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## Clinical Nutrition Session: Nutrition in severe diseases

CN01

### PLASMA METABOLOMIC SIGNATURES REFLECTING MEAT AND FISH CONSUMPTION AND RISK OF COLORECTAL CANCER

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**Rationale:** Consumption of red and processed meat has been consistently associated with an increased risk of colorectal cancer (CRC). However, findings on the association between fish intake and CRC risk are inconsistent, and the evidence using objective approaches to assess meat and fish consumption is sparse. We aimed to investigate the plasma metabolites related to meat and fish consumption and assess their associations with CRC risk.

**Methods:** Within the Nurses' Health Study (NHS), NHSII, and Health Professionals Follow-up Study (HPFS), we examined the plasma metabolome related to intakes of total red meat, unprocessed red meat, processed red meat, total poultry, total fish, dark meat fish, and canned tuna fish among 5269 participants. Metabolomic signatures reflecting meat and fish intakes were developed, and their associations with CRC risk were further evaluated among 559 matched pairs in a nested case-control study within NHS/HPFS and 266 matched pairs within Women's Health Study (WHS).

**Results:** Red meat and fish groups exhibited systematic differences in plasma metabolite profiles, especially highly unsaturated lipid species. Metabolomic signatures comprising 7-55 known metabolites were developed for each meat and fish group, and were significantly correlated with the corresponding dietary intake in both NHS/NHSII/HPFS and WHS. After pooling results from NHS/HPFS and WHS, the metabolomic signatures for fish intake were all inversely associated with CRC risk: odds ratios per 1-SD increase were 0.86 (95% CI: 0.78, 0.96) for total fish, 0.86 (95% CI: 0.77, 0.96) for dark meat fish, and 0.87 (95% CI: 0.78, 0.97) for canned tuna fish. No significant associations were found for metabolomic signatures reflecting red meat and poultry consumption.

**Conclusion:** Plasma metabolomic signatures reflecting the fish consumption were inversely associated with CRC risk, supporting a protective role of fish intake in CRC prevention and indicating the promising use of metabolomics in complementing traditional dietary assessment.

**Disclosure of Interest:** None declared.

CN02

### THE RELATION BETWEEN FAT-FREE MASS AND SIDE EFFECTS INDUCED BY CHEMOTHERAPY IN PATIENTS WITH LYMPHOMA – A PROSPECTIVE COHORT STUDY

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**Rationale:** As cytostatic agents are water soluble it has been suggested, that side-effects should be expected to be more serious in patients with a modest lean-body-mass (LBM), and it has been suggested to use LBM for dose-calculation instead of surface.

**Aim:** We wanted to investigate if the occurrence of side-effects (dose limiting toxicity or treatment delaying toxicity or chemotherapeutic-induced side effects - DLT) is related to the dose/ kg LBM as well as compare the dose-calculation using body surface and LBM.

**Methods:** The prospective cohort study included 53 patients in myelosuppressive treatment for malignant lymphoma of various types. The patients received several different types of chemotherapy. The patients was observed over a minimum of two treatment series and had bioimpedance (BIA) measurements conducted at each treatment series together with interviews about side effects, physical activity, quality of life and 24-hour diet recall interview.

**Results:** There was no significant difference in the total change in FFM, FM and weight during the study period, but the patients lost more FFM than weight. There was no significant difference in the average total change in FFM across the study population parted into series-interval groups, risk groups and in patients who experienced DLT and no DLT. Significantly more women experienced DLT ( $p=0,02$ ). The grade 0-1 for the presence of side-effects was reported by > 50% of the patients. There were few significant trends between the groups in the correlations-test of dose pr. kg. FFM, expressed as Body Surface Area (BSA)/FFM ratio, and side-effects. Decreased appetite, taste disturbances and stomatitis significantly correlated positively with BSA/FFM ratio in 2 out of 7 series within the same group. Patients who experienced DLT had a significantly higher BSA/FFM ratio at 3 series ( $p=0,02-0,05$ ). In addition, 3 cut-offs were estimated for the maximal tolerable BSA/FFM ratio: 0,038 m<sup>2</sup>/kg, 0,036 m<sup>2</sup>/kg og 0,037 m<sup>2</sup>/kg respectively. Over 50% of the patients had their percentage of energy and protein needs met >75% during the study period. Physical activity (PAL) decreased during the study period and was significantly lower for DLT patients vs. no DLT ( $p=0,04$ ). In the evaluation of quality of life, patients who experienced DLT had a higher health status and lower symptom burden.

**Conclusion:** There was no evidence for a relationship between dose of cytostatic pr. kg. and FFM in patients with lymphoma.

**Disclosure of Interest:** None declared.

CN03

### IMPACT OF LOW VISCERAL FAT MASS ON COMPLIANCE OF ADJUVANT CHEMOTHERAPY AND RELAPSE-FREE SURVIVAL AFTER GASTRECTOMY IN GASTRIC CANCER PATIENTS

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**Rationale:** It has been reported that preoperative reduced skeletal muscle mass and skeletal muscle mass loss during adjuvant chemotherapy are associated with discontinuation of adjuvant chemotherapy. However, the relationship between visceral fat mass and compliance has not yet been investigated. In this study, we investigated the impact of low preoperative visceral fat mass on compliance and relapse-free survival (RFS) after gastrectomy in gastric cancer patients.

**Methods:** This was a retrospective cohort study of consecutive patients with gastric cancer who underwent radical gastrectomy for pathological stages II and III, and who received postoperative S-1 adjuvant chemotherapy between April 2008 and April 2017. Treatment failure was defined as discontinuation of adjuvant chemotherapy within 1 year. Visceral fat mass was measured preoperatively at the umbilical level on computed tomography, which was divided by height (m<sup>2</sup>) to obtain the visceral adipose tissue index (VAI). Patients with a VAI below the median cut-off value were categorized as low-VAI, while those above the cut-off value were classified as high-VAI. We compared the treatment failure rate and RFS in the low-VAI and high-VAI groups after adjusting for group differences with propensity score matching. In addition, risk factors related to treatment failure and poor prognostic factors for RFS were analyzed in multivariate analyses that included all cases.

**Results:** Among all 263 patients, treatment failure and recurrence were observed in 44 patients (16.7%) and 90 patients (34.2%), respectively. The median follow-up period was 52 months. After propensity matching, there were 101 patients in both low- and high-VAI groups. Treatment failure rate was higher ( $P=0.037$ ) and RFS was worse ( $P=0.025$ ) in the low-VAI group. In multivariate analyses, low-VAI was an independent risk factor associated with treatment failure (odds ratio: 2.360, 95% CI: 1.120-5.000,  $P=0.025$ ), and was a poor prognostic factor for RFS (hazards ratio: 1.652, 95% CI: 1.057-2.582,  $P=0.028$ ).

**Conclusion:** Preoperative low visceral fat mass was an independent risk factor for poor compliance with adjuvant chemotherapy and a poor prognostic factor for RFS after radical gastrectomy in gastric cancer patients. Preoperative evaluation using body composition may be useful for post-treatment and prognosis prediction.

**Disclosure of Interest:** None declared.

## CN04

## EFFECTS OF ANTIOXIDANTS SUPPLEMENTATION ON PRO-INFLAMMATORY CYTOKINES IN NON-CRITICALLY ILL COVID-19 PATIENTS

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**Rationale:** Pro-inflammatory cytokines play a role in COVID-19 pathogenesis. Antioxidants are frequently prescribed for SARS-CoV-2 infected patients. However, the clinical evidence is lacking<sup>1</sup>. This study investigated the effect of oral antioxidants on the serum levels of interleukin-6 (IL-6), Tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), and the general inflammatory biomarkers in mild to moderate COVID-19 cases.

**Methods:** A double-blinded, randomized controlled clinical trial was done in the Prince Mohammed Bin Abdulaziz Hospital, Riyadh, SA, (December 2020 and March 2021). This trial was registered under reference no: NCT04323228. A total of 44 hospitalized noncritically ill COVID-19 patients were randomized into (Antioxidant group, n=24) and (placebo group, n=20) for 10 days. The supplement included 250 mg Vitamin C, 1500 ug Vitamin A, 90 mg vitamin E, 15 ug Selenium, and 7.5 mg Zinc, while the placebo consisted of 0.3g cellulose powder. Both study groups received the standard medical therapy according to the protocol of the Ministry of Health, SA<sup>2</sup>. Baseline and final serum levels of C-reactive protein (CRP), IL-6, and TNF- $\alpha$  were measured by ELISA kits (R&D Systems, UK). Also, total leukocyte count, lymphocytic count, and neutrophil to lymphocyte ratio (NLR) were measured by Sysmex XP 300 system (Sysmex co, Japan).

**Results:** Levels of lymphocyte count, NLR, and CRP were not significantly changed, while levels of IL-6, and TNF- $\alpha$ , were significantly reduced in the Antioxidant group (Table 1).

Table 1:

Comparison of main parameters between study groups.

Variables	Antioxidant (n=24)			Placebo (n=20)			Sig. baseline	Sig. Final
	Basal Mean $\pm$ SD	Final Mean $\pm$ SD	P-value	Basal Mean $\pm$ SD	Final Mean $\pm$ SD	P-value		
Neutrophils (10 <sup>3</sup> /uL)	4.85 $\pm$ 2.21	5.82 $\pm$ 2.44	0.167	6.07 $\pm$ 2.61	5.86 $\pm$ 1.71	0.822	0.227	0.973
Lymphocytes (10 <sup>3</sup> /uL)	1.05 $\pm$ 0.55	1.58 $\pm$ 0.86	<b>0.008</b>	1.22 $\pm$ 0.38	2.09 $\pm$ 0.67	<b>&lt;0.001</b>	0.498	0.135
NLR	6.29 $\pm$ 4.43	5.70 $\pm$ 5.46	0.664	5.59 $\pm$ 3.13	3.17 $\pm$ 1.81	<b>0.011</b>	0.796	0.190
CRP (mg/dL)	4.70 $\pm$ 3.85	1.28 $\pm$ 1.19	<b>0.049</b>	7.35 $\pm$ 6.47	1.44 $\pm$ 1.05	<b>0.033</b>	0.915	0.603
IL-6 (pg/mL)	22.09 $\pm$ 6.58	8.91 $\pm$ 4.23	<b>&lt;0.001</b>	23.56 $\pm$ 7.06	11.89 $\pm$ 1.62	<b>&lt;0.001</b>	0.692	<b>0.035</b>
TNF- $\alpha$ (pg/mL)	46.36 $\pm$ 3.20	14.91 $\pm$ 5.32	<b>&lt;0.001</b>	47.11 $\pm$ 3.62	21.11 $\pm$ 3.89	<b>&lt;0.001</b>	0.252	<b>0.003</b>

**Conclusion:** Antioxidants oral supplementation, as an adjuvant to the standard medical management, significantly ameliorated the COVID-19-associated IL-6 and TNF- $\alpha$  storm.

**References:**

- Soto, M E. Guarner-Lans V. Soria-Castro E. Manzano Pech L. Pérez-Torres I. Is antioxidant therapy a useful complementary measure for Covid-19 treatment? An algorithm for its application. *Medicina* 2020; 56: 386.
- Therapeutic protocol for COVID-19, Saudi MOH publication, 2020. (Accessed December 1, 2020 at <https://www.moh.gov.sa/Ministry/Media-Center/Publications/Documents/MOH-therapeutic-protocol-for-COVID-19.pdf>)

**Disclosure of Interest:** None declared.

## CN05

## BIOENERGETIC BALANCE OF CRRT. A POST-HOC ANALYSIS OF THE MECCIAS TRIAL

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**Rationale:** Indirect calorimetry guided nutritional therapy is the gold standard and is associated with lower morbidity and mortality in critically ill patients. Scientific progress has made the use of a metabolic cart possible during CVVH. Non-intentional calories due to citrate, glucose and lactate in dialysis fluids must be taken into account when formulating a caloric prescription. We aimed to evaluate this bioenergetic balance of CVVH and how nutritional therapy should be adapted.

**Methods:** This is a post hoc analysis of the prospective MECCIAS trial which analyzed CO<sub>2</sub> removal during low dose CVVH with citrate, high dose CVVH with citrate and low dose CVVH without citrate to conclude a low impact on measured resting energy expenditure (REE). CVVH runs were included in the statistical analysis when effluent dose of glucose and lactate were present. Citrate, glucose and lactate balance were compared respectively during low dose CVVH with citrate (e.g. glucose<sub>c</sub>), compared to CVVH during high dose (e.g. glucose<sub>HD</sub>) and finally low dose CVVH without citrate (e.g. glucose<sub>e</sub>) with a one way anova.

The caloric load of these non-nutritional calories was compared to the true REE (which takes CO<sub>2</sub> and O<sub>2</sub> exchange of CVVH into account).

**Results:** The mean caloric load of citrate<sub>c</sub> was 736 $\pm$ 101 Kcal/day; the setting with citrate<sub>HD</sub> delivered 564  $\pm$  75 Kcal/day and citrate. 0 Kcal/day (p<0,0001). The caloric load of glucose<sub>c</sub> was -222 $\pm$ 90 Kcal/day compared to glucose<sub>HD</sub> of -262 $\pm$ 202 Kcal/day and glucose<sub>e</sub> of -187 $\pm$  74 Kcal/day (p=0,584). The caloric load of lactate<sub>c</sub> was -16 $\pm$ 5 Kcal/day, lactate<sub>HD</sub> was -7 $\pm$ 27 Kcal/day and lactate. 3 $\pm$  15Kcal/day (p=0,032). This resulted in a statistically significant absolute bioenergetic balance (p<0,0001) and difference (in %) of true REE (p=0,001). The [bioenergetic balance]<sub>c</sub> was 498 $\pm$ 110Kcal/day (range 339 to 681 Kcal/day) or 26 $\pm$ 9% (range 14 to 42%) of REE compared to [total caloric balance]<sub>HD</sub> of 262 $\pm$ 222 Kcal/day or 17 $\pm$ 11% of REE and [total caloric balance]<sub>e</sub> of -189 $\pm$ 77Kcal/day (range -298 to -92Kcal/day) or -13 $\pm$ 8 % (range -28 to -5%) of REE.

**Conclusion:** Different CVVH settings resulted in different caloric balances ranging from - 28 % up to +42 % of true REE. When formulating a caloric prescription, an individual approach taking the balance of these non-nutritional calories into account seems warranted. During low dose CVVH with citrate, feeding with relative high dose protein formula seems required as CVVH delivers a lot of carbohydrate based calories.

**Disclosure of Interest:** None declared.

## CN06

## FEEDING INTOLERANCE AS A PREDICTOR OF CLINICAL OUTCOMES IN CRITICALLY ILL PATIENTS: A MACHINE LEARNING APPROACH

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**Rationale:** Feeding intolerance (FI) in enterally fed patients is a common problem associated with adverse outcomes in critically ill patients. Yet, the exact role of FI regarding mortality and morbidity remained controversial. The aim of the study is to investigate whether FI occurrences, along 72 hours of admission, has incremental prognostic significance in predicting clinical outcomes in critically ill patients.

**Methods:** We included adult patients (2012–2018) admitted at Beilinson hospital ICU for more than 48 hours. FI definition is based on the occurrence of “large” gastric volumes, GI symptoms and “inadequate” delivery of enteral nutrition (Reintam Blaser et al., 2021). Admission conditions and FI

occurrences, along 72 hours, were analyzed by machine learning (ML) classification algorithms predicting several mortality and morbidity outcomes metrics. Prediction performance was assessed by the area under the curve (AUROC) of ten-fold cross-validation and validation sets. The study was approved by the ethics committee of Beilinson.

**Results:** The dataset comprised of 1,782 patients who received enteral nutrition (EN). The median (IQR) age was 62 (48–72) years, BMI 26.5 (23–31). Main admission conditions: surgical (47%), trauma (27%) and medical (25%). Five ML algorithms were trained and tested (Python software). The best performing algorithm was Random Forest classifier. Models included admission conditions only achieved AUC of 73% - 77% (according to outcome metric), while the addition of FI occurrences along 72 hours achieved AUC of 82% - 87%, respectively. Valuable predictors were mainly large GRV (>250 mL) and inadequate delivery of enteral nutrition.

**Conclusion:** FI occurrences along 72 hours of ICU admission has an incremental prognostic significance in an ML approach predicting adverse clinical outcomes in enterally fed critically ill patients.

#### References:

Reintam Blaser A., Deane AM, Preiser JC, Arabi YM, Jakob SM. Enteral Feeding Intolerance: Updates in Definitions and Pathophysiology. *Nutr Clin Pract.* 2021 Feb;36(1):40–49.

**Disclosure of Interest:** None declared.

## ESPEN Best Abstracts

### 001

#### NUTRITIONAL PARAMETERS ASSOCIATED WITH PROGNOSIS IN NON-CRITICALLY ILL HOSPITALIZED COVID-19 PATIENTS: THE NUTRI-COVID19 STUDY

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**Rationale:** To investigate the association between the parameters used in nutritional screening assessment (body mass index [BMI], unintentional weight loss [WL] and reduced food intake) and clinical outcomes in non-critically ill, hospitalized coronavirus disease 2019 (COVID-19) patients.

**Methods:** This was a prospective multicenter real-life study carried out during the first pandemic wave in 11 Italian Hospitals. In total, 1391 patients were included. The primary end-point was a composite of in-hospital mortality or admission to ICU, whichever came first. The key secondary end-point was in-hospital mortality.

**Results:** Multivariable models were based on 1183 patients with complete data. Reduced food intake before and after hospital admission was found to have a negative prognostic impact for both the primary and secondary end-point ( $P < 0.001$  for both). No association with BMI and WL was observed. Other predictors of outcomes were age and presence of multiple comorbidities. A significant interaction between obesity and multi-morbidity ( $\geq 2$ ) was detected. Obesity was found to be a risk factor for composite end-point (HR=1.36 [95%CI, 1.03–1.80];  $P=.031$ ) and a protective factor against in-hospital mortality (HR=0.32 [95%CI, 0.20–0.51];  $P < .001$ ) in patients with and without multiple comorbidities, respectively. Secondary analysis (patients, N=829), further adjusted for high C-reactive protein ( $>21$  mg/dL) and LDH ( $>430$  mU/mL) levels yielded consistent findings.

**Conclusion:** Reduced food intake was strongly associated with negative clinical outcomes in non-critically ill, hospitalized COVID-19 patients. This simple and easily obtainable parameter may be useful to identify patients at highest risk of poor prognosis, who may benefit from prompt nutritional

support. The presence of comorbidities could be the key factor, which may determine the protective or harmful role of a high body mass index in COVID-19.

**Disclosure of Interest:** None declared.

### 002

#### A RETROSPECTIVE COHORT STUDY OF NUTRITIONAL RISK, NUTRITIONAL SUPPLEMENTATION AND OUTCOMES IN COVID-19

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**Rationale:** This study aimed to characterise nutritional risk in COVID-19 inpatients, their outcomes based on nutritional risk status (inflammatory response, length of stay, ICU admission, inpatient mortality), and whether or not nutritional supplementation had any association with inpatient mortality.

**Methods:** This was a retrospective cohort study of adult inpatients admitted to University College London Hospital between February 2020 and July 2020 with PCR-confirmed SARS-CoV-2 (n=518). Data were collected in a de-identified fashion from a paperless digital platform. 73.6% of patients (n=381) had nutritional assessment on admission and were classified as low, moderate or high nutritional risk using the local Nutritional Scoring Tool (NST). Unpaired Student's T-tests were performed to compare statistical differences between mean values. Multivariate logistic regressions were performed to generate adjusted odds ratios accounting for co-morbidities (chronic lung disease, hypertension, diabetes, AKI/CKD, cancer, dementia), age $>70$ , ICU admission and gender. Statistical significance was determined as  $p < .05$ .

**Results:** 34.6% of patients (n=132) were assessed as high nutritional risk, 23.4% (n=89) were assessed as moderate nutritional risk and 42.0% (n=160) were assessed as low nutritional risk on admission to hospital. Mean peak CRP of patients at moderate and high nutritional risk was 30 mg/L higher than those at low nutritional risk ( $p < .05$ , 95% CI 3 mg/L to 57 mg/L), and mean nadir albumin was 3g/L lower ( $p < .0001$ , 95% CI 2 g/L to 5 g/L). Inpatient length of stay was 5.8 days longer in patients at moderate and high nutritional risk compared to those at low nutritional risk ( $p < .001$ , 95% CI 2.4 to 9.2 days). Moderate nutritional risk on admission was an independent risk factor for ICU admission, adjusted OR 2.18 (95% CI 1.18 to 4.00),  $p < .05$ . High nutritional risk was an independent risk factor for mortality, adjusted OR 3.13 (95% CI 1.79 to 5.53),  $p < .0001$ . In patients at high nutritional risk, nutritional supplementation with oral nutritional supplements and/or nasogastric feeding was associated with lower odds of inpatient mortality, adjusted OR 0.26 (95% CI 0.09 – 0.69),  $p < .001$ . Overall, 64.8% of patients at high nutritional risk received nutritional supplementation.

**Conclusion:** A large proportion of COVID-19 patients are at moderate or high nutritional risk on admission to hospital. This study showed they had a greater inflammatory response and longer length of stay compared to those at low nutritional risk. Patients at moderate nutritional risk had greater odds of requiring ICU admission, and patients at high nutritional risk had greater odds of inpatient mortality. Nutritional supplementation in the high nutritional risk group was associated with lower odds of inpatient mortality, yet only two-thirds received this simple intervention. More attention should be paid to nutritional assessment and supplementation in this high-prevalence, high-risk group of patients.

**Disclosure of Interest:** None declared.

### 003

#### NUTRITIONAL INTAKE AND GI SYMPTOMS IN CRITICALLY ILL COVID-19 PATIENTS

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**Rationale:** Critically ill COVID-19 patients seem hypermetabolic and difficult to feed enterally, due to high gastric residual volumes (GRV) and diarrhea. Our aim was to describe the association of nutritional intake and gastro-intestinal (GI) symptoms during first 14 days of ICU admission.

**Methods:** Observational study including critically ill adult COVID-19 patients. Data on nutritional intake (enteral nutrition (EN) or parenteral nutrition) and GI symptoms were collected during 14 days after ICU admission. Energy and protein feeding goals were calculated conform ESPEN guidelines and actual intake was recorded. GI symptoms included GRV (ml/d), vomiting, abdominal distension and feces (ml/d). GI symptoms were defined as mild if at least one symptom occurred and as moderate when  $\geq 2$  symptoms occurred. Linear mixed model analysis was performed to explore the development of nutritional intake and GI symptoms over time at day (D) 0,4,10&14.

**Results:** 150 patients were included (75% male; median age 64 years [54–70]). BMI upon admission was 28 kg/m<sup>2</sup> [25–33], of which 41% obese (BMI>30 kg/m<sup>2</sup>). The majority received EN during admission (98% D4; 96% D10–14). Mean delivery of prescribed kcal increased from 87% at D4 to 93% D10–14. Protein goals expanded during admission (84% D4; 96% D10–14). Presence of moderate GI symptoms decreased (10% D0; 6% D4–10; 5% D14), reversively mild GI symptoms increased. None of patients developed severe GI failure. Development of high GRV fluctuated (5% D0; 23% D4; 14% D10; 8% D14) and diarrhea increased during admission (5% D0; 22% D4; 25% D10; 27% D14). Association between the amount of the prescribed kcal and GI symptoms ( $p<0.0001$ ) attenuated over time.

**Conclusion:** GI symptoms occurred frequently but were no major barrier for EN in COVID-19 patients, while nutritional intake were just below requirements during the first 14 days of ICU admission.

**Disclosure of Interest:** None declared.

004

#### DIETARY INSULINEMIC POTENTIAL AND RISK OF TOTAL AND CAUSE-SPECIFIC MORTALITY AMONG MEN AND WOMEN

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**Rationale:** Insulin resistance and hyperinsulinemia play important roles in the progression of multiple chronic disease and conditions. Diet modulates insulin response; however, evidence is limited regarding whether diet with higher insulinemic potential is associated with all-cause and cause-specific mortality risk.

**Methods:** We prospectively followed 63,464 women from the Nurses' Health Study (1986–2016) and 42,883 men from the Health Professionals Follow-up Study (1986–2016). Diet was assessed by food frequency questionnaires every 4 years. The insulinemic potential of diet was evaluated using a food-based empirical dietary index for hyperinsulinemia (EDIH) that was pre-defined based on predicting circulating C-peptide concentrations.

**Results:** During 2,815,428 person-years of follow-up, 38,322 deaths occurred. In the pooled multivariable-adjusted analyses, a higher dietary insulinemic potential, as indicated by higher EDIH scores, was associated with an increased risk of mortality from all causes (hazard ratio [HR] comparing extreme quintiles: 1.32; 95% confidence interval [CI]: 1.27, 1.36; P-trend<0.001), cardiovascular disease (CVD) (HR: 1.35; 95% CI: 1.26, 1.44; P-trend<0.001), cancer (HR: 1.20; 95% CI: 1.13, 1.27; P-trend<0.001), and other-causes (HR: 1.37; 95% CI: 1.31, 1.44; P-trend<0.001). Additional adjustment for body mass index slightly attenuated the association between EDIH and CVD mortality (HR: 1.28; 95% CI: 1.19, 1.37; P-trend<0.001), suggesting adiposity may partly mediate the observed association. Moreover, compared with participants whose EDIH scores remained stable over an 8-year period, those with the greatest increases had a higher subsequent risk of all-cause (HR: 1.13; 95%CI: 1.09, 1.18; P-

trend<0.001) and CVD (HR: 1.10; 95% CI: 1.00, 1.20; P-trend=0.005) mortality.

**Conclusion:** Higher insulinemic potential of the diet was associated with higher risk of all-cause and cause-specific mortality. Reducing the insulinemic potential of the diet may therefore be a means of improving overall health and preventing premature death.

**Disclosure of Interest:** None declared.

005

#### EFFECT OF LACTOBACILLUS CASEI SHIROTA IN PREVENTING ANTIBIOTIC ASSOCIATED DIARRHOEA INCLUDING CLOSTRIDIUM DIFFICILE INFECTION IN PATIENTS WITH SPINAL CORD INJURIES: A MULTICENTRE RANDOMISED, DOUBLE-BLINDED, PLACEBO-CONTROLLED TRIAL

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**Rationale:** Antibiotic associated diarrhoea (AAD) and *Clostridium difficile* infection (CDI) are of major clinical concern in spinal cord injury (SCI) rehabilitation. Neurogenic bladder dysfunction as a result of SCI often leads to enhanced risk of urinary tract infections.<sup>1</sup> Use of invasive devices such as urinary catheters further increases the need for antibiotics and the risks of AAD and CDI.<sup>2</sup> A previous open-labelled study found that SCI patient taking a probiotic containing at least 6.5x10<sup>9</sup> live *Lactobacillus casei* Shirota (LcS) could prevent AAD.<sup>3</sup> In order to confirm this effects and fully demonstrate the extent of LcS effectiveness in preventing AAD/CDI, a double-blinded, placebo-controlled study is indicated.

**Methods:** A multicentre, randomised, placebo-controlled, double-blind (the ECLISP) trial, was conducted to assess (1) the efficacy of consuming LcS in preventing AAD and CDI; (2) whether proton pump inhibitors (PPI) and undernutrition-risk are risk factors for AAD/CDI and (3) associated changes in quality of life. LcS or placebo was given once daily, within 48 hours from the start of antibiotic, for the duration of an antibiotic course and continued for 7 days thereafter. Follow up was set at 7 and 30 days after the antibiotic course finished. This trial was registered with ISRCTN:13119162.

**Results:** Between November 2014, and November 2019, 359 consenting SCI adults (median age: 53.3; range: 18–88 years), from 3 SCI centres responsible for providing approximate 45% of UK SCI service, with a requirement for antibiotics due to infection were randomly allocated to receive LcS (n=181) or placebo (n=178). Overall, there was no statistical difference in the occurrence of AAD or CDI between the groups at 7 or 30 days, but LcS prevented AAD at 7 (19% v 35.7%, p=0.041) and 30 days follow up (28% v 52.2%, p=0.016) in the participants who took PPI regularly. LcS was associated with a reduced risk for AAD in PPI-subgroup of 0.53 (0.29–0.99); 0.54 (0.32–0.91), and the number needed to treat were 6.0 (3.1–101); 4.1 (2.3–19.2) at 7 and 30d follow up respectively.

**Conclusion:** The present study indicates that LcS could not prevent AAD in unselected SCI patients but has the potential to prevent AAD in the higher risk group of patients on PPI. Confirmatory studies are needed to allow translation of this apparent therapeutic success into improved clinical outcomes.

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## Best in Theme Session I - Critical care 006

### MULTICENTRIC STUDY ON THE EVOLUTION OF THE NUTRITIONAL STATUS OF CRITICALLY ILL COVID-19 SURVIVORS DURING THE 1ST OUTBREAK IN MADRID. NUTRICOVID STUDY: PRELIMINARY RESULTS

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**Rationale:** COVID-19 patients show high hospitalization rate with high mortality risk for those requiring intensive care. Information about long-term evolution of nutritional status in COVID-19 patients remains scarce. NUTRICOVID study aims to describe 1-yr evolution of nutritional and functional status of COVID-19 survivors admitted in ICU during the 1<sup>st</sup> outbreak (March-June 2020).

**Methods:** Multicenter, ambispective, observational study conducted in 16 public hospitals of Madrid (Spain) with ICU COVID-19 survivors. A descriptive analysis of hospital stay data was performed, including age, gender, weight at admission/discharge, nutritional and sarcopenia screening at discharge (MUST and SARC-F), use of healthcare resources (length of hospital/ICU stay, use of respiratory support, tracheostomy), medical nutritional treatment (MNT), and functional (Barthel) and HRQoL (EQ-5D) at discharge. The analysis was performed using STATA v.14.

**Results:** Preliminary results of 176 patients are presented (95% of sample): 72% male, mean age (SD) 60 (11) years; average (SD) percentage weight loss during hospital stay 17% (8%); median hospital and ICU length of stay: 53 (27-90) and 25 (11-44) days, respectively. During hospitalization, 88% required invasive mechanical ventilation, 54% tracheostomy; 51% received parenteral nutrition, 85% enteral nutrition and 67% oral nutritional supplements. At discharge, 84% and 87% of patients were at risk of malnutrition and sarcopenia, respectively, but only 38% were prescribed MNT. According to Barthel, 80% were moderate or highly dependent at discharge, and 71% had significant impairment of their mobility, with a median EQ-VAS score of 40 (25-50).

**Conclusion:** This preliminary analysis evidences a high impact of COVID-19 on ICU patient's nutritional and functional status and HRQoL at hospital discharge. Results from the 1-yr follow-up will provide further information on the recovery and long-term effects of the disease.

**Disclosure of Interest:** C. Cuerda: None declared, J. Álvarez-Hernández: None declared, F. J. Pérez-Sádaba Other: consulting fees from SENDIMAD.

007

### THE EFFECTS OF SUPPLEMENTARY NUTRITION SUPPORT (SNS) ON THE PHYSICAL AND FUNCTIONAL RECOVERY OF COVID-19 PATIENTS

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**Rationale:** Nutritional insufficiency and decreased muscle mass of patients with COVID-19 leads to prolonged respiratory support, ICU & hospital stay, as well as reduced muscle strength and quality of life after COVID-19. Aim of study was to evaluate effects of SNS on the physical health recovery of COVID-19 patients.

**Methods:** A prospective, open, multicenter, randomized controlled trial aims to evaluate the effect of nutritional intervention with SNS in COVID-19 patients. 1 group received SNS daily for 28 days from the day of inclusion. The

other group received standard diet. The primary endpoint was the evaluation of quality of life (SF-36 questionnaire) and the changes in the hand grip strength. Secondary endpoints of the study were duration of hospital stay and respiratory support. To analyze the data on the SF-36, a two-way ANOVA was carried out. The data which were not continuous, nonparametric tests was considered (Wilcoxon test and Mann-Whitney test).

**Results:** Total patients included: 185. Median age: 55 years old. Upon evaluation of the physical component of quality of life (SF-36), a statistically significant difference between groups- 44.28±5.45 and 46.58±6.76 respectively (p=0.012). Muscle strength was statistically different in the control (4.01±1.15 daN) and study (6.1±2.06 daN) groups (p<0.0001). The duration of respiratory support and hospital stay was significantly lower in the study group, 6.7±1.30 days vs 8.14±1.52 days in the control group (p<0.0001) and 16.47±2.93 days, whereas in the study group it was 13.16±2.69 days (p<0.0001).

**Conclusion:** Oral nutritional support given to oxygen dependent COVID-19 patients improves rehabilitation potential including preservation of muscle mass and function, reducing oxygen support requirements and length of stay in hospital.

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008

### β-HYDROXY β-METHYL BUTYRIC ACID (HMB) SUPPLEMENTATION REDUCED WHOLE BODY PROTEIN BREAKDOWN IN THE EARLY RECOVERY PHASE OF SEPSIS IN THE PIG

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**Rationale:** Optimal feeding in patients recovering from sepsis is critical to preserve muscle mass. β-Hydroxy β-methylbutyric acid (HMB) supplementation potentially attenuates whole body protein breakdown (WbPB) in healthy subjects, but it is unclear whether HMB reduces WbPB during the recovery phase of sepsis. Therefore, we studied WbPB and untargeted amino acid productions (WBP) during a HMB intervention in the early recovery phase of sepsis in the pig.

**Methods:** In catheterized pigs (±25kg, overnight fasted), acute sepsis was present for 6 hours (*Pseudomonas aeruginosa*: 3e<sup>8</sup> CFU/ml/h IV). At t=6h, recovery was started by a single dose of gentamicin (5 mg/kg) and intra-gastric HMB intervention started and continued for 6 hours (sip administration, 94.8 μmol/kg/h CaHMB, PLACEBO: saline), creating randomized 2 groups: HMB n=10, PLACEBO n=10. Over the last 3 hours the rate of appearance of phenylalanine (WbPB) and WBP was measured with IV pulse administration of stable isotope amino acids tracers. Statistics: mean [95%CI] and ANCOVA. p<0.05.

**Results:** During the six hours intervention, arterial HMB concentration was 948 [858, 1039] vs 2.4 [2.1, 2.7] μM in PLACEBO. Also, WbPB was lower (p=0.0172, Δ Estimate (PLACEBO-HMB): -876 [-1576, -176] μmol/hour; -22 [-39, 4] %). Untargeted WBP showed an overall decrease of production in the HMB group (14.0[10.0,18.0] %, p<0.0001).

**Conclusion:** HMB attenuates whole body protein breakdown in the early recovery phase of sepsis in the pig. We hypothesize that the overall decrease of amino acid production indicates an overall downregulated metabolism that potentially could help preserving muscle mass.

**Disclosure of Interest:** None declared.

009

### ANTICOAGULANTS DECREASE THE RISK FOR CATHETER-RELATED THROMBOSIS IN HOME PARENTERAL NUTRITION PATIENTS

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**Rationale:** Catheter-related venous thrombosis (CRVT) is a severe complication of home parental nutrition (HPN). Although primary prevention of CRVT is crucial, there is no consensus on anticoagulant use to prevent these adversities. The most recent updated ESPEN guidelines for

chronical intestinal failure does not recommend thrombosis prophylaxis as primary prevention. The aim of this study was to compare CRVT risk in HPN patients in the presence or absence of anticoagulants, and to identify risk factors for CRVTs.

**Methods:** This retrospective cohort study comprised adult HPN patients with a central venous access device (CVAD) between 2010 and 2020 who were treated at our national HPN referral centre. Subcutaneously tunnelled central venous catheters and subcutaneous ports were included. Primary outcome was the CRVT risk of HPN patients with anticoagulants compared to those without anticoagulants. Multi-level binary logistic regression outcomes are presented as odds ratios (OR) with 95% confidence intervals (95%CI).

**Results:** Overall, 1188 CVADs in 389 patients were included (601246 CVAD days). Anticoagulants were used in 408 CVADs. In total 129 CRVTs occurred in 129 CVADs of 92 patients, resulting in 0.21 CRVTs/1000 CVAD days (CI95% 0.18–0.25). Anticoagulant use was associated with a decreased risk

hypercaloric (>14.67 kcal/kg/day) nutrition and low, normal or high protein administration. Record of nutrient administration focuses on the chronic phase of critical illness, starting on day seven.

**Results:** This analysis includes 77 obese with 20 non-obese patients. Their baseline characteristics and some outcomes are shown in Table 1. At ICU discharge, obese patients were significantly more frail according to the Clinical Frailty Scale ( $p=0.004$ ), emotionally less well (Short Form 36 [SF-36],  $p=0.035$ ) and less socially functioning (SF-36  $p=0.043$ ). In contrast, they had better functional performance at hospital discharge ( $p=0.013$ ) as reported by Functional Status Score for the Intensive Care Unit.

Compared to iso-/hypercalorically fed obese patients, hypocalorically fed obese patients had shorter ICU length of stay ( $p=0.0009$ ) as well as shorter duration of mechanical ventilation ( $p=0.0002$ ) and noradrenaline demand ( $p=0.014$ ). Comparing outcomes of low, normal or high protein administration, no advantage of a certain strategy was found.

**Table 1:**

Characteristics and outcomes of obese and non-obese critically ill patients. Means and ranges (in brackets) are displayed. Two obese critically ill patients received deficient feeding and were excluded from subcohort analysis. Abbreviations: BMI = body mass index, d = day, FSS-ICU = Functional Status Score for the Intensive Care Unit, h = hour, ICU = intensive care unit, SF-36 = Short Form 36 Health Survey, SOFA = sequential organ failure assessment

	Obese critically ill (n=20)		Non-obese critically ill (n=77)
	Hypocaloric (n=4)	Iso- or hypercaloric (n=14)	
Age in years	62.25 (52-71)	65.07 (37-80)	65.84 (28-86)
BMI in kg/m <sup>2</sup>	35.12 (30.12-47.63)	36.16 (30.47-47.13)	24.23 (16.41-29.32)
Mean energy in kcal/d during the chronic phase of critical illness	910.69 (720-1317.56)	1953.90 (1157.07-2474.3)	1682.04 (0-2887.51)
SOFA upon inclusion	8.5 (7-11)	11.14 (7-17)	9.39 (4-17)
Mortality in ICU in %	25.00	42.86	28.57
Mortality 30 days after discharge in %	50.00	16.67	5.41
ICU length of stay in d	19.25 (9-25)	50.43 (16-90)	35.29 (5-169)
Duration of noradrenaline demand in h	132.5 (23-349)	480.90 (87-1138)	274.60 (0-2117)
Duration of mechanical ventilation in h	145.5 (60-324)	723.93 (249-1634)	454.19 (50-1441)
Clinical Frailty Scale	6.56 (6-7)		5.61 (1-8)
FSS-ICU	31.5 (30-33)		22.53 (6-35)
SF-36 emotional wellbeing	23.33 (15-40)		54.67 (25-90)
SF-36 social functioning	29.67 (13-38)		60.25 (0-100)

for CRVT (adjusted OR 0.53, 95% CI: 0.31-0.90). A left-sided CVAD insertion (adjusted OR 2.04, 95% CI: 1.37-3.04), a previous CVAD thrombosis (adjusted OR 1.8, 95%CI: 1.1-3.1), and a shorter lifespan of the CVAD (adjusted OR 0.98, 95%CI:0.96-0.99) were independently associated with an increased risk for CRVT.

**Conclusion:** In this study, anticoagulant use decreased the risk for CRVTs. In addition, we identified left-sided vein insertion, a previous CVAD thrombosis, and a shorter CVAD lifespan as risk factors for CRVT. Further prospective studies should provide guidance whether prophylactic use of anticoagulants, especially for patients with a left-sided CVAD and a history of CVAD thrombosis, is justified.

**Disclosure of Interest:** None declared.

## O10

### NUTRITION AND FUNCTIONAL OUTCOME IN OBESE SEVERELY ILL ICU PATIENTS

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**Rationale:** Although adequate nutrition therapy improves outcomes of intensive care unit (ICU) patients, uncertainty about the optimal feeding strategy especially for obese ICU patients remains.

**Methods:** The primary aim of this prospective observational study ("INFO", NCT04180852) was to describe the nutritional therapy of mechanically ventilated ICU patients and its influence on clinical, functional and quality-of-life outcomes which were measured longitudinally at inclusion, ICU and hospital discharge and 30 days after discharge. This predefined subgroup analysis compares obese (BMI $\geq$ 30 kg/m<sup>2</sup>) with non-obese patients and evaluates subcohorts of hypo- (7.33 - 14.67 kcal/kg/day) or iso-/

**Conclusion:** Obese patients may be more vulnerable to side effects of ICU therapy than non-obese patients. They may benefit from hypocaloric feeding during the ICU stay.

**Disclosure of Interest:** None declared.

## O11

### NUTRITION GAP AFTER DISCHARGE FROM MAXIMIZED INTENSIVE CARE NUTRITIONAL THERAPY

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**Rationale:** Critical care survivors may benefit from maximized nutritional support. Guidance regarding nutritional requirements and challenges in the immediate post-ICU period rely on few well-designed observational studies. This is a larger observational study to identify if a nutrition gap exists after ICU discharge & to identify barriers of intake.

**Methods:** Prospective observational study at the ICU & wards at Rigshospitalet. Quality assurance project. 69 patients >18 years, expected ICU LOS >3 days & to be discharged to a ward in the hospital. Data was collected on last full nutritional ICU day (day -1) & day +1,3,7 in wards. Energy/protein needs were prescribed according to nutritional risk, disease severity & phase. Barriers to reach goals were recorded.

**Results:** 51/69 patients were followed. 18/51 was in stabilizing phase not reached full requirements. 13/20 in moderate & 3/7 patients in severe nutritional risk was discharged from ICU before reaching stable phase intake. Energy: Day -1 90% of needs by phase, mostly tube feeding. 74/75/82% day +1-7. Increase was due to oral intake. Protein: Day -1 87% of needs, 54/66/65% day +1-7. ONS: 24/20/20% day +1-7. Barriers: Feeding tube: 100/69/16% day -1/+1/7, mostly selfseponated due to discomfort. CVC:100/96/92% day -1/+1/7. Large aspirates: 4/2/4% day +1-7. Constipation: 6/10/4% day +1-7. Nausea: 10/2/2% day +1-7. Loss of appetite: 18/16/8% day +1-7. Fasting: 0/3/3% day +1-7. Specific nutritional plan from the ICU to the ward

was given in 31% of files. New screening was performed in the ward in 53%. New nutritional plan was made for 51% patients in the ward. A dietitian was contacted in 27%.

**Conclusion:** A nutrition gap existed the first week after intensive care nutrition among those patients who may benefit the most from full nutritional therapy. System driven procedures hinder patients from improved nutritional status even after 7 days.

**Disclosure of Interest:** J. Wiis Grant / Research Support from: Fresenius-Kabi, L. Wangen: None declared, A. Perner: None declared.

## Best in Theme Session II - Nutrition and GI tract

### O12

#### COMPARTMENTAL TRACER ENRICHMENT DATA ANALYSIS TO MEASURE INTESTINAL SHORT-CHAIN FATTY ACID (SCFA) PRODUCTION IN HEALTH AND DISEASE

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**Rationale:** Production rates of the short-chain fatty acids (SCFA) acetate (C2), propionate (C3) and butyrate (C4), as beneficial metabolites of the intestinal microbiota, are difficult to measure due to their high first pass metabolism in colonocytes (C4) and liver (C3). We developed a stable tracer pulse approach to analyze the production of the individual SCFA in the intestinal pool by compartmental analysis in health and diseased conditions, and examined the effect of aging.

**Methods:** A two-compartmental model, representing plasma and intestinal pools, was designed to determine SCFA kinetics in 10 healthy young (18–30yo), 20 moderate to severe Chronic Obstructive Pulmonary Disease patients (55–83yo) and 20 healthy age-matched controls, and 11 healthy very old adults (80–85yo). Participants received in the postabsorptive state a pulse containing acetate [<sup>13</sup>C<sub>2</sub>], propionate [1-<sup>13</sup>C] and butyrate [1-<sup>13</sup>C] intravenously and blood was sampled 4 times over a 30 min period. Plasma tracer enrichments were measured by GC-MS and the decay curves fit for each subject using Graphpad Prism for compartmental analysis. Data presented as geometric mean [95% CI]. Group differences were analyzed by ANOVA controlling for FDR; differences of pool sizes and production rates within the groups by paired t-test,  $\alpha < 0.05$ .

**Results:** Intestinal microbial production rate (U2) of propionate was higher in the healthy young than all other groups (all  $q < 0.05$ ) (Table). SCFA plasma (Q1) and intestinal (Q2) pool sizes, fluxes ( $\mu\text{mol}/\text{min}$ ) between the pools, whole body rates of appearance of SCFA in plasma (WbRa), as well as intestinal microbial acetate and butyrate production rates did not differ between the groups. Q2 was 23 (acetate), 27 (propionate), and 53 (butyrate) times higher than Q1 (all  $q < 0.0001$ ). Intestinal production for all SCFA was higher than plasma WbRa on whole group level (C2: 7, C3: 9, and C4: 14 times), as well as in the individual groups (all  $q < 0.0001$ ).

		Healthy Young	Healthy Older	COPD	Healthy Very Old
C2	WbRa	266 [183, 386]	242 [181, 325]	234 [190, 289]	239 [151, 381]
	U2	2836 [1869, 4303]	1687 [1218, 2340]	1566 [1164, 2105]	1591 [1149, 2200]
C3	WbRa	17 [12, 24]	14 [10, 21]	16 [11, 22]	14 [10, 19]
	U2	287 [168, 490]	127 [84, 191]	111 [73, 171]	131 [90, 189]
C4	WbRa	4 [2, 7]	4 [2, 6]	5 [3, 8]	3 [1, 8]
	U2	94 [49, 180]	51 [31, 85]	47 [25, 90]	59 [32, 110]

Data are  $\mu\text{mol}/\text{min}$ , geometric means [95% CI]. WbRa: whole-body rate of appearance. U2: Intestinal microbial production rate

**Conclusion:** Whole body SCFA production measurements underestimate the intestinal SCFA production as assessed by compartmental analysis in health and diseased conditions, independent of aging.

**Disclosure of Interest:** None declared.

### O13

#### SHORT-CHAIN FATTY ACIDS REGULATE TIGHT JUNCTION PROTEINS OF SMALL INTESTINAL ORGANOID THROUGH HDAC AND STAT3

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**Rationale:** There is growing evidence for a role of the intestinal barrier in the pathogenesis of obesity-associated metabolic diseases. In previous work we have shown that the intestinal barrier is impaired in C57BL/6J mice receiving a high fat and high sugar diet, resulting in a decrease of tight junction (TJ) proteins and an increased bacterial translocation. The supplementation with the prebiotic inulin or the short-chain fatty acid (SCFA) butyrate ameliorated the intestinal barrier function and induced TJ proteins, but the underlying mechanisms remain unclear.

**Methods:** We used organoid culture of small intestinal crypts of C57BL/6J mice to investigate the effects of butyrate, acetate, propionate and lactate, fermentation products of dietary fiber inulin. Furthermore, organoids were treated with HDAC1-3 (Entinostat)-, HDAC8 (HDAC-8-IN)- and STAT3 (HJC-0157)- inhibitors.

**Results:** Butyrate significantly induced claudin-2, -5, -7, occludin and zonula occludens 1 (ZO-1) mRNA expression ( $p < 0.05$ ). Treatment of cells with acetate also resulted in an increase of claudins, occludin and ZO-1 ( $p < 0.01$ ). In addition, propionate and lactate induced claudin-2 and -5 expression ( $p < 0.05$ ). The treatment of organoids with HDAC and STAT3 inhibitors indicated that SCFA-mediated inductions are regulated by HDAC1-3, -8 inhibition ( $p < 0.05$ ) and STAT3 activation ( $p < 0.05$ ).

**Conclusion:** Our Results revealed that SCFAs induce TJ expression *in vitro* and that histone deacetylation and STAT3 are involved in these effects. Such molecular mechanisms could be new targets for preventive strategies against metabolic diseases.

**References:**

**Disclosure of Interest:** None declared.

### O14

#### BENEFICIAL EFFECTS OF A LONG-ACTING GLP-2 ANALOG, HM15912, AFTER SWITCHING FROM DAILY OR WEEKLY GLP-2 ANALOG DRUGS IN ANIMAL MODEL

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**Rationale:** Several long-acting GLP-2 analogs targeting once a week dosing are currently in clinical development to address unmet medical need of teduglutide. Previously, we confirmed monthly potential of HM15912, novel long-acting GLP-2 analog, and here we further evaluated its efficacy after switching from daily or weekly GLP-2 drugs for solid conclusion of superiority.

**Methods:** In study 1, C57BL/6 mice treated with teduglutide (BID) for 2 weeks were switched to HM15912 (QW), or continued teduglutide for the remaining 2 weeks. In study 2, weekly GLP-2 analogs, same sequences with gleglutide and apraglutide, were synthesized, and SD rats treated



with Q2D dosing for 2 weeks were switched to HM15912 (QW) or continued weekly GLP-2 analogs for the remaining 2 weeks. In both studies, small intestine (SI) mass was measured at W2, 3 and 4, and D-xylose test was performed to evaluate absorption capacity at W4. Results were statistically evaluated by one-way ANOVA.

**Results:** In mice, SI mass in teduglutide group was reached at the maximum efficacy (39.4% over vehicle) at W2. After 2 more weeks treatment, while showing the maintained SI mass in teduglutide group, it was further increased after switching to HM15912 (68.5% vs 41.1% over vehicle). In rats, weekly GLP-2 analogs reached at 41.5% or 26.6% of SI mass over vehicle at W2 were further increased after switching to HM15912 (82.1% and 90.7% over vehicle) while showing the slight increase in continued weekly GLP-2 analogs (50.5% and 37.4% over vehicle). Effect on serum D-xylose was similar to the result of SI mass.

**Conclusion:** Further increase in SI mass after switching from GLP-2 drugs of daily or weekly regimens is supporting that HM15912 may provide less treatment stress and less dependency to parenteral nutrition to SBS patients being treated with or without teduglutide or weekly GLP-2 drugs.

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## O15

### INDOLE-3-ACETATE IS ASSOCIATED WITH IMPROVEMENTS OF GLYCEMIC CONTROL BIOMARKERS AFTER BARIATRIC SURGERY

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**Rationale:** Indole-3-acetate (IAA) is a tryptophan metabolite produced by gut microbiota and has been associated with glucose homeostasis in pre-clinical studies. Since bariatric surgery can promote changes in tryptophan metabolism, we evaluated the associations between IAA and biomarkers of glycemic control before and three months after of Roux-en-Y gastric bypass surgery (RYGB).

**Methods:** The study included 30 women with type 2 diabetes who undergone RYGB. Plasma and urine samples were collected before and 3 months after bariatric surgery. IAA were determined by untargeted metabolomic analysis, performed by mass spectrometry in a multiplatform approach. The biomarkers of glycemic control analyzed were fasting blood glucose (FBG), HbA1C, insulin, C-peptide, HOMA-IR and HOMA-b. Relative changes of the IAA after RYGB (vs. preoperative) were determined by fold change (FC) and Wilcoxon test assessed the significance of these changes. Linear regression model was applied to assess the associations between IAA and biomarkers of glycemic control in both periods and significant significance was considered at 5% level. Data were collected from the cohort of the SURMetaGIT study, which was approved by local ethics committee and registered at Clinical Trials (NCT01251016).

**Results:** Indole-3-acetate increased in both plasma (FC 1.68;  $p = 0.001$ ) and urine (FC 1.51;  $p = 0.005$ ) three months after RYGB. In plasma, IAA was inversely associated with HOMA-IR ( $b_0 -0.002$ ;  $p < 0.04$ ). In urine, IAA was inversely associated with HbA1C ( $b_0 -0.0001$ ;  $p 0.042$ ).

**Conclusion:** Indole-3-acetate increased three months after bariatric surgery and it was associated with better glycemic control in type 2 diabetic women.

**Disclosure of Interest:** None declared.

## O16

### IMPACT OF FERMENTATION SUPERNATANTS OF RICH IN $\beta$ -GLUCANS MUSHROOMS ON THE INTESTINAL BARRIER: AN IN VITRO STUDY

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**Rationale:** Intestinal epithelial barrier permeability can be modulated by gut microbiota, composition and metabolism. The aim of the study was to examine the *in vitro* effect of fermentation supernatants (FS) from *Pleurotus eryngii* lyophilized mushrooms (PEWS) cultivated in wheat straw and of their enriched in  $\beta$ -glucan extracts (PEWSE) by fecal microbiota, on the expression levels of tight junctions (TJs) genes in Caco-2 cells monolayer stimulated by bacterial lipopolysaccharides (LPS).

**Methods:** PEWS and PEWSE were fermented using fecal inocula from healthy elderly donors, in an *in vitro* static batch culture model. Subsequently, Caco-2 cells were incubated initially with the fermentation supernatants (FS-PEWS or FS-PEWSE) and then challenged with LPS. Reverse transcription PCR was applied to measure the expression levels of *zonulin-1*, *occludin* and *claudin-1* TJs. Based on the normality of the data, Wilcoxon matched-pairs signed rank test or Students' t-test was performed.

**Results:** Our data suggested that both types of FS from *P. eryngii* could strongly impact the TJs gene expression. Down-regulation of all TJs gene expression levels was observed when the cells were challenged only with LPS. The FS negative control, consisting of the donors' gut microbiota only, exhibited a similar effect on *zonulin-1* and *claudin-1* expression levels compared to the culture medium used for Caco-2 cells (untreated). It should be highlighted that FS-PEWS displayed a profound up-regulation effect on gene expression levels of all TJs compared to the stressor, but also to the untreated cells. In parallel FS-PEWSE showed a significant increase on the expression levels of *occludin* and *claudin-1*, when compared only to LPS.

**Conclusion:** In conclusion, our data highlighted the positive and potential protective effects of the rich in  $\beta$ -glucan *P. eryngii* mushrooms on the intestinal barrier integrity, fueling further efforts to elucidate their manifold role, prebiotic included, in human health.

This research has been co-financed by the EU and Greek national funds, through the Operational Program Competitiveness, Entrepreneurship and Innovation under the call RESEARCH – CREATE – INNOVATE (T1EDK-03404).

**Disclosure of Interest:** None declared.

## O17

### GENETIC CONDITIONS IN THE PHYTOSTEROL AND THEIR FRACTIONS IN HEALTHY POPULATION

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**Rationale:** Lipid emulsions phytosterols are relevant in liver function test alterations. Higher phytosterolemia for T carriers of rs41360247, C carriers of rs4245791 and rs11887534 and T of rs4148217 from ABCG8 have been demonstrated. C allele carriers of blood group ABO locus (rs657152) is associated with decreased phytosterolemia.

**Objective:** determine phytosterolemia in healthy population and if it is associated with these polymorphisms.

**Methods:** This observational study was conducted in healthy adult population. Variables collected were demographics; total plasma PS and their fractions and, genetics (rs11887534, rs4245791, rs41360247, rs4148217 and rs657152).

A statistical approach was made to study the relationship between with the values of phytosterols and fractions and polymorphisms with one-way ANOVA approximation.

**Results:** 196 volunteers, 58.7% female; a median age of  $42 \pm 19$  years; 87.6% caucasian; and a body mass index of  $24.57 \pm 4.27$  kg/m<sup>2</sup>. Total plasmatic PS were  $2.01 \pm 1.69$   $\mu$ g/mL, betasitosterol:  $0.88 \pm 0.77$   $\mu$ g/mL, sitostanol:  $0.03 \pm 0.02$ , campesterol:  $0.89 \pm 1.04$ , ergosterol:  $0.03 \pm 0.01$ , lanosterol:  $0.09 \pm 0.01$  and sitmasterol:  $0.11 \pm 0.13$ . C homozygotes for rs4148217 had lower total PS than A homozygotes. Betasitosterol highest levels had a tendency for the A allele. A homozygotes for rs414360247 showed higher campesterol levels than C homozygotes.

Polymorphisms	Allele	Total PS (µg/mL)	F Snedeckor
rs4148217	CC (n=59)	1.65±1.21	0.016
	CA (n=124)	2.11±1.64	
	AA (n=6)	3.59±4.52	
rs414360247		<b>Campesterol (µg/mL)</b>	0.003
	CC (n=60)	0.73±0.89	
	CA (n=131)	0.91±0.89	
rs657152	AA (n=6)	2.24±3.25	0.068
		<b>Campesterol (µg/mL)</b>	
	TT (n=30)	0.88±0.55	
rs4148217	GT (n=97)	1.06±1.36	0.057
	GC (n=70)	0.68±0.58	
		<b>Betasitosterol (µg/mL)</b>	
rs4148217	CC (n=60)	0.69±0.44	0.057
	CA (n=131)	0.96±0.85	
	AA (n=6)	1.14±1.26	

**Conclusion:** rs4148217 and rs414360247 polymorphisms of the ABCG8 gene are associated with PS levels. More studies have to be done to determine the effect of these alleles on PS levels.

**Disclosure of Interest:** None declared.

## Best in Theme Session III - Nutrition and cancer 018

### MODIFICATIONS IN MARKERS OF BROWNING IN WHITE ADIPOSE TISSUE OF PATIENTS WITH CANCER CACHEXIA

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**Rationale:** The browning of white adipose tissue (WAT) is involved in cachexia and we assessed the molecular phenotype of this phenomenon in cancer patients and healthy controls.

**Methods:** We considered gastrointestinal cancer patients and controls undergoing surgery for gastrointestinal tumors and for non-malignant diseases. We used the FFACT score to diagnose anorexia and international criteria for pre-cachexia and cachexia. During surgery, we collected subcutaneous adipose tissue samples. By RT-PCR, we analyzed markers of browning (mRNA levels) and we calculated the cross-sectional area (CSA) of the adipocytes.

**Results:** We studied samples from 40 participants (25 cancer patients and 15 controls). In cancer patients, anorexia and cachexia accounted for 76% and 56%.

UCP1 mRNA median levels were lower in cancer patients compared to controls (P=0.003), in patients within the cachexia + pre-cachexia group vs controls (0.7 vs 1.43) (P<0.01) and higher in non-cachectic patients vs controls (0.5 vs 1.43) (P=0.01).

CIDEA mRNA median levels were higher in patients with cancer vs controls, in particular in cachexia + pre-cachexia group vs controls (1.35 vs 0.56) (P=0.003), whereas no differences were observed between non-cachectic and controls.

TMEM26 median levels were higher in cachectic patients vs non-cachectic (1.93 vs 1) (p<0.05) and vs controls (0.77) (P<0.05), and PGC-1α levels were up-regulated in cancer cachexia compared to controls (P<0.05).

The CSA of adipose cells was decreased in cancer patients with respect to controls (P<0.01), but we did not observe differences among cancer patients with and without cachexia.

**Conclusion:** Our data suggest a modulation in browning of WAT of gastrointestinal cancer patients with and without cachexia. In particular, we

documented a downregulation of UCP1 mRNA levels in WAT highlighting the presence of thermogenic modifications in patients with cancer.

**Disclosure of Interest:** None declared.

## O19

### POLYUNSATURATED FATTY ACIDS IN COLORECTAL CANCER CELLS

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**Rationale:** The polyunsaturated fatty acids (PUFAs) are a critical group of essential fatty acids (FAs), which status has been associated with cancer mitigation, inflammation control, obesity, metabolic disease, cardiovascular function or insulin action. Colorectal cancer (CRC) is associated with changes of FA profiles in blood and tissue of patients [1], however the exact role of PUFAs in CRC is not yet fully understood.

**Methods:** Lipids were extracted from serum, tumour tissue and normal epithelial mucosa from 44 CRC patients and from serum samples from 38 healthy control subjects. FA profiles were analysed using gas chromatography-mass spectrometry (GC-MS). The mRNA levels of FAs elongases and desaturases were analysed with real-time PCR. In order to establish whether differences in PUFA levels in study subjects are a consequence of diet or due to the activity of lipogenic enzymes, *in vitro* experiment was set up using colorectal cancer cell lines HT-29 and WiDr, and normal epithelial CCD 841 line. Cells were incubated in medium enriched with selected PUFAs (18:2 n-6, 22:4 n-3 and 22:6 n-3).

**Results:** Tumour tissue was characterized by increased amount of PUFAs than normal tissue, while serum of CRC patients had lower PUFA content than healthy controls. No significant differences were found in exogenous linolenic (18:3 n-3) or linoleic (18:2 n-6) acids. Additionally, mRNA levels of enzymes desaturating and elongating PUFAs were significantly higher in tumour tissue. After 72 h incubation culture mediums containing HT-29 and WiDr cells contained significantly lower amounts of PUFAs than CCD 841 medium. No such differences were observed for saturated and monounsaturated FAs.

**Conclusion:** CRC is associated with increased PUFA content in tumour tissue and decrease of these FAs in blood. PUFAs are pivotal to formation of membrane phospholipids, therefore the enhanced uptake of PUFAs can be explained by utilization of these FAs in membrane formation of proliferating cancer cells. The findings of our *in vitro* study support the notion that cancer cells preferentially uptake PUFAs and imply that PUFA supplementation may not be beneficial for CRC patients [2].

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## O20

### NUTRITIVE SUPPORT IN THE TREATMENT OF PATIENTS WITH LOCALLY ADVANCED GASTRIC CANCER

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**Rationale:** There are still no common assessment standards for nutritional status and nutritional support (NS) during the treatment of locally advanced gastric cancer. This study investigated the impact on NS on the effectiveness of treatment in patients with locally advanced gastric cancer.

**Methods:** 200 patients with locally advanced gastric cancer received neoadjuvant chemotherapy (NACT) from 2013 to 2020: 100 patients in the observation group received NACT with NS and 100 patients in the control group received only NACT. The average age in the observation group was 57.3 ( $\pm 11.2$ ), in the control group 56.9 ( $\pm 11$ ). Before NACT signs of nutritional deficiency (ND) were observed in 54% in the observation group, and in 47% in the control group. Complex diagnostics of nutritional status included anamnesis, anthropometry, nutritional risk scales, dynamometry, blood tests, BIA, CT to quantify the muscle mass at the level of the L<sub>III</sub>. Depending on the presence of ND signs and sarcopenia the frequency of complications in the background of NACT, the frequency of objective responses, the frequency of pathomorphological regressions and event-free survival (EFS) were evaluated. The association between the nutritional status and patients' EFS was analyzed by the Kaplan-Meier method. Demographics and clinical variables were analyzed using univariate and multivariate analyses.

**Results:** After NACT in the observation group ND frequency was 1%, in the control group it was 62%. In patients with ND partial regression was registered in 51.9% in the observation group and in 27.6% in the control group, and progression 1.9% and 6.4%, respectively ( $p < 0.05$ ). There were no statistically significant differences in the frequency of pathomorphological responses. The frequency of complications in the observation group was lower than in the control group. 2-year EFS in the observation group was 77.4% and in the control group it was 64.4% (HR 0.471[95%CI 0.278–0.796];  $p = 0.005$ ). 2-year EFS in the observation group in patients without ND was 100%, for patients with ND it was 72.5%; in the control group in patients without ND it was 68.5%, in patients with ND 2-year EFS was 60.6% (HR 0.77[95%CI 0.45–1.34];  $p < 0.001$ ).

**Conclusion:** ND is an unfavorable prognostic factor for 2-year EFS in patients with locally advanced gastric cancer. Adequate and timely NS during NACT in patients with locally advanced gastric cancer can increase the frequency of objective responses, reduce the frequency of complications, and improve the 2-year EFS.

**Disclosure of Interest:** None declared.

## 021

### EVALUATION AND VALIDATION OF THE PROGNOSTIC VALUE OF SERUM ALBUMIN TO GLOBULIN RATIO IN PATIENTS WITH CANCER CACHEXIA: RESULTS FROM A LARGE MULTICENTER COLLABORATION

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**Rationale:** Recently, albumin-globulin-ratio (AGR), a serological indicator that reflects nutritional status and systemic inflammatory, has been reported to be associated with the prognosis of various cancers (1,2). However, there is currently no research report on its relationship with cancer cachexia. This study aimed to explore the prognostic value of AGR in patients with cancer cachexia through a multi-center retrospective analysis.

**Methods:** We recruited 2,364 patients with cancer cachexia, and randomly divided the patients into training and validation cohorts at a ratio of 7:3. The optimal stratification method was used to determine the optimal cutoff value of AGR. The survival curve was evaluated by the Kaplan-Meier method. Cox regression proportional hazards models were used to determine independent prognostic factors in patients with cancer cachexia. The time-dependent receiver operating characteristic curve was used to compare the prognostic performance of different prognostic evaluation tools.

**Results:** The optimal cutoff value of AGR as 1.24 in patients with cancer cachexia. Increasing AGR was associated with survival in a dose-response manner with a forward L-shape. Compared with the high AGR group, the low AGR group had a shorter overall survival, and there was consistency in

training and the validation cohorts. In the stratified analysis of TNM stage, AGR had good prognostic distinguishing ability for advanced patients. Multivariate survival analysis determined that low AGR was an independent risk factor affecting all-cause mortality in patients with cancer cachexia. Subgroup analyses revealed that overall, the association between low AGR and increased risk of death was consistent in each subgroup of patients with cancer cachexia. The sensitive analysis showed that AGR was an effective predictor of short-term prognosis in patients with cancer cachexia, and the predictive effect of AGR in predicting prognosis in patients with cancer cachexia is not affected by related mixed diseases. In addition, compared with other prognostic evaluation tools, AGR could effectively stratify the prognosis of patients with cancer cachexia.

**Conclusion:** AGR is an independent prognostic factor affecting patients with cancer cachexia, especially in advanced patients.

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**Disclosure of Interest:** None declared.

## 022

### COMPARISON OF 21 GLIM PHENOTYPIC AND ETIOLOGIC CRITERIA COMBINATIONS AND ASSOCIATION WITH 30-DAY OUTCOMES IN PEOPLE WITH CANCER

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**Rationale:** The Global Leadership Initiative on Malnutrition (GLIM) criteria require validation in various clinical populations. This study determined the prevalence of malnutrition using 21 diagnostic combinations of GLIM etiological and phenotypic criteria in a cohort of 2801 participants from two cancer malnutrition point prevalence studies, and determined the combinations that best predicted mortality and unplanned admission within 30-days.

**Methods:** The GLIM criteria were applied using 21 combinations of the phenotypic (>5% unintentional weight loss, body mass index [BMI], subjective assessment of muscle mass) and etiological (reduced food intake, metastatic disease as a proxy for inflammation) criteria. Machine learning approaches were applied to predict 30-day mortality and unplanned admission.

**Results:** We analysed 2492 participants after excluding those with missing data. Overall, 19% (n= 485) participants were malnourished. The predominant GLIM combinations were weight loss and reduced food intake (15%, n=376), and low muscle mass, weight loss and reduced food intake (12%, n= 242). Machine learning models demonstrated the most important combinations to predict mortality were: 1) weight loss, low muscle mass and inflammation (accuracy 88%) and 2) (excluding the proxy for inflammation) weight loss, low muscle mass and reduced food intake (accuracy 89%). While weight loss and reduced food intake was the most important combination to predict unplanned admission when using all combinations, or when excluding the proxy for inflammation (accuracy 77% and 88%, respectively).

**Conclusion:** Machine learning identified which GLIM combinations were best at predicting adverse outcomes. GLIM combinations including (a proxy) for inflammation as the etiological criteria, were better at predicting mortality, while reduced food intake was better at predicting hospital readmission.

**Disclosure of Interest:** None declared.

## 023

### DOES MUSCLE MASS MEASURED WITH COMPUTED TOMOGRAPHY ANALYSIS DIFFER IN PATIENTS WITH DIFFERENT TYPES OF CANCER? RESULTS FROM THE BODY-CONVERT STUDY GROUP

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**Rationale:** Patients with cancer of the upper gastrointestinal tract or lung are more likely to present with malnutrition at diagnosis than, for instance, patients with melanoma. Low muscle mass is an indicator of malnutrition and can be determined by computed tomography (CT) analysis of the skeletal muscle index (SMI) at the 3<sup>rd</sup> lumbar vertebra (L3) level. However, CT images at L3 are not always available. At each vertebra level, we determined if type of cancer, i.e., head and neck cancer (HNC), oesophageal cancer (OC) or lung cancer (LC) vs. melanoma (ME) was associated with lower SMI. **Methods:** CT images from adult patients with HNC, OC, LC or ME were included and analyzed. Scans were performed in the patient's initial staging after diagnosis. MIM software version 7.0.1 was used to contour the muscle areas for all vertebra levels. Skeletal muscle area was corrected for stature to calculate SMI (cm<sup>2</sup>/m<sup>2</sup>). We tested for the association of HNC, OC, or LC diagnosis vs ME with SMI by univariate and multivariate linear regression analyses. In the multivariate analyses, age (years), sex, and body mass index (BMI; kg/m<sup>2</sup>) were included. Betas (B;95%CI) were calculated and statistical significance was set at p<0.05.

**Results:** A total of 216 patients were included: 33 HNC, 44 OC and 52 LC patients (65.5±10.4 y, 68% male, BMI 24.2±4.8 kg/m<sup>2</sup>) vs. 87 ME patients (64.8±11.1 y, 75% male, BMI 28.8±7.0 kg/m<sup>2</sup>). Univariately, HNC, OC or LC was associated with a significantly lower SMI vs ME at all vertebra levels except T2 and T3. B (95%CI) of the significant results varied from -12.37 (-16.19 - -8.55; C6) to -1.34 (-2.12 - -0.55; C1). Multivariately, HNC, OC, or LC was associated with a significantly lower SMI vs. ME on C2-C7, T5-T9 and L4 level. HNC, OC, or LC were associated with a significantly higher SMI in vs. ME on and T2-T3 level. B (95%CI) of the significant results varied from -7.32 (-10.85 - -3.80; C6) to 7.18 (3.77-10.59; T2).

**Conclusion:** As expected in patients more likely to present with malnutrition, HNC, OC or LC was associated with significantly lower SMI at all vertebra levels, except T2 and T3. After correcting for differences in age, sex and BMI between the groups, HNC, OC or LC still was associated with a significantly lower SMI at most cervical and thoracic levels, but not at the lower thoracic and most lumbar levels, including L3.

**Disclosure of Interest:** None declared.

## Best in Theme Session IV - Nutrition and chronic diseases

### 024

### N-3 PUFA DIETARY ENRICHMENT MODULATES MITOCHONDRIAL DYNAMICS, INCREASES MITOPHAGY AND REVERSES UREMIA-INDUCED MITOCHONDRIAL DYSFUNCTION IN RAT SKELETAL MUSCLE

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**Rationale:** Chronic kidney disease (CKD) induces global and profound skeletal muscle mitochondrial alterations, which contribute to muscle mass loss and ultimately negatively affect patient outcome. Among derangements, changes in fission and fusion as well as in mitophagy are known to regulate mitochondrial function. n-3 polyunsaturated fatty acids (PUFA) reportedly improve mitochondrial function in several tissues and disease models, however their potential to modulate muscle mitochondrial dynamics, mitophagy and ultimately function in CKD is currently unknown.

**Methods:** We investigated the impact of 30-day n-3-PUFA isocaloric isolipidic enriched diet (N-PUFA; Fat = 5.5% total cal; EPA+DHA = 27% total fat; n = 8) in a rodent 5/6 nephrectomy CKD model on regular diet (N; Fat = 5.5% total cal; n=8) compared to sham (S; regular diet; n=8) on skeletal muscle mitochondrial function (citrate synthase and cytochrome c oxidase activities), fission and fusion (Opa1; Drp1 protein expression) and mitophagy (LC3-COX IV co-localization).

**Results:** Compared to sham-operated rats, N had lower mitochondrial function and fusion, with higher fission and mitophagy (all p<0.05). Changes in mitochondrial function and dynamics were normalized by PUFA enrichment, while mitophagy was further enhanced in the N-PUFA compared to both S and N (all p<0.05).

**Conclusion:** In rodent CKD, n-3 PUFA completely prevent CKD-induced alterations in mitochondrial dynamics while also further stimulating the removal of dysfunctional organelles by increased mitophagy, improving function. PUFA may therefore be considered and further investigated as a novel potential treatment for CKD-associated muscle mitochondrial derangements leading to muscle wasting.

**Disclosure of Interest:** None declared.

## 025

### UNDERNUTRITION ALTERS SKELETAL MUSCLE PROTEOME IN OLD RATS

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**Rationale:** Aging is associated to a progressive loss of skeletal muscle mass and function named sarcopenia. Various metabolic alterations occurring in aging also favor the risk of undernutrition, worsening the age-related sarcopenia. However, few studies have evaluated the impact of dietary restriction on aged skeletal muscle. In order to increase our understanding of underlying cellular and molecular mechanisms, we characterized the undernutrition-induced skeletal muscle proteome changes during aging.

**Methods:** Twenty-month-old male rats were fed with 50% (DR) or 100% (CTRL) of their spontaneous intake for 12 weeks. A proteomic analysis has been performed on both fast-contracting plantaris muscle (PL) and slow-contracting muscle (SOL) and dysregulated proteins have been submitted to functional annotation according to Gene Ontology categories. The more relevant changes have been confirmed by Western blotting on the same protein extracts used for the LC-MS/MS. Proteomic data were processed with Progenesis Q1 using the "between-subject" design. Unpaired Student's t-test was used to assess statistical differences amongst means.

**Results:** Undernutrition induced a significant decrease in muscle mass, especially at the level of hindlimbs (-26% vs. CTRL; p < 0.05). We observed a significant decrease in muscle mass from PL muscle in response to DR (-26% vs. CTRL; p < 0.05), while SOL muscle was not significantly affected. In contrast, the proteomic analysis revealed that, despite a similar number of identified proteins (SOL/PL ratio = 1.18), more proteins were found to be differentially expressed (SOL/PL ratio = 2.74) in the SOL muscle compared to PL muscle. While SOL muscle show a large differential expression pattern of proteins important for energy metabolism, more proteins involved in proteostasis were affected in PL muscle.

**Conclusion:** DR profoundly affects muscle proteome independently of its effect on muscle mass. Further studies will need to investigate if these muscle proteome changes may explain the better resistance of slow-contracting muscle to muscle wasting. Most of all, the present study could define new biomarkers associated to undernutrition-induced muscle loss in the elderly.

**Disclosure of Interest:** None declared.

O26

### LOW PLASMA ESSENTIAL FATTY ACIDS IN PATIENTS ON FAT-FREE PARENTERAL NUTRITION AND SHORT BOWEL SYNDROME

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**Rationale:** Patients with intestinal failure (IF) type 2 and 3 on fat-free parenteral nutrition (PN) or with a functional short bowel (FSB), are at risk for developing essential fatty acid deficiency (EFAD). This study aims to describe period prevalence of EFAD and essential fatty acid status of patients with IF type 2 and 3.

**Methods:** This retrospective cohort study included adult patients with IF type 2 and 3. Primary outcome was occurrence of EFAD using the triene/tetraene-ratio (T:T-ratio). Fatty acids in both erythrocytes and plasma were determined with gaschromatography. T:T-ratio was calculated by dividing eicosatrienoic acid by arachidonic acid. An elevated ratio (>0.04) in plasma was defined as EFAD. No reference value is available for T:T-ratio in erythrocytes. Data collection was performed between October 2018 and November 2020.

**Results:** The cohort consisted of 353 adult IF-patients. Fifty-three patients were included because fatty acid measurements were available. Thirty-seven (70%) patients were female. Mean age was 59 years ( $\pm 16$ ). Forty-six (86.8%) patients were classified as type 3 IF. Low concentrations of plasma alpha-linolenic acid and linoleic acid were found in 30.2% and 75.5% of the patients respectively. An elevated T:T-ratio was seen in 34 (64%) patients; 16 (68%) patients on PN and 18 (62%) patients with FSB. An elevated T:T-ratio was present in 82% of patients on fat-free PN and in 54% of patients on PN with a lipid emulsion.

**Conclusion:** According to the current reference value, deficiency of plasma essential fatty acids is present in the majority of patients on fat-free PN and in half of patients with a short bowel syndrome not on PN. As fatty acid concentrations in erythrocytes are more accurate in reflecting fatty acid availability in tissues, a reference value for T:T-ratio in erythrocytes should be established. This is needed to assess essential fatty acid status in patients on PN and in patients with intestinal failure and might lead to treatment strategies to replenish the essential fatty acid pool.

**Disclosure of Interest:** None declared.

O27

### PHASE ANGLE IS ASSOCIATED WITH SARCOPENIA AND ITS COMPONENTS IN PATIENTS WITH CHRONIC HEPATITIS C

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**Rationale:** Sarcopenia is a remarkable finding in patients with chronic hepatitis C (CHC). However, the potential factors behind the skeletal muscle loss have not been completely clarified. We evaluate independent associations between host-, disease-, nutritional- and virus-related factors with sarcopenia and its components [appendicular muscle mass index (ASMI) and handgrip strength (HGS)]. Additionally, we appraised the association between sarcopenia and Bioelectrical Impedance Analysis (BIA)-derived phase angle (PhA).

**Methods:** Ninety outpatients with CHC (mean age, 49.9  $\pm$  11.3yrs.; 73.3% males; 67.8% non-cirrhotic; 32.2% with compensated cirrhosis) underwent scanning of ASM and bone mass by dual-energy X-ray absorptiometry. Sarcopenia was defined as the presence of both low ASMI and low HGS according to the European Working Group on Sarcopenia in Older People criteria. Osteopenia and osteoporosis were defined according to the World Health Organization criteria. The International Physical Activity Questionnaire was used to determine the physical activity level. Associations were investigated by logistic and linear regression models.

**Results:** Sarcopenia, low ASMI and low HGS were found in 5.6%, 12.2% and 17.8% of the patients, respectively. In the multivariate analysis, low ASMI and sarcopenia were positively associated with low bone mass and inversely associated with PhA. Low HGS was inversely associated with raw BIA-derived measurement. When we considered PhA as dependent variable, this nutritional parameter was independently associated with age, male sex, diabetes mellitus and sarcopenia. PhA was positively correlated with ASMI ( $r = 0.30$ ;  $P = 0.04$ ), irrespective of the sex.

**Conclusion:** PhA may be considered a simple and reliable nutritional marker of skeletal muscle status in patients with CHC. The appraisal of muscle quality especially before the onset of significant liver fibrosis, is an issue of utmost relevance in these patients.

**Disclosure of Interest:** None declared.

O28

### UREMIC TOXIN REMOVAL DURING HEMODIALYSIS IS NOT COMPROMISED BY PROTEIN INGESTION OR INTRADIALYTIC EXERCISE

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**Rationale:** Dietary protein and physical activity interventions are increasingly implemented during hemodialysis (HD; intradialytic) to support muscle maintenance in patients with end-stage renal disease (ESRD). Though muscle maintenance is important, adequate removal of uremic toxins is of primary concern for patients on chronic HD treatment. It remains to be established whether intradialytic protein ingestion and/or exercise modulate uremic toxin removal during HD.

**Methods:** We selected 10 patients with ESRD (age: 65 $\pm$ 16 y, BMI 24.2 $\pm$ 4.8 kg/m<sup>2</sup>) on chronic HD treatment to participate in this randomized cross-over trial. During HD, patients were assigned to ingest 40 g milk protein or a non-protein placebo, both at rest (PRO and PLA, respectively) and following 30 min of exercise (PRO+EX and PLA+EX, respectively). Blood and spent dialysate samples were collected throughout HD to assess the reduction ratio and removal of urea, creatinine, potassium, phosphate, cystatin C, and indoxyl sulfate.

**Results:** The reduction ratios of urea and indoxyl sulfate were higher during PLA (76 $\pm$ 6 and 46 $\pm$ 9%, respectively) and PLA+EX (77 $\pm$ 5 and 45 $\pm$ 10%, respectively) treatments when compared to PRO (72 $\pm$ 4 and 40 $\pm$ 8%, respectively) and PRO+EX (72 $\pm$ 4 and 42 $\pm$ 7%, respectively); protein effect:  $P < 0.05$ ; exercise effect:  $P > 0.05$  treatments. Nonetheless, protein ingestion resulted in ~10% greater urea removal ( $P = 0.042$ ) during HD. Intradialytic protein ingestion and exercise did not modulate reduction ratios and removal of creatinine, phosphate, and cystatin C during HD (protein effect:  $P > 0.05$ ; exercise effect:  $P > 0.05$ ). However, urea and phosphate removal throughout intradialytic exercise during PLA+EX and PRO+EX treatments were greater when compared to the same period during PLA and PRO (exercise effect:  $P = 0.032$  and  $P = 0.020$ , respectively) treatments.

**Conclusion:** The removal of uremic toxins is not compromised by protein feeding and/or exercise implementation during HD in patients with ESRD.

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## 029

### FOOD CREATINE AND HEALTH RISKS IN ELDERLY MEN AND WOMEN

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**Rationale:** No epidemiological studies so far evaluated the intake of creatine via regular diet in the elderly, neither the possible link between creatine consumption and risk of chronic medical conditions. We examined dietary intake of creatine in U.S. men and women aged 65 years and over, and evaluated the association between creatine intake and risk of self-reported medical conditions, and physical functioning/disability variables using data from the 2017–2018 National Health and Nutrition Examination Survey (NHANES).

**Methods:** Detailed dietary intake data from NHANES elderly was obtained by dietary interview component through a 24-hour dietary recall interview, with estimated individual values for total grams of creatine consumed per day for each respondent. A threshold for dietary intake of creatine used to calculate risk between creatine intake and medical conditions was set at 1.00 gram per day, with respondents were classified into two separate subpopulations: the suboptimal intake of creatine (< 1.00 g/day), and recommended intake (> 1.00 g/day). Relevant variables from Medical Conditions, Cardiovascular Disease and Health, Diabetes, Osteoporosis, Disability, and Physical Functioning questionnaires were identified from the NHANES 2017–2018 datasets.

**Results:** The NHANES 2017–2018 population included 1,500 participants aged 65 years and older, of which 1,221 individuals (627 men and 594 women) provided detailed dietary data via a dietary interview. Average creatine intake across all participants was  $0.76 \pm 0.79$  grams per day (95% CI, from 0.72 to 0.81). As much as 70% of U.S. elderly consume less than 1.00 gram of creatine per day, with about 1 in 5 individuals (19.8%) consume no creatine at all. Elderly with the suboptimal intake of creatine were found to have 2.62 times higher risk of angina pectoris (adjusted OR = 2.62, 95% CI from 1.14 to 6.01,  $P = 0.023$ ), and 2.59 times higher risk of liver conditions (adjusted OR = 2.59, 95% CI from 1.23 to 5.48,  $P = 0.013$ ), compared to older counterparts who consume > 1.00 gram of creatine per day after controlling for demographic and nutritional variables.

**Conclusion:** A majority of U.S. elderly consume dietary creatine below the amounts recommended for adults, making creatine deficiency widespread in this sensitive population. The considerable shortage of dietary creatine is associated with an increased risk of heart and liver conditions, which calls for public measures that foster diets rich in creatine-containing foods, and additional research to investigate the role of creatine in age-related diseases.

**Disclosure of Interest:** None declared.

## Best in Theme Session V - Nutritional assessment 1 030

### LOW THORACIC SKELETAL MUSCLE INDEX IS ASSOCIATED WITH NEGATIVE OUTCOMES IN 244 PATIENTS WITH COVID-19

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**Rationale:** Sarcopenia is associated with negative outcomes in critical acute conditions patients and during chronic diseases. We aimed to evaluate if low skeletal muscle index (SMI) measured at the thoracic level (T12) is associated with poor outcomes in hospitalized patients with COVID-19.

**Methods:** In this retrospective cohort study, we included all patients admitted to the hospital between March 1st and June 9, 2020, from the Emergency Department, with a confirmed diagnosis of COVID-19. SMI was assessed from a transverse computed tomography (CT) image at the T12 level. We analyzed the association between SMI and mortality, admissions in intensive care unit (ICU), infections, length of stay (LOS).

**Results:** We included 244 patients, median age was 62 (20–95) years, mean body mass index was 28.6 kg/m<sup>2</sup>, and 34% were obese patients. 102 patients (41.8%) had low SMI. On multivariable analysis, low SMI was associated with more infections (OR=1.88 [1.06–2.98]), increased LOS (OR=1.87 [1.14–3.49]) and less ICU admissions, but not associated with mortality.

**Conclusion:** SMI measured by CT at the thoracic level T12 was associated with negative outcomes in patients with COVID-19.

**Disclosure of Interest:** None declared.

## 031

### EFFECT OF COVID-19 QUARANTINE ON WEIGHT LOSS EFFORTS OF HEALTHY SUBJECTS WITH OVERWEIGHT/OBESITY

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**Rationale:** The outbreak of the COVID-19 pandemic and the mandatory quarantine due to the unpredictable emergence of the viral disease have disrupted health care in multifaceted ways. The outcome of a dietary intervention based on the Mediterranean Diet (MD) to overweight and obese subjects during and after the quarantine period in Greece has been compared and potential differences have been observed.

**Methods:** Fifty apparently healthy overweight and obese adults participated in a 12-week dietary intervention conducted in two different time periods, during (phase I) and after (phase II) the lockdown in Greece (26 and 24 subjects, respectively). Volunteers in both phases received individualized guidance along with a weekly diet plan (caloric deficit of 20% of the daily energy requirements) and were asked not to change their exercise habits. A detailed clinical examination was performed, anthropometric characteristics and biochemical parameters were measured at the first and final session.

**Results:** Decreases in body weight, body fat mass and waist circumference were observed in both groups. Participants in phase II experienced a greater weight loss compared to phase I participants ( $7.5 \pm 2.8$  kg compared to  $4.7 \pm 2.6$  kg,  $p = 0.001$ ). A significantly larger decrease in body fat mass ( $p = 0.019$ ) and waist circumference ( $p < 0.001$ ) was also observed in phase II participants. Adherence to the MD was improved in both groups, however a trend towards a higher reduction in caloric intake and a significantly lower fat intake and less sedentary time spent weekly were observed in phase II subjects.

**Conclusion:** An energy-restricted intervention based on the MD during the COVID-19 lockdown led to a significant weight loss. However, once the lockdown was lifted, the same intervention was substantially more effective. This nationwide quarantine was associated with more fat intake and sedentary behavior and a trend towards higher energy intake.

**Disclosure of Interest:** None declared.

## 032

### CONCURRENT AND PREDICTIVE VALIDITY OF GLIM CRITERIA TO IDENTIFY UNDERNUTRITION IN HOSPITALIZED PATIENTS

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**Rationale:** Global Leadership Initiative on Malnutrition (GLIM) criteria were developed in order to reach a consensus regarding the diagnosis of undernutrition in clinical setting. The present study aims to assess the concurrent and the predictive validity of GLIM criteria in hospitalized patients, namely as a predictor for home discharge.

**Methods:** A prospective study was conducted among hospitalized patients aged  $\geq 18$  years. Nutritional risk was assessed with the Nutritional Risk Screening (NRS-2002) initial screening, within the first 72h after hospital admission. Patients were also evaluated with Patient-Generated Subjective Global Assessment (PG-SGA) and with GLIM criteria. Kappa ( $\kappa$ ) statistics were applied to determine the degree of agreement between these latter tools. Sensitivity and specificity of GLIM criteria were calculated using PG-SGA as a reference. Cox regression analysis was used to estimate adjusted (marital status, Katz index, age) hazard ratios (HR) and corresponding 95% confidence intervals (95%CI) for being discharged home.

**Results:** A total of 591 inpatients were included. Of those, 430 (72.7%) were nutritionally-at-risk. For those that had screened positive, 241 (56.0%) and 214 (49.8%) inpatients were undernourished according to PG-SGA and to GLIM criteria, respectively. Agreement between PG-SGA and GLIM criteria was  $\kappa=0.465$ . GLIM criteria sensitivity was equal to 70.5% and specificity was equal to 76.7%. Undernutrition evaluated by GLIM criteria was independently associated with lower probability of being discharged home, HR= 0.713 (95%CI: 0.576; 0.884).

**Conclusion:** Regarding the concurrent validity of GLIM criteria, a moderate agreement with PG-SGA was found. Sensitivity and specificity were high. Within this sample, GLIM criteria were independently associated with lower probability of being discharged home.

**Disclosure of Interest:** None declared.

### O33

#### THE AUTOMATIC NUTRITIONAL RISK SCREENING SYSTEM (CONUT) PREDICTS THE MORTALITY RISK OF COVID-19 PATIENTS

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**Rationale:** Disease-related malnutrition increases the morbimortality of hospitalized patients. Since 2010, La Paz University Hospital, a tertiary level hospital in Spain, implemented an automatic nutritional risk screening system (CONUT) that can also predict complications and mortality. However, it has not been yet validated in COVID-19 patients. The main objective was to evaluate the CONUT tool as a prognostic predictor of mortality in patients hospitalized with COVID-19 from their admission from emergency department.

**Methods:** A longitudinal hospital-based study nested in a bigger cohort that included all patients consecutively hospitalized in HULP from 25 February (first case admitted) to 19 April 2020 (pandemic first wave) until *exitus letalis* or discharge was carried out. CONUT provides tree malnutrition alerts based on analytical parameters (albumin, total lymphocytes, and cholesterol): low (0-4 points), moderate (5-8), high (9-12). A univariate analysis and a logistic regression was carried out adjusted by a propensity score in order to control confusion data as sex, age and medical comorbidities

**Results:** Electronic health records from 1752 admitted patients diagnosed with COVID-19 were analyzed. Patients with a moderate (45.1%) and high (5.8%) malnutrition alert had 3.78 [3.07, 4.65] and 7.94 [4.85, 13.58] times more likely to die than patients with low malnutrition alert ( $p<0.001$ ). The predictive power had an accuracy of 57.35%. The algorithm had a sensitivity of 65.98%, a specificity of 68.48%, a positive predictive value of 65.98% and a negative predictive value of 19.57%.

**Conclusion:** The CONUT predicts the risk of mortality in patients with COVID-19 admitted to a tertiary level hospital. The early detection of

patients with a moderate or high risk of malnutrition will allow the immediate treatment of these patients, improving the risk of death.

**Disclosure of Interest:** None declared.

### O34

#### APOB-48 LEVELS ARE RELATED TO PARENTERAL NUTRITION DEPENDENCE IN PATIENTS WITH SHORT BOWEL SYNDROME: A POTENTIAL BIOMARKER OF INTESTINAL FAILURE

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**Rationale:** Short bowel syndrome with intestinal failure (SBS-IF) is a rare condition that requires parenteral nutrition (PN). Citrulline levels are correlated with small bowel length in SBS-IF patients but evidence varies according to clinical settings. Apolipoprotein B-48 (apoB-48) is a protein exclusively synthesized by enterocytes. The secretion is associated with the chylomicron during the postprandial phase. We hypothesized that circulating apoB-48 levels could be a better reflect of the absorptive function of the remnant gut in patients with SBS-IF.

**Methods:** The aim of this study was to examine the evidence of plasma apoB-48 as a marker of intestinal function. We assessed correlation between apoB-48 concentration and remnant small bowel length or the PN dependence in SBS-IF cohort patients.

We recruited in an expert centre of PN, adults SBS-IF patients after 2 years of last surgery. Patients with active neoplasia or with an alternative treatment for intestinal failure (analogue of GLP2, reverse loop or intestinal transplantation) were excluded.

Fasting Apo-B48 and citrulline serum levels were measured by ChemiLuminescent Enzyme Immunoassay (Lumipulse 1200®) and compared to clinical and other biological data. PN dependence was estimated by a ratio; caloric intake provided by PN/ resting energy expenditure. Statistical correlations and study groups comparisons were conducted using Prism.

**Results:** Fifty-four patients were evaluated, aged between 20 and 83 years old (sex ratio H/F 0,86). Among them, 38 were still dependent on PN. The most frequent SBS etiology was mesenteric ischemia (44%). The median of the remnant small bowel length was 67,5 cm (min=0, max=280). Serum levels of Apo-B48 were not correlated with body mass index, sex, age nor triglycerides levels but were correlated with HDL cholesterol ( $p < 0.01$ ). There was a robust correlation between serum Apo-B48 and remnant small bowel length ( $p < 0,0001$ ). The correlation was significant whatever the type of intestinal anastomosis (end-jejunostomy, jeuno-colonic and jeunoileal anastomosis). Citrulline was correlated with remnant small bowel length ( $p < 0,01$ ). In the overall population, Apo-B48 was correlated with the PN dependence ( $p < 0,0001$ ) while PN dependence was also associated with remnant small bowel length ( $p < 0,01$ ), and with citrulline ( $p < 0,01$ ).

**Conclusion:** Serum apoB-48 concentration is strongly associated with the remnant small bowel length and with PN dependence in SBS patients. Our Results suggest that apoB-48 could be proposed as a marker of absorptive intestinal function and could be a complementary indicator to citrulline levels in assessing intestinal mass.

**Disclosure of Interest:** None declared.

### O35

#### THE LEVEL OF ENERGY REQUIREMENTS OF PATIENTS AT THE STAGE OF EARLY NEUROREHABILITATION, DEPENDING ON THE LEVEL OF CONSCIOUSNESS

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**Rationale:** The aim of the study is to compare the level of energy requirements in patients after brain damage with different levels of consciousness.

**Methods:** 55 patients at the stage of early neurorehabilitation in the ICU; 33 men and 22 women, average age  $49 \pm 19$  years. A total of 101 indirect calorimetry was performed at rest. According to the level of consciousness, 4 groups were identified: vegetative state (29 examinations), minimally conscious state minus MCS- (19 examinations), minimally conscious state plus MCS+ (23 examinations) and clear consciousness (30 examinations). As the level of consciousness was restored or regressed during the observation period, the patient could be included in several groups. The nonparametric Kruskal-Wallis test (H-test) was used to determine the significance of differences between the groups; to check the dependence of the resting energy expenditure (REE) on the type of respiratory support, the Spearman correlation coefficient ( $\rho$ ) was calculated.

**Results:** It was found that the REE of this category of patients is statistically significantly different ( $h_{emp} = 9.69238$ ,  $p_{emp} = 0.02137$ ,  $p \leq 0.05$ ). The lowest level of REE was observed in patients in clear consciousness ( $20.86 \pm 9.2$  kcal/kg), while energy consumption in MCS+ patients and in a vegetative state was high and amounted to  $25.27 \pm 7.6$  kcal/kg and  $25.13 \pm 8.2$  kcal/kg, respectively. In MCS- patients energy expenditure took average values and amounted to  $24.07 \pm 6.0$  kcal/kg. At the same time, no statistically significant dependence of REE on the use of respiratory support was found in any of the groups.

**Conclusion:** The established statistically significant dependence of energy needs on the level of consciousness reflects the metabolic response to severe damage, determines the possibility of providing adequate nutritional support in patients after brain damage, increasing the efficiency and possibilities of early neurorehabilitation in this category of patients.

**Disclosure of Interest:** None declared.

## Best in Theme Session VI - Nutritional assessment 2 O36

### EVERYDAY CLINICAL PRACTICE EVALUATION OF SAROPENIA IN PATIENTS WITH DECOMPENSATED CIRRHOSIS

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**Rationale:** Sarcopenia is the syndrome of progressive loss of skeletal muscle mass, strength and function and is correlated with quality of life, disease complications and mortality. The gold standard for muscle mass quantity evaluation is dual-energy x-ray absorptiometry (DXA), but it is not always available. The aim of the study was to evaluate the accuracy of anthropometric methods for the evaluation of muscle mass quantity and to correlate muscle functionality with the measurements of muscle mass quantity in decompensated cirrhosis.

**Methods:** Muscle mass was assessed using the appendicular lean mass index (ALMI) by DXA and sarcopenia was defined based on the cut-offs proposed for the Mediterranean population (Coin et Al. 2013). Body Mass Index (BMI) was calculated from correlated body weight and measured height. Waist Circumference (WC), triceps skinfold thickness and middle arm circumference were measured and mid-arm muscle circumference (MAMC) was calculated. Muscle strength and functionality were assessed by dominant hand grip strength (HGS) and Short Physical Performance Battery (SPPB), respectively. HGS and SPPB were considered indicative of sarcopenia when  $<27$ kg for men and  $<16$ kg for women and  $\leq 8$  points, respectively, as proposed by EWGSOP2. Sarcopenia (based on ALMI), HGS and SPPB were treated as binary nominal variables.

**Results:** Data were evaluated from 113 Caucasian patients (70% men, mean age  $54 \pm 10$  years) with decompensated cirrhosis of various etiologies: 76 (67.5%) of the patient were sarcopenic based on ALMI. Both HGS and SPPB

were not correlated with the sarcopenic status of the patients ( $p$ : 0.69 and 0.88, respectively). Seventy percent of the patients with normal HGS and 66% of the patients with normal SPBB were sarcopenic, while 35% of patients with low functionality measurements had normal ALMI (positive predictive value, PPV:65%). Furthermore, SPPB and HGS were not correlated with each other ( $p$ :0.52). On the other hand, BMI, MAMC and WC were all significantly correlated with sarcopenia, even when corrected for their ascites grade ( $p$ :  $<0.001$ , 0.03 and 0.046, respectively). BMI showed the best discriminative ability for the presence of sarcopenia (area under the curve, AUC:0.766), followed by MAMC (AUC:0.619) and WC (AUC:0.577).

**Conclusion:** EWGSOP2 proposes screening of sarcopenia based on clinical scores or suspicion and HGS as a first tool of assessment before proceeding to more detailed evaluation. In our cohort, no statistically significant correlation was identified among HGS or SBPP and sarcopenia as measured with ALMI by DXA while HGS had a really low PPV. Although anthropometric evaluation in decompensated cirrhosis is considered to be low in accuracy, BMI, WC and MAMC were significantly correlated with sarcopenia as measured by ALMI, irrespective of the patients' grade of ascites.

**Disclosure of Interest:** None declared.

## O38

### DIETARY COMPOSITION IN ADULT EOSINOPHILIC ESOPHAGITIS PATIENTS MAY BE RELATED TO DISEASE SEVERITY

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**Rationale:** Food allergy is common in Eosinophilic Esophagitis (EoE) and often treated by elimination diet. In addition, dietary composition may influence the severity of EoE through modulation of the immune response. This study explores the immunomodulatory role of nutrients and foods before and during elimination diet in adult EoE patients.

**Methods:** Nutritional intake was assessed in 40 Dutch adult EoE patients participating in the Supplemental Elemental Trial (SET) using 3-day food diaries. In this randomized controlled trial, diagnosed patients received either a four-food elimination diet (FFED) alone or with addition of an amino acid-based formula (Neocate) for 6 weeks. Multiple linear regression analyses were performed to assess associations between the intake of nutrients and foods per 1000 kCal and PEC, both at baseline and after the 6 weeks diet, while controlling for baseline variables.

**Results:** At baseline, per 1000 kCal we found a statistically significant negative (thus favorable) relationship between the intake of total fat, protein, phosphorus, zinc, vitamin B12, folate and milk products with peak eosinophil counts (PEC) in esophageal biopsies ( $p < 0.05$ ), while calcium ( $p = 0.058$ ) and full fat cheese/curd ( $p = 0.056$ ) were borderline significant. Thus, higher intake of these nutrients/foods was associated with decreased PEC. In contrast, total carbohydrates, prepacked fruit juice and white bread were significantly positively related to PEC ( $p < 0.05$ ) (unfavorable), while (ultra)processed meals ( $p = 0.059$ ) were borderline significant (unfavorable). After 6 weeks dietary intervention, coffee/tea were significantly negatively related to PEC (favorable), hummus/legumes were significantly positively related with PEC, while peanuts were borderline significantly (unfavorable) ( $p = 0.058$ ).

**Conclusion:** Dietary composition may be related to inflammation in adult EoE patients. The relevance of specific nutrients should be interpreted in the light of foods consumed. High intake of folate (vegetables), milk products and full fat cheese/curd may be protective, while carbohydrates low in fiber (white bread) and (ultra)processed foods may be a risk factor.

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## O39

**RELATIONSHIP BETWEEN TOTAL PHYSICAL ACTIVITY AND PHYSICAL ACTIVITY DOMAINS WITH BODY COMPOSITION AND ENERGY EXPENDITURE**

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**Rationale:** The aim of this study was to evaluate the relationship of total physical activity (PA) and its different domains with nutritional status and resting energy expenditure (REE); and assess the Baecke Habitual Physical Activity Questionnaire (BHPAQ) capacity to screen fat mass excess.

**Methods:** Nonsmoking adults (193 females and 173 males; 20–40 y) were evaluated. All measurements were performed consecutively, early in the morning, by the same dietitian, in an isolated temperature-controlled (23–25°C) room, after 12-h fasting and with abstention from alcohol, caffeine drinks, and rigorous PA for 36 h prior to assessment. PA was assessed with the BHPAQ, a five-point Likert scale, composed of three PA domains (occupational, leisure-time/locomotion and exercise/sport), with evaluation of habitual PA in the last 6 months. Individuals were divided into activity level tertiles according to total PA and each PA domain. Body composition was evaluated by bioelectrical impedance (BCM, FMC), providing data of fat free mass (FFM) and index (FFMI), fat mass (FM) and index (FMI) and phase angle (PhA). REE was assessed by indirect calorimetry (VO2000, Aerografit) and calculated using the Weir equation. Differences between groups were analyzed by Student t test. Pearson correlation was applied to assess association between PA domains and body composition. To assess the independent association of different PA domains and total PA with body composition, linear regression analyses were conducted, adjusting for age, sex, and height. ROC curve was applied to assess the ability of BHPAQ to distinguish individuals with a poor body composition characterized by FM excess.

**Results:** Total PA ( $8.2 \pm 1.0$  vs  $8.4 \pm 1.2$ ), sports/exercise PA ( $2.8 \pm 0.67$  vs  $3.0 \pm 0.78$ ), weight ( $69 \pm 17$  vs  $86 \pm 17$  kg), BMI ( $26 \pm 6.1$  vs  $27 \pm 4$  kg/m<sup>2</sup>), FFMI ( $13 \pm 1.6$  vs  $17 \pm 2.24$  kg/m<sup>2</sup>), PhA ( $6.1 \pm 0.59$  vs  $7.3 \pm 0.66^\circ$ ) and REE ( $1178 \pm 249$  vs  $1487 \pm 309$  kcal) were lower and FMI ( $13 \pm 6.0$  vs  $9.8 \pm 4.9$  kg/m<sup>2</sup>) was higher in women than men. For the most active subjects (n=122; 60% men), PhA ( $7.1 \pm 0.86$  vs  $6.4 \pm 0.81^\circ$ ), FFMI ( $16 \pm 3.2$  vs  $14 \pm 2.7$  kg/m<sup>2</sup>), and all PA domains were higher and FMI ( $10 \pm 5.3$  vs  $13 \pm 5.9$  kg/m<sup>2</sup>) was lower than the least active individuals (n=122; 43% men). The participants most active for sports/exercise PA domain had higher FFMI ( $17 \pm 3.1$  vs  $14 \pm 2.6$  kg/m<sup>2</sup>), PhA ( $7.1 \pm 0.83$  vs  $6.4 \pm 0.77^\circ$ ) and REE ( $1400 \pm 305$  vs  $1282 \pm 332$  kcal) and lower FMI ( $9.8 \pm 4.9$  vs  $13 \pm 6.4$  kg/m<sup>2</sup>) than the least active subjects; the most active subjects in leisure-time/locomotion PA domain had higher FFMI ( $16 \pm 2.9$  vs  $14 \pm 2.6$  kg/m<sup>2</sup>), PhA ( $6.9 \pm 0.82$  vs  $6.3 \pm 0.75^\circ$ ) and lower FMI ( $10 \pm 5.7$  vs  $14 \pm 6.0$  kg/m<sup>2</sup>). In occupational PA, the most active individuals had a greater adiposity (FMI:  $13 \pm 6.3$  vs  $11 \pm 5.7$  kg/m<sup>2</sup>). The occupational PA domain was associated with higher weight (r=0.14), BMI (r=0.17) and FM (r=0.14). Exercise/sports PA had the strongest positive correlation with FFM (r=0.28), a negative correlation with FM (r=-0.18), and the only significant correlation with REE (r=0.12). Leisure-time/locomotion PA had the strongest negative correlation with BMI (r=-0.21) and FM (r=-0.28). Total PA had a moderate correlation with FFM (r=0.26), a negative one with FM (r=-0.19), a weak correlation with occupational PA (r=0.41) and a strong correlation (r=0.80) with exercise/sports PA. The BHPAQ could discriminate subjects with excess body fat with a 9.375 cutoff point for total PA.

**Conclusion:** Exercise/sports and leisure-time/locomotion are PA domains associated with a better body composition. A gender gap still exists in PA, as women are less active than men. The BHPAQ could screen subjects with excess fat mass.

**Disclosure of Interest:** None declared.

## O40

**NUTRITIONAL STATUS IN PATIENTS WITH MULTIPLE SCLEROSIS**

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**Rationale:** Multiple sclerosis is a chronic neurological disease leading to disability. The observed in this group nutritional disturbances are clinically significant. They cover the spectrum from obesity to severe malnutrition. Early diagnosis of nutritional status aim at improving patients' prognosis. The purpose of this study was an assessment of nutritional status in SM patients undergoing neurological treatment.

**Methods:** 150 patients (mean age  $40.4 \pm 11.6$  yr.) included to the study were diagnosed with SM. and undergoing neurological treatment. The time since the diagnosis of SM ranged from 24–1 years. The percentage of patients with comorbidities (including depression) was 57.8%. Nutritional status was estimated by NRS 2002. Analysis of body composition was performed using the InBody 120 analyzer (body and adipose tissue weight, muscle mass, body fat, total water. BMI was calculated. The following biochemical parameters were measured in serum: albumin, lipidogram, CRP and whole blood morphology. The statistical analysis was done using Statistica 13.0.

**Results:** Good nutritional status according to NRS - 2002 did not occur in the study group, slight deterioration of the nutritional status was observed in 87.8% of patients, moderate in 9.5% and severe in 2.7%. In study group mean BMI was 25.1 (range 2.8–43.4), mean % body fat was 30.7 (range 9.9–52.0) and mean weight loss in the last 6 months was 1.4 kg (range 0–20 kg). Risk of malnutrition was positively associated with low content of the adipose tissue (R = -0.24; p = 0.00), low BMI (R = -0.22; p = 0.00) and higher weight loss in the last 6 months (R = 0.47; p = 0.00). Additionally, significant (p<0.05) correlation was observed between malnutrition and s-albumin (R = -0.2) and CRP (R = 0.23).

The percentage of patients with excess body mass was 46.8% and underweight 6.6%.

**Conclusion:** Excess body weight occurred in a significant percentage of the studied group of SM patients but this does not exclude high risk of malnutrition. During disease progression, gastroenterological disorders such as lack of appetite, constipation, and dysphagia develop. Dietary care and regular outpatient nutritional status assessment should be provided throughout the disease.

**Disclosure of Interest:** None declared.

## O41

**EVALUATION OF A DIGITAL FOOD SCANNER TO MONITOR FOOD INTAKE IN A CLINICAL SETTING**

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**Rationale:** Monitoring of food intake in clinical settings is important for health monitoring and to prevent malnutrition. Digital food recording with depth detection capability can be a viable alternative to traditional survey methods of food intake, saving time and human resources.

**Methods:** In this pilot study at the University Department of Geriatric Medicine FELIX PLATTER, Basel, Switzerland, a digital survey method with a pre-installed camera at food delivery and return in the hospital kitchen - a "food scanner" - with depth detection function was compared to the reference method (weighted food records). The aim was to evaluate the validity and accuracy of meal weight estimation by the food scanner. During seven days, all meals recorded from the food scanner, were compared to the reference method. It was determined whether the menu

weight on the plate or individual food items corresponded to  $\pm 15\%$  before serving or  $\pm 50$  g after return from the patient. We examined 1) menu weights before serving as well as 2) after return, 3) food items of test meals, and 4) the differences between serving and return.

**Results:** In total, 502 meals and 459 food items were analyzed. 1) Of menu weights 13% (n=196), were within the limit of  $\pm 15\%$ . 2) Of returned menu weights (n= 306), 70% were within  $\pm 50$  g, however, in most cases (n=100), the plates were empty (correctly detected empty by the food scanner). 3) Of 459 food items (bread, cheese, fish, and others) 15% were within the weight limits of  $\pm 15\%$ . 4) The delivered vs. return estimates showed that the latter and thus smaller quantities were more accurately estimated.

**Conclusion:** The precision of food weight estimation by the tested food scanner is still inaccurate at this stage. If its adaptive algorithm can be further trained to dependably recognize meals, the food scanner would in principle be a novel, resource-saving survey method to assess food intake of hospitalized patients.

**Disclosure of Interest:** None declared.

## Best in Theme Session VII - Obesity and metabolic syndrome

042

### THE ASSOCIATION OF PROGNOSTIC NUTRITIONAL INDEX WITH MORTALITY IN OVERWEIGHT OR OBESE PATIENTS WITH CANCER

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**Rationale:** Overweight and obese patients with cancer are accompanied with chronic inflammation, dysfunctional anti-tumor immunity and malnutrition risk. Prognostic nutritional index (PNI) is an indicator reflecting inflammatory, immunological and nutritional states, but its prognostic information is lacking for overweight and obese patients with cancer. The objective of this study was to examine the impact of PNI levels on the prognosis of such patients.

**Methods:** This is a large-scale retrospective cohort multicenter study included 3,532 cancer patients. The prediction accuracy of PNI levels for mortality was assessed by time-dependent receiver operating characteristic (ROC). The restricted cubic splines were used to flexibly model the association of PNI levels with mortality. The association of low PNI with overall survival was analyzed by the Kaplan-Meier method and a Cox model.

**Results:** The area under curves (AUCs) of PNI for all-cause mortality was higher than NLR and PLR in overweight and obese patients with cancer. There was a significant inverse relationship of PNI levels with all-cause mortality (per SD increment-HR: 0.79; 95% CI: 0.74, 0.85;  $P < 0.001$ ). In subgroup analysis, the risk of mortality showed a more pronounced decreased trend with the increase of PNI levels in patients at risk of malnutrition (per SD increment-HR: 0.67; 95% CI: 0.57, 0.78;  $P < 0.001$ ) and elderly patients (per SD increment-HR: 0.74; 95% CI: 0.64, 0.84;  $P < 0.001$ ). Interestingly, PNI levels also showed an inverse association with mortality in patients without malnutrition risk (per SD increment-HR: 0.81; 95% CI: 0.75, 0.88;  $P < 0.001$ ). When stratified by tumor type, low PNI was an independent predictor of worse prognosis for patients with lung cancer, gastric cancer and hepatobiliary and pancreatic cancer.

**Conclusion:** Low PNI level was associated with an increased risk of all-cause mortality. PNI levels could be a useful prognostic tool in clinical practice for overweight and obese patients with cancer.

**Disclosure of Interest:** None declared.

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### DOES BMI AFFECT THE USE OF ENTERAL AND PARENTERAL NUTRITION IN THE WARD: A NUTRITIONDAY ANALYSIS IN 191 886 ADULT PATIENTS

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**Rationale:** Enteral (EN) and parenteral (PN) nutrition is given to a small proportion of hospitalized patients. Obese patients may be malnourished and may need nutrition support. We wanted to determine how patient and nutrition related risk factors modified the clinical choices and whether obesity affects these choices.

**Methods:** We analyzed separately the adult patients from the two nutritionDay cohorts 2006-2015 (cohort 1: n=153470) and 2016-2019 (cohort 2: n=38416). We determined to which extent sex, age, surgical status, duration of hospital stay before nutritionDay, BMI, self-rated health, fluid status, weight change within the last 3 month, mobility, amount eaten on nutritionDay and previous ICU stay modify the chances to get EN, PN and oral nutritional supplements with GLM logistic regression (STATA 15.1). All modeling included length bias correction and assuming units as random factors. Results are given as Odds ratios (OR) with 95% confidence intervals [CI95].

**Results:** BMI was similar in both cohorts with 25.7 SD 6.0 and 25.5 SD 5.9. BMI <18.5 was observed in 7.6% and 8.1% respectively and BMI >30 in 19.2% and 18.1%.

EN choice was significantly increased with previous length of hospital stay, low BMI <18.5 (OR 1.44 [1.23-1.69] cohort 1 and OR 2.02 [1.47-2.79] cohort 2), poor self-rated health, being bedridden and eating nothing and decreased in overweight (OR 0.76 [0.68-0.85] cohort 1 and OR 0.74 [0.55-0.98] cohort 2) and obese (OR 0.75 [0.64-0.89] cohort 1 and OR 0.51 [0.34-0.76] cohort 2) and as well as patients with fluid overload.

PN choice was significantly increased by being postoperative, previous length of hospital stay, low BMI <18.5 (OR 1.63 [1.36] cohort 1 and OR 1.91 [1.48-2.46] cohort 2), poor self-rated health, low fluid status (only in cohort 1), eating less than all and previous ICU stay and decreased only for overweight (OR 0.77 [0.66-0.9] cohort 1 and OR 0.73 [0.58-0.91] cohort 2) and obese (OR 0.49 [0.4-0.6] cohort 1 and OR 0.41 [0.29-0.58] cohort 2).

ONS use was significantly increased with age >80, previous length of stay > 3 days, low BMI <18.5 (OR 1.61 [1.41-1.83] cohort 1 and OR 2.05 [1.73-2.43] cohort 2), self-rated health fair or poor, fluid status overloaded or dry, weight loss with 3 month, needing help to get out of bed, eating less and previous ICU stay and decreased in overweight (OR 0.69 [0.63-0.75] cohort 1 and OR 0.56 [0.45-0.7] cohort 2) or obese (OR 0.57 [0.5-0.65] cohort 1 and OR 0.41 [0.32-0.54] cohort 2) as well as in those eating nothing and not allowed to eat.

**Conclusion:** Obese and overweight patient get less frequently EN, PN and ONS even after adjustment for many clinical risk factors. Appearance appears to drive certain clinical decisions more than hidden risk factors such as weight loss.

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### IN VIVO RESPONSE TO AN ORAL FAT LOAD OF ECTOPIC LIPIDS AND ACETYLCARNITINE IN SKELETAL MUSCLE IN SUBJECTS WITH OBESITY

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**Rationale:** Acetylcarnitine plays a pivotal role in the regulation of mitochondrial and cellular lipid trafficking. The aim of the present study was to

investigate the postprandial response to an oral fat load in terms of changes in skeletal muscle acetylcarnitine and intramyocellular lipid content (IMCL) in subjects with obesity through proton magnetic resonance spectroscopy ( $^1\text{H-MRS}$ ), in association with changes in postprandial lipid metabolism.

**Methods:** Participants were enrolled among subjects referring to the High Specialization Center for the Care of Obesity (CASCO) at the “Policlinico Umberto I” University Hospital, Sapienza University, Rome, Italy. Inclusion criteria were Body Mass Index (BMI)  $\geq 30$  kg/m $^2$ , and age: 18–65 years. Body composition was evaluated by DXA. An oral fat load was administered at breakfast. Intramyocellular lipid content (IMCL), and skeletal muscle acetylcarnitine were assessed at baseline (T0) and 3 (T3) and 5 hours (T5) postprandially through proton magnetic resonance spectroscopy ( $^1\text{H-MRS}$ ). Postprandial lipid metabolism was assessed through hourly measurement of plasma triacylglycerols (TGs), free fatty acids (FFA) and ketone bodies (beta-hydroxybutyrate, BOH, and acetoacetate, AcAc).

**Results:** Ten participants were included, six females and four males (age:  $48.9 \pm 5.1$  years; BMI:  $34.8 \pm 1.9$  kg/m $^2$ ). After the oral fat load consumption, intramyocellular lipid content significantly increased (T0 vs. T3,  $p < 0.05$ ) and tended to decrease from T3 to T5. Skeletal muscle acetylcarnitine decreased 3 h postprandially and remained decreased at T5 (vs. T0,  $p < 0.05$ ).

**Conclusion:** Simultaneous assessment of *in vivo* changes in ectopic lipid accumulation and skeletal muscle acetylcarnitine in obese patients after ingestion of an oral fat load can provide relevant insights into the mechanisms underlying metabolic inflexibility and lipotoxicity in metabolic tissues.

**Disclosure of Interest:** None declared.

#### O45

##### LONG-TERM EFFECT OF BARIATRIC SURGERY ON BODY COMPOSITION IN POST-MENOPAUSAL WOMEN

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**Rationale:** Bariatric surgery (BS) induces sustained loss of body fat mass (FM) with an inevitable loss of lean mass (LM). In contrast, menopause leads to deleterious changes in body composition (BC) related to estrogen deficiency including LM loss and increases in total and visceral adipose tissue (VAT). This study aims to assess BC in post-menopausal women after RYGB (Roux-en-Y gastric bypass) and compares their profile with age and BMI matched controls.

**Methods:** Cross-sectional case-control study of 41 post-menopausal women aged  $\geq 50$  years who underwent RYGB at least 2 yrs prior to the study. Control population consists of 41 age and BMI-matched post-menopausal women. 2/41 BS patients and 8/41 controls were on hormone replacement therapy. Both groups had a DEXA scan to evaluate BC and a blood test to assess lipids and glucose metabolism markers.

**Results:** Mean age was  $58.4[\text{SD}=6.2]$  vs  $59.4[\text{SD}=3.2]$  yrs ( $p=0.4$ ) and mean BMI was  $29.6[\text{SD}=4.9]$  vs  $31.1[\text{SD}=5.6]$  kg/m $^2$  ( $p=0.2$ ) in BS patients vs controls, respectively. RYGB was performed a median of 90 months prior to DEXA. Total weight loss was  $28.5[\text{SD}=10]$  and excess weight loss was  $67.5[\text{SD}=29.2]$ . Compared controls, BS patients showed higher LM percentage ( $57.7[\text{SD}=8\%]$  vs  $52.5[\text{SD}=5\%]$ ,  $p=0.001$ ) and reduced FM ( $39.4[\text{SD}=8.4\%]$  vs  $45.9[\text{SD}=5.4\%]$   $p < 0.01$ ) associated with lower VAT ( $750.6[\text{SD}=496]$  vs  $1295.3[\text{SD}=688]$  gr,  $p < 0.01$ ), and android fat ( $44.6[\text{SD}=7.5\%]$  vs  $48.21[\text{SD}=4.9\%]$ ). Post-BS women showed a better lipid profile compared to controls (total cholesterol  $4.8[\text{SD}=0.9]$  vs  $5.5[\text{SD}=0.94]$  mmol/l,  $p < 0.001$ ; LDL  $2.4[\text{SD}=0.8]$  vs  $3.4[\text{SD}=0.8]$  mmol/l  $p < 0.001$ ; HDL  $1.9[\text{SD}=0.4]$  vs  $1.6[\text{SD}=0.4]$  mmol/l  $p=0.008$ ). Glucose markers were not different.

**Conclusion:** Post-menopausal women after RYGB have a decreased FM and VAT with a greater LM and a better lipid profile compared to controls. Weight loss after RYGB seems to sustain long-term impact on metabolic health.

**Disclosure of Interest:** None declared.

#### O46

##### SHORT-TERM IMPACT OF A VEGETARIAN AND THE NORDIC DIET ON METABOLIC RISK FACTORS: A HUMAN INTERVENTION STUDY IN ADULTS WITH A RISK PHENOTYPE FOR CARDIO METABOLIC DISEASES

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**Rationale:** Recent epidemiological studies indicate that both the so-called Nordic diet (ND, rich in berries, fish, and nuts) as well as a vegetarian diet (VD) may reduce the risk for the development of cardio metabolic diseases compared to a typical ‘Western Diet’. The aim of this comparative human intervention trial was to define the short-term effects of both dietary patterns on decisive biomarkers.

**Methods:** One hundred and twenty adults with at least one metabolic syndrome trait ( $60 \pm 7$  y, BMI  $31.1 \pm 3.5$  kg/m $^2$ , waist circumference (WC) men  $109 \pm 9$  cm, women  $104 \pm 9$  cm) were randomized into three groups, adhering to ND, ovo-lacto VD, or habitual diet (HD) for six weeks (menu/recipe list) adapted to individual energy consumption (RMR x 1.5 for physical activity). Anthropometrics, blood parameters and clinical parameters (blood pressure, heart rate) were measured before and after intervention. Statistical data analysis was performed using linear mixed-effect models (group-specific comparison: visit\*diet interaction).

**Results:** In all groups, body weight ( $p=0.083$ ), body composition ( $p=0.354$ ) and WC ( $p=0.604$ ) remained unchanged over intervention period. Compared to baseline, ND decreased serum concentrations of triglycerides ( $p=0.015$ ), total cholesterol ( $p=0.003$ ), LDL-cholesterol ( $p=0.008$ ), uric acid ( $p=0.023$ ), and  $\gamma$ -glutamyltransferase ( $p=0.0043$ ); VD lowered serum levels of creatinine ( $p < 0.001$ ) and uric acid ( $p=0.001$ ). In HD group, no significant changes in biomarkers were observed. Group-specific comparisons confirmed beneficial effects of ND and VD compared to HD.

**Conclusion:** Even a short-term switch from a habitual ‘Western’ diet to a ‘Nordic’ or vegetarian diet reduced metabolic risk factors encouraging the long-term use of these dietary patterns in adults with risk phenotypes for cardio metabolic diseases.

**Disclosure of Interest:** None declared.

#### O47

##### FOLATE INTAKE AND THE GUT FOLATE TRANSPORT GENE ARE DECREASED AFTER ROUX-EN-Y GASTRIC BYPASS (RYGB) IN SEVERELY OBESE WOMEN

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**Rationale:** Roux-en-Y Gastric Bypass (RYGB) is a successful bariatric technique in attaining sustained weight loss and metabolic control of obese patients. Particularly, folate deficiency is highly reported after RYGB and may, negatively, impact clinical outcomes. After RYGB, to explore the association of folate intake and plasma levels along with the expression of intestinal folate genes related to its metabolic pathways.

**Methods:** Twenty adults ( $47 \pm 6$  years) severely obese (body mass index =  $46.5 \pm 5.3$  kg/m $^2$ ) women were assessed before and 3 months after RYGB. Food intake information was collected through 7 days survey, plasmatic folate levels was measured by ECLIA method and intestinal gene expression was assessed by microarray analysis (Human GeneChip 1.0 ST array - Affymetrix, Inc., Santa Clara, CA), in biopsies of duodenum, jejunum and ileum collected at both studied time points by double-balloon endoscopy. Differentially expressed genes from global technique were validated by target RT-qPCR. Fold change (FC) was applied to determine folate relative changes after RYGB (vs. preoperative). Data were collected from the SUR-MetaGIT cohort study, approved by local ethics committee, and registered at Clinical Trials (NCT01251016).

**Results:** At the postoperative 3-months there was a significant reduction ( $p < 0.05$ ) in both folate intake and plasma levels. The intestinal transcriptome associated with folate metabolism showed alterations in all intestinal segments studied, marked by decreased expressions of genes encoding folate transporters (SLC19A1, SLC46A1, FOLR2, ABCC5) (FC -1.02; [DP 2.47]) and increased expression of genes involved in folate biosynthesis (MTHFD1, MTHFD2, SHMT2, TYMS) (FC 0.32; [DP 2.24]) ( $t$ -test=4.91;  $p < 0.001$ ).

**Conclusion:** Obese women experienced a significant reduction in plasma levels of folate early after RYGB. This change occurred in parallel not only with decreased folate intake but also with decreased expression of genes related to its intestinal transport. Increased intestinal expression of genes related to folate biosynthesis was also observed and may reflect a molecular mechanism to compensate its depletion. Our data reinforces that preoperative and postoperative folate monitoring should be considered for RYGB patients, to guide its appropriated supplementation.

**Disclosure of Interest:** None declared.

## Critical care

### PD-02

#### THE RELATIONSHIP BETWEEN MALNUTRITION STATUS ACCORDING TO GLIM CRITERIA, CLINICAL OUTCOME AND SCORINGS OF PALLIATIVE CARE PATIENTS

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**Rationale:** Although it is known that there is a relationship between malnutrition and mortality, it has not been found a study showing the relationship between malnutrition according to Global Leadership Initiative on Malnutrition (GLIM) criteria and clinical outcome. The aim of this study is to show the relationship between malnutrition status according to GLIM criteria, clinical outcomes and scorings of palliative care patients.

**Methods:** The clinical and demographic characteristics, physical measurements, Palliative Performance Scale (PPS), Palliative Prognostic Score (PaP) and Palliative Prognostic Index (PPI) and nutritional status of 196 patients hospitalized in the palliative care service between December 15, 2020 and March 15, 2021 were recorded. The outcomes of the patients were recorded prospectively and statistical comparisons were made among the groups.

**Results:** The average age of the patients was  $69.2 \pm 14.3$  and 69.4% were male. 55.1% had malignancy; 63.9% of malignancies were in the fourth stage. 80.6% of patients was malnourished.

PPS percentages were lower ( $29.6 \pm 18.3$  vs.  $39.7 \pm 18.2$ ,  $p = .002$ ), PaP and PPI scores were higher ( $6.75 \pm 3.67$  vs.  $4.24 \pm 3.88$ ,  $p = .000$  and  $7.42 \pm 3.58$  vs.  $5.97 \pm 3.29$ ,  $p = .025$ ) in malnourished patients compared to non-malnourished patients.

54.1% of the patients ( $n = 106$ ) discharged as exitus; PPS percentages were lower ( $27.4 \pm 15.8$  vs.  $36.4 \pm 20.6$ ,  $p = .001$ ), PaP and PPI scores were higher ( $7.27 \pm 3.88$  vs.  $5.07 \pm 3.44$ ,  $p = .000$  and  $7.81 \pm 3.46$  vs.  $6.34 \pm 3.53$ ,  $p = .004$ ) than those who were discharged alive.

There was no difference in outcomes of patients diagnosed with malnutrition according to GLIM criteria (Table 1).

**Table 1:**

Relationship between type of hospital discharge and malnutrition according to GLIM criteria

		Malnutrition		$\chi^2$	p
		Yes	No		
Discharge	Alive	69	21	1.658	.210
	Exitus	89	17		

$\chi^2$ : Chi-square test.

**Conclusion:** Although there is a significant relationship between scorings and malnutrition and the scorings are sufficient to predict the outcome of the patient, malnutrition according to GLIM is not sufficient to predict the outcome. The reason for this relationship is probably that there are malnutrition-based questions within these scorings that predict mortality.

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### PD-03

#### MAGNITUDE OF GLUCONEOGENESIS AND ENDOGENOUS GLUCOSE PRODUCTION: ARE THEY PREDICTABLE IN CLINICAL SETTINGS?

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**Rationale:** Regulation of endogenous glucose production (EGP) is essential for glucose homeostasis. It includes gluconeogenesis (GNG) from non-carbohydrate substrates and hepatic glycogenolysis. Both these pathways are dysregulated in acute stress, but the magnitude of this deregulation cannot be assessed in clinical practice. The study aims at identifying clinically available variables predictive of EGP and GNG magnitude by modeling routinely available data.

**Methods:** This exploratory study is based on the data from the Supplemental Parenteral Nutrition study 2 (SPN2) (1), which measured EGP and GNG at days 4 and 10 in 23 critically ill patients. The correlation between EGP and GNG and 83 potential clinical indicators were explored, using single-stage and multivariate analysis.

**Results:** On single-stage analysis, the strongest correlations were noradrenaline dose at day 4 with GNG ( $R = 0.71$ ;  $P = 0.0004$ ) and Nutrition risk screening score (NRS) with EGP ( $R = 0.42$ ;  $P = 0.05$ ). At day 10,  $VO_2$  ( $R = 0.59$ ,  $P = 0.04$ ) was correlated with GNG and  $VCO_2$  with EGP ( $R = 0.85$ ,  $P = 0.00003$ ). Cumulated insulin dose between days 5 and 9 was correlated to EGP at day 10 ( $R = 0.55$ ,  $P = 0.03$ ). Our multivariate model could predict EGP at day 4 ( $VCO_2$ , glucose and energy intake) with an error coefficient (e.c.) between 7.8% and 23.4% (minimal and maximal error), and GNG at day 10 (age, mean and basal blood glucose), with e.c. 18.5% and 29.9%. GNG at day 4 and EGP at day 10 could not be predicted with an error e.c.  $< 40\%$ .

**Conclusion:** This preliminary exploratory study shows that GNG and EGP have different predictors on days 4 and 10; EGP is more correlated with the metabolic level, while GNG is dependent on external factors. Nevertheless, a bundle of variables could be identified to empirically assess the magnitude of both values. Our results suggest that a robust model might be built, but requires a prospective study including a larger number of patients, based on an EGP tracer study.

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**Disclosure of Interest:** None declared.

**PD-04**

**EFFICACY OF INTENSIVE GOAL-DIRECTED REHABILITATION WITH ELECTRIC MUSCLE STIMULATION AND NUTRITION (I-GREEN) PROTOCOL IN INTENSIVE CARE UNIT**

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**Rationale:** This single-center historical control study aimed to confirm the effects of our original protocol that combined goal-directed rehabilitation with electric muscle stimulation and high-protein nutrition (IGREEN protocol).

**Methods:** We included patients from October 2019 to February 2020, who had not undergone neuromuscular electrical stimulation (NMES) before the protocol was introduced, as the control group, and patients from September to December 2020, after the protocol was introduced, as the intervention group. In rehabilitation, activity level was assessed by Intensive Care Unit Mobility Scale (IMS), and if possible, interventions were performed to achieve the next level of activity achieved the day before. On days when IMS 4, the equivalent of standing training, was not achieved, NMES was performed on both lower limbs. Nutritional therapy was provided by enteral nutrition and supplementary parenteral nutrition. The intervention group first underwent nutritional assessment with the Malnutrition Universal Screening Tool on admission. Protein was increased to a target of 1.8 g/kg/day by Day 4 in all patients, and calories were titrated to 20 kcal/kg/day by Day 4 and then 30 kcal/kg/day after Day 7 in patients without malnutrition, and 30 kcal/kg/day by Day 4 in patients with malnutrition.

**Table 1:**

Logistic regression model for the prediction of ICU mortality in septic shock patients

Variable	OR	CI 95%	P value
CAF*	1.002	1.000 – 1.004	<b>0.019</b>
CAF**	1.002	1.000 – 1.003	0.053
eHsp72*	2.128	0.630 – 7.188	0.224
eHsp72**	2.834	0.768 – 10.461	0.118

The primary endpoint was the change in femoral muscle volume assessed by computed tomography during the first 10 days after admission. Secondary endpoints were nitrogen balance up to day 10, Medical Research Council score and grip strength at intensive care unit (ICU) discharge, Barthel Index at hospital discharge and the length of ICU stay.

**Results:** For the final analysis, 45 patients in the control group and 56 patients in the intervention group were included. There were no differences between the two groups in basic characteristics: age (70.9 vs 70.9 years,  $p=0.997$ ), sex (male 69.6 vs 75.6 %,  $p=0.663$ ), sequential organ failure assessment score (7.9 vs 7.8,  $p=0.930$ ), survival discharge (89.1 vs 86.7 %,  $p=0.951$ ), and length of ICU stay (6.0 vs 5.0 days,  $p=0.589$ ). IMS 3 (3.0 vs 5.0 days,  $p=0.009$ ) an IMS 4 (3.0 vs 5.0 days,  $p=0.022$ ) were achieved earlier in the intervention group. The mean calorie delivery (20.1 vs 17.0 kcal/kg/day,  $p=0.013$ ) and protein delivery (1.4 vs 0.8 g/kg/day,  $p<0.001$ ) by day 10 were higher in the intervention group. Femoral muscle volume loss (11.6 vs 14.5 %,  $p=0.034$ ) was less in the intervention group. Nitrogen balance (-27.8 vs -42.1,  $P=0.161$ ), Medical Research Council score (49.5 vs 55.0,  $p=0.161$ ), grip strength (14.1 vs 15.0 kg,  $p=0.799$ ), and Barthel Index (52.5 vs 70.0,  $p=0.589$ ) did not differ.

**Conclusion:** IGREEN protocol achieved high protein nutrition within optimal calories and early mobilization, resulting in reduced femoral muscle volume loss in intensive care unit.

**Disclosure of Interest:** None declared.

**PD-05**

**ASSESSMENT OF FRAILTY AS PROGNOSTIC INDICATORS IN PATIENTS WITH SEPTIC SHOCK**

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**Rationale:** About 18 to 70% of critically ill patients have frailty on admission to the Intensive Care Units (ICU), being a predictor of disability, cognitive impairment, and mortality. Biomarkers have been used to identify muscle depletion and frailty, such as the C-terminal fragment of agrin (CAF) and the extracellular toxic shock protein 72 (eHsp72). However, there are no studies that have assessed the influence of the frailty in the evolution of patients with septic shock. Thus, we aimed to identify and evaluate the association of frailty, CAF, and eHsp72 levels with mortality in septic shock patients.

**Methods:** This is a prospective observational study that included septic shock patients admitted to the adult ICU. Frailty was assessed by the FRAIL scale [1]. Blood samples were collected in the first 24 hours of the patient's admission at ICU for determination of CAF, and eHsp72 levels. All patients were followed during their ICU stay.

**Results:** So far, 60 patients were included in the analysis; their mean age was  $59.8 \pm 13.7$  years, 58.3% were male and mortality rate during the ICU stay was 55%. At the time of ICU admission, 35% of the patients were classified as frail. There were no differences between no frail/pre-frail and frail patients regarding mortality, CAF and eHsp72 levels. However, patients who died had higher levels of CAF (588.5 [395.0 – 1018.6] vs. 369.9 [232.5 – 645.5] pg/mL;  $p=0.005$ ) and eHsp72 (0.132 [0.06 – 0.20] vs. 0.065 [0.039 – 0.111] ng/mL;  $p=0.007$ ). CAF and eHsp72 levels were positively correlated ( $r=0.344$ ;  $p=0.012$ ). In the logistic regression models, CAF and eHsp72 values were not associated with ICU mortality when adjusted by age, sex, and APACHE II (Table 1).

**Conclusion:** Based on preliminary results in septic shock patients, frailty before to ICU admission, CAF, and eHsp72 levels were not associated with mortality.

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**Disclosure of Interest:** None declared.

**PD-06**

**CORRELATION BETWEEN NUTRITION, PHOSPHATE LEVEL AND LENGTH OF VENTILATION IN CRITICALLY ILL PATIENTS WHO NEED RENAL REPLACEMENT THERAPY**

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**Rationale:** Hypophosphatemia (hP) is associated with prolonged ventilation and may be correlated with increased mortality. Acute kidney injury requiring renal replacement therapy (RRT) is associated with a 50%

morality rate and prolonged length of ventilation (LOV). We studied the relationship between nutrition, blood phosphate levels (P), and the LOV in ICU patients on RRT.

**Methods:** A retrospective cohort study of 1374 admissions in two years. Using electronic medical records, demographic and clinical data were obtained, including RRT (CRRT\IHD), total administrated calories during admission and LOV. Baseline characteristics and outcomes of hP and non-hypophosphatemic (nP) for both RRT and non-RRT patients were compared. Local IRB approved the study.

**Results:** A cutoff level of  $P < 2.5 \text{ mg/dl}$  was found as best correlates with prolonged LOV. hP was found in 503 patients. RRT was performed in 118 (8.59%) (51 CRRT, 67 IHD). There was no difference between RRT requirement between hP and nP (7.55% and 9.18%,  $p=0.76$ ), but CRRT rate was higher with hP (5.17% vs 2.87%,  $p=0.04$ ); IHD rate was lower in the hP (2.39% vs 6.31%,  $p < 0.002$ ). Mortality and LOV were higher in RRT group. Mortality and LOV were higher in hP for both RRT types. CRRT patients with hP were ventilated 8.3 days more than nP CRRT patients ( $p < 0.001$ ); for IHD patients, the difference was 6.9 days ( $p=0.02$ ). We found a negative correlation between %calories administered and hP ( $r=-0.46$ ) in CRRT patients, but not in IHD patients ( $r=0.04$ ); a negative correlation between hP and LOV ( $r=-0.39$  in CRRT and  $-0.29$  in the IHD group); and a positive correlation between %calories administered and LOV in both CRRT ( $r=0.57$ ) and IHD ( $r=0.39$ ) groups.

**Conclusion:** hP is associated with increased LOV in RRT patients. It is correlated with increased %calories provided. However, hP did not impact mortality in RRT patients.

**Disclosure of Interest:** None declared.

#### PD-07

##### TAILORING NUTRITION THERAPY AMID THE COVID-19 PANDEMIC: DOES IT WORK?

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**Rationale:** The COVID-19 pandemic has been a challenge for nutrition science, particularly monitoring and delivery. This study evaluates clinical and nutrition characteristics of patients infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and investigates the relationship between nutrition delivery and clinical outcomes.

**Methods:** Prospective observational study of adults admitted for >24hrs to a tertiary-care hospital during a period of 2months. Data was collected on disease severity, energy, protein delivery and adequacy, use of mechanical ventilation (MV), ICU and hospital length of stay (LOS). Multivariate logistic regression models were used to determine the associations with 14-day mortality as the primary outcome.

**Results:** 1083 patients: 69% male ( $n=747$ ), 31% females ( $n=336$ ), mean age  $58.2 \pm 12.8$  with  $26.6 \pm 4.32$  BMI were recruited. 1021 patients survived and 62 deaths occurred, with 183 and 900 patients in the ICU and ward, respectively. Inadequate calorie and protein delivery had significantly higher 14-day mortality than those with adequate provision ( $p < 0.001$ ). In bivariate logistic regression analysis, adequacy of energy, protein, disease severity, comorbidities  $\geq 3$ , NRS score  $\geq 3$  and severe ARDS patients requiring prone ventilation correlates with 14-day mortality ( $p < 0.001$ ). In multivariate logistic regression analysis of the ICU patients, prone ventilation (OR:11.0, 95%CI:3.8-31.9), energy inadequacy (OR: 3.6, 95%CI 1.25-10.2) were significantly ( $p < 0.05$ ) associated with 14-day mortality after adjusting the effect of disease severity, presence of comorbidities and MV days.

**Conclusion:** Most patients infected with SARS-CoV-2 are at nutrition risk that can impact outcome. Our data suggest that addressing nutritional adequacy can be one of the measures to reduce ICU-hospital LOS, and 14-day mortality among nutritionally risk patients.

**Disclosure of Interest:** None declared.

#### PD-09

##### SUPPLEMENTAL PARENTERAL NUTRITION ENRICHED WITH OMEGA-3 POLYUNSATURATED FATTY ACIDS IN INTENSIVE CARE PATIENTS – A RANDOMIZED, CONTROLLED, DOUBLE-BLIND CLINICAL TRIAL

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**Rationale:** Enteral nutrition (EN) and parenteral nutrition (PN) enriched with omega-3 polyunsaturated fatty acids (PUFA) may have beneficial effects in critical illness. This study aimed to assess the combined effect of EN and supplemental PN enriched with omega-3 PUFA on blood oxygenation ICU patients.

**Methods:** Single-center, prospective, randomized, controlled, double-blind, phase III trial conducted included 100 ICU patients (18-85 years, APACHE II score >15) requiring mechanical ventilation. They were randomly assigned to received combined EN and PN either with-3 PUFA ( $\omega$ -3 group) or without (control group) for up to 28 days. Primary endpoint: 'change of PaO<sub>2</sub>/FiO<sub>2</sub> from day (D) 1 to D4'. Secondary endpoints: length of hospital stay, days free of ICU care/ventilation/sedation/catecholamine treatment, mortality, erythrocyte fatty acid composition. Safety parameters: standard laboratory assessment, vital signs, physical examination, SOFA score. Parametric (t-statistic) one-sided 97.5% confidence interval for the treatment difference. 2-sample t-test or Wilcoxon rank sum test, Chi-square test and log-rank test for time variables were used. The study was approved by local IRB and informed consent was obtained.

**Results:** Combined EN and PN covered energy requirements to > 80 %. On D6, significantly more  $\omega$ -3 group patients tolerated EN alone (51.0 % vs. 29.8 %,  $p=0.03$ ). Blood oxygenation ( $\Delta \text{PaO}_2/\text{FiO}_2$  from D1 to D4:  $-1.3 \pm 83.7$ ,  $n=42$ , and  $13.1 \pm 86.1$ ,  $n=39$ , in  $\omega$ -3 and control group, respectively,  $p=0.8$ ) did not differ between groups but days free of catecholamine treatment were significantly higher in the  $\omega$ -3 group ( $-4$  days,  $p=0.05$ ). Eicosapentaenoic acid (EPA) content in erythrocytes was significantly increased in the  $\omega$ -3 group at last observation compared with the control group ( $\Delta \text{EPA}$ :  $0.928 \pm 0.808$  % vs  $-0.024 \pm 0.190$  %,  $p < 0.0001$ ). No further significant group differences were detected.

**Conclusion:** Supplemental PN with  $\omega$ -3 PUFA allowed earlier weaning from catecholamine treatment and PN but did not improve lung function. Supplemental PN succeeded to adequately cover energy requirements in critically ill patients.

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#### PD-10

##### ASSOCIATION BETWEEN OUTCOME AND NUTRITION CARE IN CRITICALLY ILL COVID-19 PATIENTS: A NUTRITIONDAY 2020 ANALYSIS

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**Rationale:** Adequate and early nutritional support has been advocated for critically ill COVID-19 patients (Lit. 1). We investigated association between nutrition support, severity of illness and outcome.

**Methods:** The nutritionDay ICU cohort 2020 includes three additional questions that allow to identify COVID-19 patients. In three COVID-19 status groups at nutritionDay (actual COVID-19 positive, COVID-19 positive before nutritionDay and never COVID-19 positive) we estimated the

association between COVID-19 status and use of EN, PN and ONS as well as the association with death in hospital within 60 days by GLM logistic regression where units were considered as random factors (STATA 15.1). Adjustment was done for sex, BMI, length of stay before nutritionDay and SAPS2 severity of illness in quintiles. Results are given as Odds ratios (OR) with 95% confidence intervals [CI95].

**Results:** We received data from 381 patients admitted in 17 units from 12 countries. Sensitivity criteria were fulfilled in 89%. The analysis cohort consists of 247  $_{\text{noCOVID}}$  (73%), 58  $_{\text{COVID}_{\text{positive}}}$  (17%) and 32  $_{\text{COVID}_{\text{before}}}$  patients (9.5%). Median age was similar in  $_{\text{noCOVID}}$  65 [53–74],  $_{\text{COVID}_{\text{positive}}}$  62 [54–67] and  $_{\text{COVID}_{\text{before}}}$  66 [58–73]. In both COVID groups women were less frequently represented 26% and 22% versus 37% for  $_{\text{noCOVID}}$  and more often obese BMI 28.6 SD 5.6 and BMI 28.6 SD 7.1 versus 26.6 SD 5.9. Mortality 60 days after nutritionDay was lowest in  $_{\text{noCOVID}}$  (19%), highest in  $_{\text{COVID}_{\text{positive}}}$  (47%) and intermediate in  $_{\text{COVID}_{\text{before}}}$  (25%).

EN and especially the combination of PN and EN were more frequently used in both  $_{\text{COVID}_{\text{positive}}}$  OR 4.36 [1.67–11.34] ( $p < 0.01$ )  $_{\text{COVID}_{\text{before}}}$  OR 4.36 [1.66–11.43] ( $p < 0.01$ ) compared with  $_{\text{noCOVID}}$  for EN and OR 10.07 [3.06–33.15] ( $p < 0.001$ ) versus OR 3.57 [1.59–8.01] ( $p < 0.01$ ) for EN+PN in the adjusted model.

Only the  $_{\text{COVID}_{\text{positive}}}$  group but not the  $_{\text{COVID}_{\text{before}}}$  is associated with increased mortality even after adjustment. EN, PN but also no nutrition are associated with worse outcome compared with oral nutrition (see table). Use of EN and PN is confounding severity of illness (data not shown).

#### Table:

Multivariate association between COVID Status and 60 day mortality.

	Adjusted model for sex, BMI, length of stay at nutritionDay and severity OR [CI95]	Adjusted model with nutrition support compared with oral nutrition as reference OR [CI95]
<b>COVID + at nDay</b>	<b>4.26*** [2.08 8.74]</b>	<b>3.83*** [1.79 8.18]</b>
Nutrition: EN exclusively		4.29*** [1.85 9.95]
Nutrition: PN exclusively		6.04*** [2.62 13.97]
Nutrition: EN & PN combined		4.16* [1.40 12.35]
Nutrition: none		4.45* [1.15 17.25]

**Conclusion:** Critically ill nutritionDay patients with COVID-19 represent a cohort with increased use of EN and PN. Only actual  $_{\text{COVID}_{\text{positive}}}$  but not  $_{\text{COVID}_{\text{before}}}$  are associated with poorer outcome than predicted. In these patients with single organ failure, the necessity to use EN or PN identifies a subgroup with increased risk.

#### References:

Lit. 1: Barazzoni R, Bischoff SC, Breda J, Wickramasinghe K, Krznaric Z, Nitzan D, Pirlich M, Singer P; endorsed by the ESPEN Council. ESPEN expert statements and practical guidance for nutritional management of individuals with SARS-CoV-2 infection. Clin Nutr. 2020 Jun;39(6):1631–1638.

**Disclosure of Interest:** None declared.

#### PD-11

### GLYCEMIC VARIABILITY IN CRITICAL CARE PATIENTS WITH ARTIFICIAL NUTRITION

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**Rationale:** Hyperglycemia is a common phenomenon in the critically ill patient and has been directly related to its morbidity and mortality. However, glycemic variability is postulated as a factor of poor prognosis of greater relevance than hyperglycemia per se. The aim of this study is to evaluate glycemic variability in patients who require artificial nutritional support.

**Methods:** All the data related to glycemic behavior in patients that were included in the ENPIC study were analyzed ([NCT: 03634943] multicenter registry on the nutritional practices of critically ill patients in 37 Spanish ICUs, from April 23 to June 15, 2019).

**Results:** A total of 629 patients were included: 67.6% were men, with a mean age of 61.8 ( $\pm 15$ ) years and a mean BMI of 27.7 ( $\pm 5.2$ ). The average APACHE II was 20 and the average time until nutritional therapy was started was 28 hours. 63.4% of patients received enteral nutrition, 18.2% parenteral and 18.4% mixed. 14.8% of patients maintained blood glucose  $< 120$  mg/dL (Group A), 27.5% between 120 and 139 mg/dL (Group B), 35.8% between 140 and 179 mg/dL (Group C) and 21.9%  $> 180$  mg/dL (Group D). Mortality was higher in the groups with the worst glycemic control (A = 15.1%, B = 19.7%, C = 27.1% and D = 37.7%) ( $p < 0.05$ ) and it was in these groups where greater glycemic variability was observed (A = 13.6 mg/dL  $\pm 6.9$  mg/dL, B = 16.8 mg/dL  $\pm 8$  mg/dL, C = 24.65 mg/dL  $\pm 13.3$  mg/dL, D = 34.9 mg/dL  $\pm 15.9$  mg/dL) ( $p < 0.05$ ) and higher insulin therapy requirement (A = 22.6%, B = 57.2%, C = 87.6%, D = 97.8%) ( $p < 0.05$ ). The patients with worse glycemic control, had a higher incidence of at least one episode of glycemia greater than 180 mg/dL (A = 9.7%, B = 46.2%, C = 92.9%, D = 100%) ( $p < 0.05$ )

**Conclusion:** Although the current guidelines recommend monitoring the patient's blood glucose below 150 mg/dL, more than one-third of patients had higher blood glucose levels. Hyperglycemia and increased glycemic variability were associated with higher mortality in our series. Patients with more hyperglycemia and more glycemic variability received more insulin.

**Disclosure of Interest:** None declared.

### Nutrition and cancer

#### PD-13

### MACHINE LEARNING MODELS TO PREDICT ADVERSE OUTCOMES USING GLIM COMBINATIONS WITH AND WITHOUT MUSCLE MASS IN PEOPLE WITH CANCER

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**Rationale:** Low muscle mass is one of three phenotypic criteria required for malnutrition diagnosis using the Global Leadership Initiative on Malnutrition (GLIM) criteria. However, techniques for assessment of muscle mass are not used or available in all health services. This study determined if there was a difference in accuracy for prediction of adverse outcomes using GLIM combinations including and excluding low muscle mass.

**Methods:** In a cohort of 2801 participants from two cancer malnutrition point prevalence studies, machine learning approaches were applied to

predict 30-day mortality and unplanned hospital admissions for all 21 GLIM combinations and separately for nine GLIM combinations that excluded low muscle mass. The accuracy of the machine learning models using these nine combinations was compared to the accuracy of the machine learning models for all combinations.

**Results:** A total of 2492 participants were analysed after excluding those with missing data. Machine learning models demonstrated the most important combinations to predict mortality using all 21 GLIM combinations were 1) weight loss, reduced muscle mass and inflammation and 2) weight loss, reduced muscle mass and reduced food intake. For the 9 GLIM combinations that excluded low muscle mass the most important combinations to predict mortality were 1) weight loss and inflammation and 2) weight loss and reduced food intake. Accuracy was similar for both models (88% and 84%, respectively). Weight loss and reduced food intake was the most important combination to predict unplanned hospital admission when both excluding and including reduced muscle mass (accuracy 77% and 76%, respectively).

**Conclusion:** Machine learning models demonstrated similar accuracy for predicting 30-day mortality and unplanned admission for GLIM combinations including and excluding reduced muscle mass. This indicates that in practice settings where muscle mass cannot be determined, GLIM phenotypic assessment using weight loss and body mass index can accurately detect cancer patients at risk of adverse outcomes.

**Disclosure of Interest:** None declared.

#### PD-14

### NEAR-TERM PROGNOSTIC IMPACT OF INTEGRATED MUSCLE MASS AND FUNCTION IN UPPER GASTROINTESTINAL CANCER : RESULTS FROM A MULTICENTER COHORT STUDY

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**Rationale:** Despite the known association between muscle mass/function and malnutrition-related mortality in upper gastrointestinal (UGI) cancer, no comprehensive study to determine the impact of muscle mass-dominant nutritional status on cancer prognosis has been conducted. The present study aimed to investigate the prognostic significance of integrated muscle mass and function in UGI cancer.

**Methods:** Between July 2013 and March 2018, we enrolled 2546 cancer patients with risks of malnutrition (Nutrition Risk Screening 2002,  $\geq 3$  points) from a multicenter cohort study [1] and split 527 patients with primary UGI cancer into an internal validation group. We prospectively performed instant nutritional assessment and recorded all general clinical characteristics of the participants, such as weight loss, body mass index, anthropometric measurements of muscle mass and function, dietary intake conditions, and disease burden and/or inflammation status based on the validated tools. Prognostic analyses were performed with post-assessment overall survival (OS).

**Results:** According to the entire set, UGI cancer was identified as the dominant risk factor for disease burden and inflammation criteria (hazard ratio (HR), 2.08, 95% confidence interval (CI), 1.81-2.39,  $P < 0.001$ ). Integrated muscle mass/function analysis with validated cutoff values showed that hand grip strength/weight followed by triceps skinfold thickness and

maximum calf circumference are the most potent predictors. Univariate and multivariate analyses revealed that reduced muscle mass/function (74.8%) and dietary intake (66.2%) independently affect OS of patients with UGI cancer. Significant associations were found between the reduced muscle mass/reduced dietary intake and the shortest OS (HR, 4.48; 95% CI, 3.07-6.53;  $P < 0.001$ ). Appending subgroups of muscle mass/function and dietary intake to the pre-existing risk model increased the efficiency of the time-dependent receiver operating characteristic curve analysis for OS in UGI cancer, particularly within 2 years of instant nutritional assessment.

**Conclusion:** Impaired muscle mass/function adversely affects the near-term prognosis in patients with UGI cancer. Along with a comprehensive evaluation of dietary intake conditions, the timely nutritional assessment might be useful for risk stratification of UGI cancers with potential for enteral and parenteral nutrition interventions.

**References:**

[1] Shi, et al. Investigation on nutrition status and clinical outcome of patients with common cancers in Chinese patients: a multicenter prospective study protocol. *International Journal of Clinical Trials*. 2020;7(2).

**Disclosure of Interest:** None declared.

#### PD-15

### A PROSPECTIVE EVALUATION OF THE EFFECTS OF SARCOPENIA ON POSTOPERATIVE OUTCOMES IN PATIENTS UNDERGOING GASTRECTOMY FOR GASTRIC CANCER

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**Rationale:** The relationship between sarcopenia and postoperative outcomes in patients with gastric cancer remains controversial. This study aimed to investigate the impact of sarcopenia on short-term outcomes after surgery for gastric cancer.

**Methods:** Patients who underwent surgical treatment for gastric cancer were evaluated in this prospective observational study. Muscle strength, muscle mass, and physical performance were measured before surgery. Diagnosis of sarcopenia was based on the revised European Working Group on Sarcopenia criteria. Postoperative outcomes including complications (graded according to the Clavien-Dindo classification system), reoperation, readmission, and operative mortality were recorded.

**Results:** Sarcopenia was observed in 31 out of 146 patients (21.2%). The overall complication incidence was 31.5%. The postoperative complication rate was higher in the sarcopenic patients compared to the non-sarcopenic patients (54.8% versus 25.2%). There was no statistically significant difference in terms of surgical complication rates (25.8% versus 14.8%), although the sarcopenic group had a significantly higher systemic complication rate (38.7% versus 13%). No statistically significant difference was observed in terms of major complications (3.2% versus 5.2%). Muscle strength, muscle mass, and physical performance were not identified as independent factors when tested alone at adjusted multivariable analysis. Sarcopenia (Odds ratio: 2.73, 95%CI 1.02-7.52) and severe sarcopenia (Odds ratio: 4.44, 95%CI 1.57-13.34) were identified as independent prognostic factors for postoperative complications (Table 1).

**Table 1: Univariable and adjusted multivariable analysis of sarcopenia-related factors for complications**

		No complications (n = 100)	Complications (n = 46)	Crude OR (95% CI, p value)	Adjusted OR† (95% CI, p value)
Muscle strength	Normal	62 (77.5)	18 (22.5)	-	-
	Low	38 (57.6)	28 (42.4)	2.54 (1.25-5.27, p=0.011)	1.79 (0.79-4.11, p=0.166)
Muscle mass	Normal	64 (71.9)	25 (28.1)	-	-
	Low	36 (63.2)	21 (36.8)	1.49 (0.73-3.04, p=0.268)	1.14 (0.48-2.72, p=0.760)
Physical performance	Normal	40 (75.5)	13 (24.5)	-	-
	Low	60 (64.5)	33 (35.5)	1.69 (0.81-3.70, p=0.173)	1.77 (0.78-4.21, p=0.178)
Sarcopenia	No	86 (74.8)	29 (25.2)	-	-
	Yes	14 (45.2)	17 (54.8)	3.60 (1.59-8.32, p=0.002)	2.73 (1.02-7.52, p=0.047)
Severe sarcopenia	No	91 (74.6)	31 (25.4)	-	-
	Yes	9 (37.5)	15 (62.5)	4.89 (1.98-12.73, p=0.001)	4.44 (1.57-13.34, p=0.006)



**Conclusion:** Sarcopenia was associated with postoperative complications after gastrectomy for gastric cancer. Severe sarcopenia may serve as a more robust prognostic indicator. The variation in the complication rates between sarcopenic and non-sarcopenic patients was mainly due to the difference in systemic complications, rather than surgical complications.

**Disclosure of Interest:** None declared.

#### PD-16

##### EARLY PALLIATIVE CARE BASED ON WARM MODEL IN PATIENTS WITH NON-SMALL-CELL LUNG CANCER: A RANDOMISED CONTROLLED TRIAL

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**Rationale:** Effective interventions to improve prognosis in non-small-cell lung cancer (NSCLC) are urgently needed. We assessed the effect of the early integration of interdisciplinary supportive care (based on WARM model) for patients with NSCLC on the quality of life, psychological state, cancer pain and nutritional status.

**Methods:** WARM model means Whole, Assessment, Reevaluation and MDT(Multi disciplinary team) Management. In this randomised controlled trial, We randomly assigned (1:1) patients with newly diagnosed NSCLC receive either early interdisciplinary supportive care (ESC) integrated with standard oncologic care or standard oncological care (SC) alone. ESC was provided by a team of medical oncologists, psychologists, oncology nurse specialists and dietitians; patients in the SC group received standard oncologic care alone. ESC group carried out intervention and evaluation each month. Quality of life and psychological state were assessed at baseline and at 6 months with the use of the Functional Assessment of Cancer Therapy-Lung (FACT-L) scale, the Hospital Anxiety and Depression Scale (HADS) and Patient Health Questionnaire-9 (PHQ-9), respectively. Cancer pain and nutritional status were assessed with the use of the Patient-Generated Subjective Global Assessment (PG-SGA) and Numerical Rating Scale (NRS), respectively. The primary outcome was the change in the quality of life, psychological state and nutritional status at 6 months. Data on end-of-life care were collected from electronic medical records.

**Results:** From Oct 15, 2019, to Jun 12, 2020, 60 patient were enrolled: 30 in ESC group and 30 in the SC group. Compliance at 6 months was 77% (23 patients) in the ESC group versus 73% (22) in the SC group. Patients assigned to ESC group had a better quality of life than did patients assigned to SC group (mean score on the FACT-L scale [in which scores range from 0 to 136, with higher scores indicating better quality of life], 122.3.0 vs 113.0;  $P = 0.0007$ ). In addition, fewer patients in the ESC group than in the SC group had anxiety (mean score on the HADS Anxiety subscale, 1.13 vs 2.86,  $P = 0.0005$ ) and depressive (mean score on the HADS Depression subscale, 0.65 vs 3.56,  $P < 0.0001$ ) symptoms. The PHQ-9 results showed that 100% patients were free of depression in the ESC group versus 45.5% patients were free of depression, 55.5% had mild level (score 5-9) in SC group ( $P < 0.0001$ ). Furthermore, patients in the ESC group (severe malnutrition was 0 %, moderate malnutrition was 60.9% and mild malnutrition was 39.1% according to PG-SGA) than in the SC group (severe malnutrition was 40.9%, moderate malnutrition was 50.0% and mild malnutrition was 9.1% according to PG-SGA) had a better nutritional status ( $P = 0.001$ ).

**Conclusion:** Among patients with non-small-cell lung cancer, early integration of interdisciplinary supportive care led to significant improvements in quality of life, psychological state and nutritional status.

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#### PD-17

##### HISTOMORPHOLOGICAL CHANGES OF WHITE ADIPOSE TISSUE IN CANCER PATIENTS WITH AND WITHOUT CACHEXIA

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**Rationale:** During cancer cachexia, several alterations occur in peripheral tissues and the adipose tissue may be involved during the catabolic state. We aimed at investigating histologic rearrangement, including the grade of fibrosis, adipocyte morphology and infiltration of inflammatory cells in the subcutaneous adipose tissue of patients with cancer according to the presence/absence of cachexia.

**Methods:** We considered gastrointestinal cancer patients with and without cachexia (presence/absence of involuntary body weight loss > 5%), and controls with non-malignant diseases, undergoing surgery. We collected subcutaneous adipose tissue samples and we performed histomorphological analyses (cross-sectional area – CSA and grade of fibrosis) and immunohistochemistry to characterize the inflammatory cells of the adipose tissue.

**Results:** We enrolled 31 gastrointestinal (7 gastric, 8 pancreatic and 16 colorectal) cancer patients and 20 controls. In cancer patients (age  $71 \pm 12$  y, BMI  $26.1 \pm 3.8$  kg/m<sup>2</sup>), cachexia was present in 13/31 (42%). The CSA (um<sup>2</sup>) of the adipocytes was reduced in cancer patients when compared to controls ( $3139 \pm 971$  vs  $4349 \pm 1136$ ) ( $p < 0.001$ ), in particular in cachectic vs non-cachectic patients ( $2617 \pm 1021$  vs  $3515 \pm 756$ ) ( $p = 0.03$ ) and in cachectic vs controls ( $p < 0.001$ ), as well as in non-cachectic vs controls ( $p = 0.04$ ). The percent of fibrosis was higher in cancer patients vs controls ( $p < 0.001$ ), in particular in cachectic vs non-cachectic patients ( $p < 0.05$ ). We observed a higher number of macrophages (CD68) ( $p = 0.0001$ ) and T-lymphocytes (CD3) ( $p = 0.002$ ) in cancer patients vs controls and T-lymphocytes were higher in cachectic vs non-cachectic patients ( $p < 0.05$ ).

**Conclusion:** Our study showed histological alterations of subcutaneous adipose tissue of cancer patients and in particular changes in CSA and grade of fibrosis and inflammation when cachexia was present.

**Disclosure of Interest:** None declared.

#### PD-18

##### THE PROGNOSTIC EFFECT OF HEMOGLOBIN ON PATIENTS WITH CANCER CACHEXIA: A MULTICENTER RETROSPECTIVE COHORT STUDY

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**Rationale: Objectives:** To clarify the influence of hemoglobin on cancer cachexia and to determine whether hemoglobin affects the prognosis or quality of life of patients with cancer cachexia and whether these effects are caused by an interaction between hemoglobin and other factors.

**Methods:** This study was a multicenter cohort of 2,715 patients with cancer cachexia diagnosed from June 2012 to December 2019. The primary outcomes and measures were overall survival (OS) time and all-cause mortality. The association between hemoglobin and all-cause mortality was evaluated using hazard ratios (HRs) and the restricted cubic splines model with a two-sided P-value. Optimal stratification was used to determine the threshold value. We also evaluated the cross-classification of hemoglobin and each variable with survival.

**Results:** Among the 2,715 participants diagnosed with cancer cachexia, 1592 (58.6%) were male, and the mean (SD) age was 58.8 (11.7) years. The optimal cutoff point for hemoglobin as a predictor of cancer cachexia mortality was 140 g/L for males and 101 g/L for females in our research. The

decrease in hemoglobin was positively correlated with all-cause mortality. These associations were consistent across cancer subtypes. In the multivariable analysis, after adjusting for sex, age, TNM stage, tumor type, radiotherapy, chemotherapy, KPS score, and other factors, patients diagnosed with cancer cachexia who had low hemoglobin levels were more likely to have a worse prognosis (HR 2.40; 95% CI, 1.12-1.51).

**Conclusion:** Our results suggested that the proposed hemoglobin cutoff point would be valuable for prognostic prediction in patients with cancer cachexia, especially for long-term prognosis.

**Disclosure of Interest:** None declared.

#### PD-19

##### COMPARISON OF THE GLIM, ESPEN AND ICD-10 CRITERIA TO DIAGNOSE MALNUTRITION AND PREDICT POST-HOSPITAL DISCHARGE OUTCOMES: AN OBSERVATIONAL STUDY IN AN ONCOLOGY POPULATION

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**Rationale:** The new Global Leadership Initiative on Malnutrition (GLIM) criteria are the proposed consensus criteria for the diagnosis of malnutrition. The purpose of this study was 1) to investigate and compare the prevalence of malnutrition using the International Statistical Classification of Diseases version 10 (ICD-10), European Society for Clinical Nutrition and Metabolism (ESPEN) and GLIM criteria, 2) compare the level of agreement between these criteria, and 3) to identify the predictive validity of each criteria with respect to 30-day mortality and unplanned hospital admission in a large cancer cohort.

**Methods:** A secondary analysis of two observational point prevalence studies, including 2794 people with cancer across various diagnoses, treatment settings and treatment types. Three criteria (ICD-10, ESPEN, GLIM) were applied to determine the prevalence of malnutrition. Agreement between the criteria was analysed with the Cohen Kappa test. Binary logistic regression models were used to determine the ability of each criteria to predict 30-day clinical outcomes of mortality and unplanned hospital admission.

**Results:** Overall, 981 (35.1%) participants were identified as being at risk of malnutrition. ICD-10, ESPEN and GLIM diagnostic criteria identified 12.5%, 5.3% and 22.0% of the cohort as malnourished, respectively. Slight to fair agreement was reported between the criteria. All three criteria were predictive of mortality at 30-days (OR (95% CI); ICD-10 2.34, 1.34 - 4.10,  $p < 0.001$ ; ESPEN 2.01, 1.02 - 3.98,  $p < 0.001$ ; GLIM 2.53, 1.46 - 4.39,  $p < 0.001$ ). Only the GLIM and ICD-10 criteria were predictive of unplanned admission within 30-days (OR (95% CI); ICD-10 1.57, 1.13 - 2.20,  $p < 0.001$ ; ESPEN 1.08, 0.65 - 1.79,  $p = 0.77$ ; GLIM 1.76, 1.33 - 2.32,  $p < 0.001$ ).

**Conclusion:** The GLIM criteria identified the highest proportion of participants as malnourished and had the greatest predictive ability for unplanned admission and mortality within 30 days.

**Disclosure of Interest:** None declared.

#### PD-20

##### BETTER PROGNOSTIC VALUE OF BODY COMPOSITION INCORPORATED SYSTEMIC INFLAMMATION MARKERS IN GASTRIC CANCER PATIENTS TREATED WITH ADJUVANT CHEMORADIOTHERAPY

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**Rationale:** This study aimed to explore the prognostic value and association of systemic inflammation response markers (RDW, PLR, PNI, NLR, NPS, LMR and SII) and poorer body composition conditions (sarcopenia, myosteatosis and sarcopenic obesity) among gastric cancer patients underwent adjuvant chemoradiotherapy (CRT) after radical gastrectomy.

**Methods:** The computed tomography (CT) scan pre-CRT within 2 weeks was applied to define sarcopenia, myosteatosis and sarcopenic obesity. Tumor and systemic inflammation response information were recorded. Logistic analysis was used to explore the potential risk factors of body composition. Cox univariable and multivariable analysis were carried out to do the survival analysis. A nomogram was constructed to serve as a prognostic predicted tool for 3- and 5-year overall survival.

**Results:** A total of 223 (74 female and 149 male) gastric cancer patients treated with adjuvant CRT after radical gastrectomy were included. Incidences of sarcopenia, myosteatosis and sarcopenic obesity were 30.04% (67/223), 39.01% (87/223) and 15.70% (35/223), respectively. The logistic analysis demonstrated that the low prognostic nutritional index (PNI) is the risk factor of sarcopenia, myosteatosis and sarcopenic obesity at the same time. After survival analysis, stage (HR = 0.44, 95%CI = 0.23-0.84,  $P = 0.01$ ), platelet to lymphocyte ratio (PLR) (HR = 0.50, 95%CI = 0.31-0.82,  $P = 0.01$ ), PNI (HR = 0.40, 95%CI = 0.24-0.68,  $P = 0.00$ ) and sarcopenic obesity (HR = 0.54, 95%CI = 0.31-0.93,  $P = 0.03$ ) remained to be the independent prognostic factors for overall survival. Better accuracy can be found in the nomogram incorporated into the systemic inflammation markers than without, and the predicted C-indices is 0.71 (95%CI = 0.67-0.73) and 0.63 (95%CI = 0.57-0.68), respectively.

**Conclusion:** Systemic inflammation response (SIR) associated with progressive nutritional conditions, and the body composition conditions incorporated systemic inflammation markers presented with a better prognostic value.

**Disclosure of Interest:** None declared.

#### PD-21

##### THE ROLE OF NUTRITIONAL SUPPORT IN AUTOLOGOUS HEMATOPOIETIC STEM CELL (AUTOHSCT) TRANSPLANTATION IN PATIENTS WITH HODGKIN'S LYMPHOMA. (INTERIM RESULTS)

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**Rationale:** Correction of metabolic disorders is one of the important point's supportive care during high-dose chemotherapy with autologous stem cell transplantation (autoHSCT) in patients with Hodgkin's lymphoma (HL). The impact of nutritional support on recovery during autoHSCT for this group of patients is not clearly understood. To assess the effect of combined nutritional support on the intensity of body weight loss, sarcopenia developing, the duration of neutropenic fever (NL), the frequency of blood transfusions during high-dose chemotherapy with autoHSCT in patients with HL.

**Methods:** The study analyzed 72 patients with Hodgkin's lymphoma who received high-dose chemotherapy without combined parenteral and enteral nutritional support (NS) between 2013 and 2016 and 76 patients treated between 2016 and 2020 who received combined NS: combination of parenteral and enteral sipping nutrition. The primary endpoints were the intensity of weight loss, differences between the duration of febrile neutropenia, and the frequency of transfusions of blood components. The t-test was used to determine the statistical significance of the mean values of equal samples.

**Results:** In group with combined nutritional support, regardless of patients initial nutritional status there was a statistically significant difference in the duration of FN: the median in the nutritional support group was  $4 \pm 1$  days and  $6 \pm 3$  days in the group without combined NS,  $p < 0.05$ . The average frequency of thrombocytes transfusions in the group with NS was  $2 \pm 1$  transfusions, and in the group without NP -  $3.5 \pm 3$  transfusions, with  $p < 0.05$ . There were no statistically significant differences in the frequency of erythrocytes transfusions,  $p = 0.1$ . A statistically significant difference was also found in the intensity of the decrease in body weight, expressed as a percentage decrease in BMI: in the group without NP, the average decrease in BMI was 14%, while in the group with NP - 7%,  $p < 0.05$ . Mean reduction psoas muscle index as an indicator of sarcopenia during autoHSCT, in the control group was  $4.5 \pm 2.5$ , in nutritional support group -  $3 \pm 2$ ,  $p = 0.01$ .

**Conclusion:** The data obtained show that combined nutritional support reduces the risk of a decrease in BMI, shortens the duration of FN, and reduces the need for MC transfusion during autoHSCT in patients with Hodgkin's lymphoma.

**Disclosure of Interest:** None declared.

#### PD-22

### THE IMPACT OF ARGININE-CONTAINING POSTOPERATIVE IMMUNE MODULATING NUTRITION ON SURVIVAL IN PATIENTS UNDERGOING SURGICAL RESECTION FOR UPPER GASTROINTESTINAL CANCER: THE LONG-TERM FOLLOW-UP OF A RANDOMIZED CONTROLLED TRIAL

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**Rationale:** Malnutrition and weight loss of varying severity is prevalent in cancers of the upper gastrointestinal tract and have been shown to independently predict poorer oncological treatment outcomes and lower quality of life. There is evidence of benefit for the use of immune modulating nutrition (IMN) in patients undergoing surgery for gastrointestinal cancers. In particular, IMN reduces infective complications and hospital length of stay. There have also been suggestions that arginine-containing IMN may result in improved survival and progression-free survival in patients undergoing surgery for head and neck cancers<sup>1,2</sup>. This study analysed long-term data from a previous randomised controlled trial<sup>3</sup> and evaluated the impact of postoperative IMN on the long-term survival of patients undergoing surgery for upper gastrointestinal cancer when compared with an isocaloric, isonitrogenous control feed.

**Methods:** This study included the 108 patients undergoing surgery for cancers of the pancreas, oesophagus and stomach, who had been randomized in a double-blind manner to receive jejunostomy feeding with IMN (Stresson, Nutricia Clinical Care, 8.9g arginine/l) or an isonitrogenous, isocaloric control feed (Nutrison High Protein, Nutricia, 3.0g arginine/l) for 10–15 days between 1999 and 2003<sup>3</sup>. The primary outcome was overall long-term survival in the intervention and control groups.

**Table 1:**

Long-term postoperative mortality in IMN and control groups

Mortality	IMN Group	Control Group	P value
30-day	11.1%	11.1%	1.00
90-day	13.0%	14.8%	0.781
1-year	31.5%	35.2%	0.839
4-year	59.3%	61.1%	0.837
5-year	70.4%	68.5%	0.835
10-year	85.2%	79.6%	0.448
15-year	88.9%	87.0%	0.767

**Results:** There was complete follow-up for all 108 patients, with 54 patients each allocated to the IMN and control arms respectively. There were no statistically significant differences between groups by age ( $p=0.63$ ), sex ( $p=0.49$ ) or site of cancer ( $p=0.49$ ). Mortality is described in Table 1

**Conclusion:** Early postoperative feeding with arginine-containing IMN had no impact on long-term survival in patients undergoing surgery for upper gastrointestinal cancer.

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**Disclosure of Interest:** None declared.

## Nutrition and chronic diseases

### PD-23

### SARCOPENIA IS ASSOCIATED WITH INCONTINENCE AND RECOVERY OF INDEPENDENCE IN URINATION AND DEFECACTION IN POST-ACUTE REHABILITATION PATIENTS

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**Rationale:** Incontinence reduces activities of daily living and quality of life in older adults. Sarcopenia is associated with frailty and disabilities. However, evidence is scarce concerning the association between incontinence and sarcopenia. The aim of this study was to examine the association between sarcopenia and recovery of independence in urination and defecation in patients undergoing convalescent rehabilitation.

**Methods:** This retrospective cohort study included post-acute rehabilitation patients. Sarcopenia was diagnosed using the muscle mass index and handgrip strength according to the updated criteria of the Asian Working Group for Sarcopenia 2019. Study outcomes and the recovery of independence in urination and defecation were evaluated using the sphincter control items of the Functional Independence Measure (FIM) at discharge: urination (FIM-Bladder) and defecation (FIM-Bowel), respectively. Multivariate regression analyses were used to determine whether sarcopenia at baseline was associated with the study outcomes. Statistical significance was set at  $P < .05$ .

**Results:** After enrollment, 917 patients (mean age  $74.7 \pm 13.5$  years; 58% women) were included in the final analyses. Sarcopenia was present in 451 patients (49.2%). The median FIM-Bladder and FIM-Bowel scores at admission were 5 [2, 7] and 5 [3, 7], respectively. Multivariate analyses showed that the presence of sarcopenia at admission was independently and negatively associated with FIM-Bladder and FIM-Bowel at discharge (all,  $P < .001$ ), respectively, after adjusting for potential confounders including baseline outcome variables, FIM, and disease.

**Conclusion:** Sarcopenia was negatively associated with the recovery of independence in urination and defecation in a post-acute rehabilita-

tion setting. This relationship was independent of physical and cognitive level, and disease. Early detection of sarcopenia and treatment by rehabilitation nutrition should be implemented to predict and maximize improvement in toileting independence in this population.

**Disclosure of Interest:** None declared.

### PD-24

### HYDRATION BY ENTEROCLYSIS IN THE DISTAL INTESTINE IN PATIENTS WITH A HIGH OUTPUT STOMA: AN ALTERNATIVE TO PARENTERAL HYDRATION

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**Rationale:** Dehydration is a very common complication of high output jeuno-ileal or ileo-colic double enterostomies, and the most frequent cause of readmissions. Hydration enteroclysis (HE) can be an alternative to parenteral hydration when the downstream intestinal segment is accessible and functional. This work describes our experience with HE in ileal or colonic sites

**Methods:** We have conducted a retrospective analysis of consecutive patients treated with HE between 01/01/2015 and 31/05/2019.

**Population:** patients with stoma output  $\geq 1200$  ml/24h with accessible lower bowel, perfused on admission to our unit or non-perfused but with clinical and biological signs of dehydration and not candidates for chyme reinfusion (lower small bowel length  $< 15$  cm or colon only).

**Technique:** After placing a Levin tube (ch 12Fr) in the lower intestine, ileum or colon, a hydration solution is instilled using an enteral feeding pump. Its sodium concentration (104 mmol/l) was close to the average of that measured in the ileal effluents of 257 patients: for one liter, water 500 ml, Vichy St-Yorre water 500 ml, NaCl 4 g. HE intakes were adapted to the objectives of diuresis  $> 1$  l/24h, urinary Na  $> 40$  mmol/24h, Na/K ratio  $> 1$ . Intravenous supports were classified as providing fluids and electrolytes (IVS-FE) and/or parenteral nutrition (IVS-PN).

**Statistics:** values are expressed as mean  $\pm$  SD and the coefficients of fat absorption (CFA) and nitrogen absorption (CNA) as a percentage of contemporary intakes for three consecutive days. Values were compared by Student's t-test for paired and unpaired series.

**Results:** HE was attempted in 69 patients and completed in 52 (24 F, 28 M,  $64 \pm 16$  y). Causes of failure: failed catheter insertion due to stenosis on downstream segment  $n=7$ ; important HE reflux without obstruction found  $n=5$ ; pain (Crohn's disease)  $n=2$ ; pouch leaks  $n=2$ ; heart failure  $n=1$ . Enteroclysis site was ileum (34), right colon (14), and left colon (4). HE lasted (median [ IQ]) 49 [31-75] days, max 368.

Initially, 22 (42%) had no IVS, despite stoma outputs of  $1465 \pm 484$  ml/24h, and none of them received one during HE. Thirty other patients (58%) had a higher stoma outputs ( $1911 \pm 524$  ml/24h,  $p=0.003$ ) and a more marked intestinal failure: steatorrhea  $27.3 \pm 14.1$  g/24h ( $n=15$ ) vs.  $12.5 \pm 10.6$  g/24h ( $n=8$ ),  $p=0.017$ , CFA  $61.8 \pm 13.9\%$  ( $n=15$ ) vs.  $82.5 \pm 14.2\%$  ( $n=8$ ),  $p<0.001$ , CNA  $63.3 \pm 14.1\%$  ( $n=23$ ) vs.  $72.9 \pm 14.9\%$  ( $n=11$ ),  $p=0.075$ . Twelve patients (40%) were receiving IVS-FE, and 11/12 were weaned. Four of the 18 (22%) receiving IVS-NP were weaned. The 14 IVS-PN patients who remained dependent on PN had their volume requirements reduced by 39% ( $1661 \pm 1023$  vs.  $2714 \pm 1423$  ml/24h,  $p<0.0001$ ), and parenteral caloric intake by only 15% ( $1263 \pm 351$  vs.  $1542 \pm 402$  kcal/24h,  $p=0.017$ ). This volume reduction was the hydration component of IVS-PN.

**Conclusion:** In case of high-flow double enterostomy, hydration by enteroclysis in the downstream bowel reduces the number of patients who need parenteral hydration by 90%. In patients who remain dependent on parenteral nutrition due to intestinal failure, it allows the volumes infused to be reduced.

**Disclosure of Interest:** None declared.

## PD-25

### HOW DOES A PREVIOUS ICU STAY MODIFY NUTRITION SUPPORT IN THE WARDS: A RISK ADJUSTED EVALUATION FROM 191 886 ADULT PATIENTS FROM NUTRITIONDAY 2006-2019

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**Rationale:** ICU stay is associated in the majority of patients with the provision of nutrients as enteral (EN) or parenteral nutrition (PN) with increasing proportions during the first week. After day 7 in the ICU parenteral nutrition use is observed in 20-25% of patients and enteral nutrition in 60-70% of patients with large variations between countries. We investigated how often nutrition support is used after ICU stay in the ward.

**Methods:** We analyzed separately the adult patients from the two nutritionDay cohorts 2006-2015 (cohort 1:  $n=153470$ ) and 2016-2019 (cohort 2:  $n=38416$ ). We determined the effect of a previous ICU stay on the use of EN, PN and oral nutritional supplements (ONS) in a uni- and multivariate model including sex, age, surgical status, duration of hospital stay before nutritionDay, BMI, self-rated health, fluid status, weight change within the last 3 month, mobility and amount eaten on nutritionDay with GLM logistic regression (STATA 15.1). All modeling included length bias correction and assuming units as random factors. Results are given as Odds ratios (OR) with 95% confidence intervals [CI95].

**Results:** Previous ICU stay was recorded in 16636 patients (10.8%) in cohort 1 and in 4127 patients (10.7%) in cohort 2. The prevalence of previous ICU stay was highest for postoperative patients 21.3% and 19% and lowest in non-surgical patients 6.8% and 7.7%. Overall 41% and 35% were surgical patients with the relation pre- to postoperative between 1:3 and 1:4.

EN was given to patients with a previous ICU stay in 13.2% versus 7.2% in those without ICU stay in cohort 1 and in 13.2% vs 4.1% in cohort 2 (both  $p<0.001$ ). PN was given to patients with a previous ICU stay in 8.2% versus 3.8% in those without an ICU stay and in 8.3 vs 4.1% in cohort 2 (both  $p<0.001$ ). ONS were given to patients with a previous ICU stay in 12.4% vs 8.8% in those without an ICU stay in cohort 1 and in 22.0% vs 14.1% in cohort 2, indicating a slight increase in ONS use (both  $p<0.001$ ).

In the multivariate model adjusting for nutrition risk factors and patient characteristics previous ICU stay was associated with increased EN use OR 1.47 [1.26-1.70] cohort 1 and OR 2.20 [1.79-2.72] cohort 2, increased PN use OR 1.54 [1.26-1.88] cohort 1 and not in cohort 2 OR 1.18 [0.88-1.59] and increased ONS use OR 1.39 [1.20-1.60] cohort 1 and OR 1.44 [1.20-1.73] cohort 2.

**Conclusion:** Previous ICU stay is associated with an increased use of EN, PN and ONS. Whereas the proportions of EN and PN users remained stable over time ONS use increased clearly. After multivariate adjustment increased EN and ONS use after ICU stay remain unchanged whereas PN use appears to be less increased in the most recent cohort.

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## PD-26

### ACUTE INTESTINOTROPHIC EFFECTS OF SHORT AND LONG-ACTING GLP-2 ANALOGUES IN RATS

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**Rationale:** Short bowel syndrome (SBS) is a debilitating condition where parenteral support often is a prerequisite for patients' survival. Additional medical therapies with acute and prolonged action are wanted to improve quality of life for patients with SBS. Endogenous glucagon-like-peptide 2 (GLP-2) and synthetic GLP-2 analogues possess remarkable intestinotrophic effects. Teduglutide (Takeda) is a marketed short-acting GLP-2 analogue for SBS patients, requiring daily dosing in man. Glepaglutide (Zealand Pharma) is a novel long-acting GLP-2 analogues currently in phase 3 clinical trial for SBS. The aim of the present study was to investigate the acute intestinotrophic effects of short vs long-acting GLP-2 analogues in rats.

**Methods:** Teduglutide, glepaglutide, or vehicle were administered to male Sprague-Dawley (SD) rats ( $n=6$ ) by s.c. injection once-daily for 4 days at doses of 30 and 300 nmol/kg. Small and large intestines were collected and weighed. Intestinal weight for each rat was normalized to body weight and expressed as % increase over the mean of a vehicle/control group. Intestinotrophic effect was assessed by recording the wet weight separately of the small and large intestines.

**Results:** Compared to controls, glepaglutide demonstrated a potent and significant dose-dependent (30 and 300 nmol/kg) effect on small intestine wet weight by 17% and 52% increase, respectively ( $*p<0.05$ ,  $***p<0.001$ ). In comparison, teduglutide (300 nmol/kg) significantly increased small intestine wet weight by 22% ( $***p<0.001$ ). Teduglutide had no significant effect on the large intestine wet weight compared to controls. In contrast,

glepaglutide (300 nmol/kg) significantly increased large intestine wet weight by 14 % (\* $p < 0.05$ ).

**Conclusion:** Long-acting GLP-2 analogue gilepaglutide possess pronounced dose-dependent acute effects on both small and large intestines in contrast to short-acting teduglutide, which only demonstrated weight increase effects on the small intestine in rats.

**Disclosure of Interest:** J. Skarbaliene Other: Salary - Zealand Pharma, M. Berner-Hansen Other: Salary - Zealand Pharma.

#### PD-27

### ASSOCIATIONS OF DIETARY FATTY ACID INTAKES WITH INFLAMMATION, NUTRITIONAL STATUS, AND ALL-CAUSE MORTALITY IN MAINTENANCE HEMODIALYSIS PATIENTS

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**Rationale:** Various dietary fatty acids (FAs) mediate diverse biological functions. Therefore, this study aimed to investigate the association of dietary FA intakes with inflammation, nutritional status, and all-cause mortality in maintenance hemodialysis (MHD) patients.

**Methods:** Study subjects were 319 MHD patients initially screened for the Palm Tocotrienol in Chronic Hemodialysis (PaTCH) study. At baseline, dietary FA intakes were assessed via the 3-day diet record method, nutrition status via the Malnutrition Inflammation Score (MIS), while inflammatory markers measured included high-sensitivity C-reactive protein (hsCRP) and interleukin-6 (IL-6). All-cause mortality was assessed after three years of follow-up. Multiple linear regression analyses were used to determine the cross-sectional association between dietary FAs and inflammatory and nutritional parameters. Kaplan-Meier and Cox regression analyses were used for survival analyses.

**Results:** The mean dietary fat intake was 28.4% of energy intake (%EN) and the proportion of saturated fatty acid (SFA), monounsaturated fatty acid (MUFA), polyunsaturated fatty acid (PUFA), *n*-3 PUFA, and *n*-6 PUFA were 12.2%EN, 11.9%EN, 4.2%EN, 0.2%EN, and 3.9%EN, respectively. Cross-sectional analyses showed that proportion of dietary SFA, MUFA, *n*-3 PUFA, and *n*-6 PUFA intakes were not significantly associated with hsCRP, IL-6, and MIS (all  $p > 0.05$ ). Over three years, 82 deaths (25.7%) were documented, two patients underwent kidney transplantation (0.6%), and two patients changed to peritoneal dialysis (0.6%). Fully adjusted models showed that only dietary *n*-6 PUFA was associated with lower all-cause mortality (adjusted hazard ratio = 0.684, 95% confidence interval = 0.489, 0.958,  $p = 0.027$ ), while SFA, MUFA, and *n*-3 PUFA showed no significant associations with all-cause mortality. MHD patients with dietary *n*-6 PUFA intakes above the median (3.79%EN) had a greater survival rate compared to those with dietary *n*-6 PUFA intakes below the median (79.7% vs. 68.9%,  $p = 0.031$ ).

**Conclusion:** Dietary *n*-6 PUFA intake was not associated with poorer nutritional status or greater inflammatory response. Instead, it was associated with lower all-cause mortality in MHD patients.

**Disclosure of Interest:** None declared.

#### PD-28

### COMBINATION OF BMI AND POSSIBLE SARCOPENIA CAN PREDICT 10-YEAR ALL-CAUSE MORTALITY AMONG THE ELDERLY

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**Rationale:** Body mass index (BMI) and sarcopenia are common indicators of nutritional status. Possible sarcopenia defined as low muscle strength was introduced recently. This study aimed to examine the association between BMI and possible sarcopenia with all-cause mortality in Asian elderly.

**Methods:** A retrospective cohort was a subsample from the Fourth Thai National Health Examination Survey, a multistage, stratified survey of the Thai population conducted in 2008. Inclusion criteria were aged  $\geq 60$  years. Demographic, socioeconomic, underlying diseases and physical function were collected. BMI was assessed by WHO Asian cut-of-points. Possible sarcopenia defined as handgrip strength  $< 28$  kg for men and  $< 18$  kg for women. All-cause mortality derived from vital registry in 2020. The associations were explored using Cox proportional hazard models and adjusted with possible cofounders.

**Results:** A total of 8,195 participants with a mean age of 69.2 years (SD 6.8) were included. The prevalence of underweight, normal weight, and overweight and obesity were 11.8 %, 33.5 % and 54.7 %, respectively. The prevalence of possible sarcopenia were 38.9 %. Elder people with underweight and sarcopenia had the highest risk of mortality when compare with those with normal weight and no sarcopenia (adjusted HR, 95%CI 2.81, 2.17-3.64 in men and 2.93, 2.32- 3.69 in women).

**Conclusion:** In conclusion, the combination of BMI and possible sarcopenia can predict all-cause mortality among Asian elderly.

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**Disclosure of Interest:** None declared.

#### PD-29

### PRELIMINARY RESULTS REGARDING ASSESSMENT OF THE ASSOCIATION BETWEEN MUSCLE MASS AND FIBROSIS-4 INDEX AMONG PATIENTS WITH CHRONIC LIVER DISEASE

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**Rationale:** Progressive loss of muscle mass and function frequently accompanies chronic liver diseases (CLDs), and it has recently been clarified that the severity of sarcopenia is associated with clinical outcomes in these patients [1]. Thus, assessment of the decrease in muscle mass due to CLDs, especially before cirrhosis develops, would be valuable in the management of patients. The aim of this study, whose preliminary results are presented here, was to examine the relationship between muscle mass measurements and disease severity markers in patients with CLDs.

**Methods:** Ultrasonographic assessment of certain muscle regions namely rectus femoris, gastrocnemius, rectus abdominis, external and internal obliques, and transverse abdominis of the patients with CLD were performed. Laboratory tests reflecting the liver functions were recorded and the Fibrosis-4 (FIB-4) index was calculated for each patient as an estimate of the degree of liver fibrosis. Correlations between liver function parameters and muscle thickness measurements were analyzed using SPSS 23.

**Results:** A total of 38 patients with CLD whose median age was 49 (20-71) were included. CLD etiology in most of the patients was hepatitis B (57.8%) followed by nonalcoholic fatty liver disease (55.3%). FIB-4 scores was found negatively correlated with rectus abdominis muscle thickness ( $r = -0.449$ ,

$p=0.006$ ). Additionally prealbumin values were positively correlated with the cross-sectional area of rectus femoris ( $r=0.762$ ,  $p<0.001$ ) and also thickness of rectus femoris ( $r=0.597$ ,  $p=0.004$ ) external oblique ( $r=0.460$ ,  $p=0.036$ ), internal oblique ( $r=0.620$ ,  $p=0.003$ ), and transverse abdominis ( $r=0.566$ ,  $p=0.007$ ) muscles.

**Conclusion:** Further studies are required to examine the association of ultrasonographic skeletal muscle mass measurement and the parameters of disease activity and liver functions in CLDs.

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**Disclosure of Interest:** None declared.

#### PD-30

##### WHAT ARE THE MOTIVES UNDERLYING BRAZILIANS' FOOD CHOICES?

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**Rationale:** The clinical and scientific community is becoming more interested in knowing the motives behind people's food choices (1). Food choice encompasses a complex set of expectations and attitudes about the sensory characteristics of the food combined with external factors (2, 3). The aim of this study was to determine the rank order from the most to the least important motive for the Brazilians' food choice.

**Methods:** This was a cross-sectional study that included women and men of different ages (>18 years-old) and economic classes. Individuals were recruited at São Paulo State University and all those who agreed to participate gave written informed consent. A sociodemographic questionnaire and the complete version (36 items, 4-point Likert-type responses) of the Food Choice Questionnaire (FCQ) were applied using paper-and-pencil. The mean scores for each FCQ factor were calculated and compared using 95% confidence interval (CI<sub>95%</sub>).

**Results:** A total of 1480 individuals participated in the study (69.5% female;  $M_{age}=25.1$ ,  $SD=6.2$  years). Most participants were middle class (52.2%). Sensory Appeal (3.5 [CI<sub>95%</sub>3.4–3.5],  $SD=.6$ ) was the most important motive for the food choice, and Price (3.3 [CI<sub>95%</sub>3.3–3.3],  $SD=.7$ ) was the second most important. After, Health (3.1 [CI<sub>95%</sub>3.0–3.1],  $SD=.7$ ) and Convenience (3.1 [CI<sub>95%</sub>3.0–3.1],  $SD=.8$ ) were the third equally important motives. Later, Mood (2.8 [CI<sub>95%</sub>2.8–2.8],  $SD=.8$ ) and Natural Content (2.7 [CI<sub>95%</sub>2.7–2.8],  $SD=.9$ ) were similarly important, as well as Natural Content and Weight Control (2.6 [CI<sub>95%</sub>2.6–2.7],  $SD=.9$ ), and Weight Control and Familiarity (2.6 [CI<sub>95%</sub>2.5–2.6],  $SD=.8$ ). Ethical Concern (2.1 [CI<sub>95%</sub>2.1–2.2],  $SD=.9$ ) was the least important reason for food choice.

**Conclusion:** Sensory Appeal and Price emerged as the most important motives, while Ethical Concern was the least valued. These findings could assist future public actions and clinical interventions aimed at producing food choices oriented to health, well-being, and sustainability. (FAPESP, grant#2017/20315-7, 2019/19590-9).

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**Disclosure of Interest:** None declared.

#### PD-32

##### ASSOCIATIONS BETWEEN HIV STATUS AND THE GUT MICROBIOTA IN SOUTH AFRICAN CHILDREN WITH LOW IRON STORES

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**Rationale:** Iron interventions such as fortification and supplementation may modify the gut microbiota. Although HIV status affects the gut microbiota, little data exist in virally suppressed children living with HIV (HIV+). In children with low iron stores, we aimed to compare gut microbiota between virally suppressed HIV+ children and children without HIV (HIV-ve).

**Methods:** This comparative cross-sectional study was performed in 8 to 13-year-old virally suppressed HIV+ and HIV-ve children with low iron stores (inflammation-unadjusted serum ferritin  $\leq 35$   $\mu\text{g/L}$ ) from Cape Town, South Africa. Dietary information was obtained using an abbreviated food frequency questionnaire. We compared gut microbial composition in faecal samples from 33 HIV+ and 31 HIV-ve children using 16S rRNA sequencing, calculated diversity measures using R, and identified differential composition between the two groups using ALDEx2.

**Results:** Diets were predominantly plant-based, and fibre intake was similar between groups [median (inter-quartile range) 27.8 g (20.4–35.5) in HIV+ and 25.8 g (22.3–33.1) in HIV-ve;  $p=0.72$ ]. The gut microbiota was enriched with *Prevotella* in both groups. There was no significant differences in microbiota diversity by HIV status ( $p=0.58$ ). Notably, despite viral suppression, the relative abundance of *Bifidobacterium* was significantly lower ( $p=0.003$ ) in HIV+ than HIV-ve children.

**Conclusion:** *Prevotella*-enrichment, evident in both groups, was likely influenced by the plant-based diet. The significantly lower relative abundance of beneficial *Bifidobacterium* among the HIV+ children may be cause for concern as reductions in *Bifidobacterium* following oral iron supplementation (a probable intervention in this population) have been reported. Research exploring prebiotic and/or probiotic interventions aimed at increasing *Bifidobacterium* abundance in iron deficient virally suppressed HIV+ children may be warranted.

**Disclosure of Interest:** None declared.

#### PD-33

##### L3-CT SCAN AS A DETERMINANT OF LEAN MASS IN THE APPLICATION OF GLIM CRITERIA AND ITS RELATIONSHIP WITH 6-MONTH MORTALITY IN CANCER INPATIENTS

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**Rationale:** Malnutrition appears in up to 80% of cancer inpatients. The skeletal muscle index (SMI) determined by CT at the third lumbar vertebrae (L3) could be useful for the assessment of lean mass in the nutritional assessment. Objective: to evaluate, in cancer inpatients, the clinical application of GLIM criteria for the diagnosis of malnutrition, using CT at L3 as a determinant of lean mass, to check its prognostic value for mortality at 6 months.

**Methods:** Prospective study in patients admitted to the Inpatient Oncology Unit. The total muscle surface area at L3 was determined by CT. SMI was calculated. Cut-off points from Prado (2008) were used as a reference for low muscle mass in application of GLIM criteria.

**Results:** 206 admitted patients were evaluated, 55.1% male, mean age 60.3 ± 12.8 years and BMI 24.4 ± 4.5 kg / m<sup>2</sup>. The total muscle surface area at L3 was 136.17 ± 32.55 cm<sup>2</sup> in men and 98.05 ± 21.22 in women. The SMI was 47.39 ± 12.3 cm<sup>2</sup> / m<sup>2</sup> in men and 38.66 ± 8.26 cm<sup>2</sup> / m<sup>2</sup> in women; showing 65.4% a value under the Prado cut-off points.

Using SMI as a determinant of lean mass in application of GLIM criteria, 181 (87.9%) malnourished patients and 25 (12.1%) normal-nourished patients were found.

There were 103 deaths (50%) at 6 months. The deceased patients had a lower muscle surface area (115.28 ± 30.19 vs 127.22 ± 40.69 cm<sup>2</sup>; p = 0.019) and a lower SMI (42.49 ± 10.24 vs 45.97 ± 13.38 cm<sup>2</sup> / m<sup>2</sup>; p = 0.007) during admission.

In malnourished patients according to GLIM criteria using CT as a determinant of lean mass, the risk of mortality, adjusted for age and disease stage, was 3.21 times higher than in normally nourished [95% IC 1.17-8.77; p=0.023].

**Conclusion:** The use of CT at L3 as a determinant of lean mass in application of GLIM criteria is a good predictor of 6-month mortality in cancer inpatients.

**Disclosure of Interest:** None declared.

## Nutritional assessment

### PD-34

#### NUTRITIONAL RISK SCREENING USING ELECTRONIC PATIENT RECORDS DOES NOT IMPROVE SCREENING RATES AND DOES NOT IDENTIFY ALL PATIENTS AT NUTRITIONAL RISK

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**Rationale:** Nutritional risk screening protocols are established in all hospitals, but compliance is low. We investigated if electronic patient record-based nutritional risk screening was associated with an increase in nutrition screening rate and if the proportion of patients at risk differed between patients where electronic risk screening was documented and those where no screening was documented.

**Methods:** We conducted a cross-sectional observation study in a Danish teaching hospital during November 2020. All patients aged 65 years or more and admitted to a medical department were included. The nutrition risk screening (NRS-2002) tool was used to identify patients at nutritional risk, both in routine clinical care and during validation by a trained nutrition nurse and a registered dietician in a random patient sample.

**Results:** In total, 817 patients were admitted for more than 24 hours to one of ten medical wards. Of these, an NRS-2002 risk score was documented in 294 (36%), among whom 177 (60%) were at nutritional risk. Validation of the risk score was performed in 237 patients. In 146 patients where no score was documented, 88 (60%) were at nutritional risk. In 91 patients where both a record-based score and a validated score were documented, the specificity of the record-based score was 100%, while the sensitivity was 75%, indicating that routine screening underestimated nutritional risk (p<0.001, proportion difference 19% (95%CI 10-28%)).

**Conclusion:** In a medical ward hospital setting with electronic documentation of nutritional risk screening, compliance with screening was 36%, indicating that electronic documentation per se does not increase

compliance. In patients where risk screening was not documented, the occurrence of nutritional risk was similar, indicating that omission of risk screening is not related to the risk score.

**Disclosure of Interest:** None declared.

### PD-35

#### POSITIVE EFFECTS OF BISCUITS ENRICHED WITH LEGUME FLOURS ON POSTPRANDIAL GLUCOSE, INSULIN AND APPETITE RESPONSES OF HEALTHY SUBJECTS

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**Rationale:** The amelioration of postprandial glucose and insulin responses to cereal products is of great importance in nutrition research since they can result to significant beneficial effects for health. Legumes are foods with a low glycaemic index (GI) and substitution of cereal flour with legume flour in foods may reduce the glycaemic responses of the final products. Enrichment of biscuits with legume flours was performed to examine potential postprandial benefits.

**Methods:** Fifteen healthy normoglycemic adults participated in the study and were provided with either a solution of glucose (reference food) or a wheat biscuit (WB) or a biscuit enriched with legume flours (LB), with 1-week intervals in amounts that yielded 50 g of available carbohydrates. Venous blood samples were collected before consumption and at 15, 30, 45, 60, 90, 120 and 180 min postprandially. Glucose and insulin responses as well as glycaemic index (GI) and subjective appetite ratings were evaluated.

**Results:** Ingestion of WB and LB elicited lower incremental area under the curve (iAUC) for 120-min glycemic response compared to the solution of glucose (P < 0.05). WB demonstrated a medium GI while LB a low GI. A significantly lower desire to eat and higher fullness were detected at 45 minutes until 180 minutes after LB consumption compared to glucose solution, as well as 60 and 90 minutes after LB consumption compared to WB. There were no significant differences in insulin responses among the two biscuits.

**Conclusion:** Enrichment of biscuits with legume flours results to products with lower GI, but induces similar insulin responses compared to conventional wheat biscuits. Legume-enriched biscuits' consumption may also offer a lower desire for the next meal. The development of products which cause improved metabolic effects is a nutritionally effective strategy of great importance for the promotion of public health.

**Disclosure of Interest:** None declared.

### PD-36

#### EVALUATION OF AN ONLINE MALNUTRITION MANAGEMENT EDUCATION MODULE FOR GENERAL PRACTITIONERS: THE ONSPRES PROJECT

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	EPR	
	Risk (3-7)	No risk (0-2)
<b>Validation</b>		
	Risk (3-7)	50
	No risk (0-2)	17
Documented records: 91		
		0
		24

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**Rationale:** Malnutrition is common, yet under-diagnosed, amongst community-dwelling older adults. General practitioners (GPs) are the first healthcare point of contact for older adults, however there is currently little nutrition education in medical training and GPs report lacking confidence in diagnosing and treating malnutrition. To address this, an online education module based on GP interviews was designed. Efficacy of the module in improving knowledge and practice was evaluated.

**Methods:** Thirty-one GPs and GP trainees participated. Knowledge was measured via a multiple choice questionnaire (MCQ). Practice was evaluated via patient case studies at baseline, immediately post-module, and 6-weeks post-module. Case studies involved calculations of weight loss, malnutrition risk scores, and approaches to treatment and follow-up. Differences between assessment performance were investigated using paired t-tests.

**Results:** MCQ scores increased significantly from baseline to immediately post-module (+25%, P<0.001), with the greatest improvement in the 'identifying malnutrition in clinical practice' topic (+47%, P<0.001). Eleven GPs completed the 6-week MCQ where scores remained significantly increased from baseline (+14%, P=0.005). Seventeen GPs completed the case studies with 85% correctly calculating malnutrition risk scores at baseline, increasing to 94% post-module. Identification of appropriate approaches to malnutrition treatment improved by 33% post-module. GP feedback was positive.

**Conclusion:** This online education module was well-received by GPs and was successful in improving malnutrition knowledge and practice, with this improvement being retained in the short-term. Future development of nutrition online education tools that promote evidence-based practical learning may represent an effective way to improve nutrition care provided by GPs.

**Disclosure of Interest:** None declared.

**PD-38**

**EVALUATION OF PROGNOSTIC AND PREDICTIVE VALUE OF GLIM CRITERIA AMONG MEDICAL INPATIENTS WITH DISEASE-RELATED MALNUTRITION: A SECONDARY ANALYSIS OF A RANDOMIZED CLINICAL TRIAL**

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**Rationale:** Disease-related malnutrition is a major public health problem but how to best identify and diagnose malnourished patients is still under debate. The Global Leadership Initiative on Malnutrition (GLIM) published GLIM criteria as minimal operational criteria for the diagnosis of malnu-

trition, but the diagnostic tool needed validation. We aimed to evaluate their prognostic and predictive value among medical inpatients with disease related malnutrition.

**Methods:** Secondary analysis of the Effect of Early Nutritional Support on Frailty, Functional Outcomes, and Recovery of Malnourished Medical Inpatients Trail (EFFORT), a randomized clinical trial conducted in 8 Swiss hospitals between April 2014 and February 2018.

Medical inpatients, all nutritionally at risk according to NRS 2002, were stratified into either GLIM positive (fulfilling GLIM criteria) or GLIM negative (not fulfilling GLIM criteria) group and randomly assigned to

receive either individualized nutritional support or standard hospital food. Primary outcome was all-cause mortality within 30 days.

**Results:** A total of 1834 patients were included. Mean age was 72.4 years (SD 14.0 years), 964 (52.6%) were men. 914 (49.84%) were assigned to the intervention group, 920 (50.16%) were in the control group. All cause-30-days mortality was significantly higher in the GLIM positive group (89/934 (9.5%) versus 51/900 (5.7%); adjusted OR, 1.56; 95% CI, 1.08 – 2.26; p=0.019). The beneficial effect of nutritional support was comparable in the GLIM negative and the GLIM positive group (adjusted OR, 0.72; 95% CI, 0.4 – 1.3 versus adjusted OR, 0.67; 95% CI, 0.42 – 1.06; p for interaction=0.997).

**Conclusion:** Based on this secondary analysis, we can state that GLIM criteria have good prognostic value for short-term survival, but cannot predict whether a patient will profit from individualized nutritional support or not. Future trials still have to validate cut-offs of the single components of GLIM criteria to work towards a better predictive value.

**Disclosure of Interest:** None declared.

**PD-39**

**PHASE ANGLE (PA) IS A STRONGER PREDICTOR OF HOSPITAL OUTCOME THAN SUBJECTIVE GLOBAL ASSESSMENT (SGA) - RESULTS FROM THE PROSPECTIVE DESSAU MALNUTRITION STUDY**

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**Rationale:** To investigate bioimpedance (BIA) derived PA against SGA using hospital outcome as endpoint in a prospectively documented cohort of consecutive adult patients of a community hospital.

**Methods:** Between May 2019 and March 2020 14150 of 16943 patients were screened for malnutrition risk using NRS-2002. Among 2695 NRS≥3 patients 1507 gave informed consent and their data (age, gender, ICD-10 category, BIA, SGA, PANDORA items, modified Glasgow Prognostic Score (mGPS)) were prospectively entered into the electronic patient record. Length of hospital stay for patients with regular discharge was analyzed using competing risk outcome models. Results are presented as hazard ratios with 95% confidence intervals.

**Results:** In a model including influence factors age, gender, weight loss, diagnoses and PANDORA items in SGA B&C patients the chance for a timely and regular discharge was reduced by 21% as compared to SGA A patients (model A). The association of SGA and outcome was abrogated when PA was added (model B). PA increased the chance of a timely and regular discharge by 18% for each degree (see table). Even when mGPS as a measure of an inflammatory state was added to model B PA remained associated with a 10% increased chance for a timely and regular discharge by each degree (model C). mGPS was associated with a decrease in the chance for discharge 0.82 (0.68-0.98) (0 vs 1) p=0.026 and 0.55 (0.40-0.75) (0 vs 2)

p<0.0005.

**Conclusion:** In patients at risk for malnutrition in terms of NRS≥3 PA was a stronger predictor of LOS than SGA and remained so even when inflammatory status in terms of mGPS as a strong prognostic variable was included in the model. Unlike SGA, PA offers the advantage of providing a numerical value as an objective measure.

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	Model A: SGA	Model B: SGA and PA	Model C: SGA, PA and mGPS
SGA A vs B&C	0.79 (0.72-0.87) p<0.0001	0.92 (0.81-1.06)	1.02 (0.90-1.16)
PA (per 1 degree)		1.18 (1.09-1.29) p<0.0001	1.10 (1.03-1.18) p<0.005



**PD-40**

**ASSESSMENT OF DIFFERENT TOOLS TO MEASURE MUSCLE MASS IN A POPULATION WITHOUT SARCOPENIA**

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**Rationale:** The Global Leadership Initiative on Malnutrition (GLIM) requires muscle assessment. Bio-impedance is the most widely used method to determine muscle mass, but the consensus document accepts other tools such as hand grip (HG) or arm circumference. On the other hand, muscle ultrasound is a novel technique with few studies yet. The objective of this study is to compare the intensity of the correlation between the free fat mass measured by impedance (FFM) and by other methods.

**Methods:** Material and methods: We performed nutritional assessment in a group of 96 outpatients from a cardiology clinic without malnutrition or sarcopenia. Mean age 61.28 (12.94), 66.7% men, coronary artery disease 33.3%, valvular heart disease 16.7%, diabetes 17.7%. Measurements: Weight, height, arm and calf circumferences, triceps skin fold, segmental impedance, biceps muscle ultrasound to measure its thickness and echogenicity, and hand grip. Statistical test: Pearson correlation. The study has been validated by the local ethics committee. C.P. - C.I. PI20 / 608.

**Results:** Results: 1- FFM was positively correlated with biceps thickness (Rho: 0.71), hand grip (Rho: 0.708), arm circumference (Rho: 0.52) and biceps echogenicity (Rho: -0.204). 2- Hand grip is not only correlated with FFM of arms (Rho: 0.75) but also with FFM of legs (Rho: 0.6) and trunk (Rho: 0.6). 3- The thickness of the biceps measured by ultrasound does not only correlate with the FFM of the arms (Rho: 0.71) but also with the FFM of the legs (Rho: 0.7) and the trunk (Rho: 0.64).

**Conclusion:** Conclusion: Hand grip and the thickness of the biceps muscle measured by ultrasound can be a good alternative to impedance in the global and not only local muscle assessment of the arm. But we can't say the same for echogenicity or arm circumference.

**Disclosure of Interest:** None declared.

**PD-41**

**REMOTE NUTRITIONAL AND SARCOPENIA SCREENING TOOL IN POST-COVID PATIENTS**

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**Rationale:** SARS-CoV-2 infection can lead to malnutrition (MN) and sarcopenia (SPN), especially in patients requiring hospitalization or ICU admission. The aim of this study was to detect the presence of MN and SPN in post-Covid patients at hospital discharge with the Remote Malnutrition App (R-MAPP).

**Methods:** Patients admitted in hospital during the second wave of Covid-19 in Navarre were called between January and March 2021 and asked the

questions included in R-MAPP (a mixture of MUST and SARC-F) at discharge. At hospital discharge, nutritional counseling was given to all patients and nutritional treatment was prescribed according to guidelines. Patients with MN (MUST  $\geq 2$ ) and/or SPN (SARC-F  $\geq 4$ ) according to R-MAPP were referred to the Nutrition Department to determine if nutritional treatment was needed. Quantitative variables are described as mean and SD (or median and IQR). Qualitative variables are describe as percentages and compared using de Chi<sup>2</sup> test.

**Results:** 74 patients were included (54.1% male, mean age 67.9 $\pm$ 4.3 years). Mean patients usual weight was 76.1 $\pm$ 3.7 kg and median body weight loss during hospitalization was 9.1% with a length hospital stay of 11.4 $\pm$ 1.7 days. 16.2% of patients required ICU admission.

According to R-MAPP, 9.5% of patients were malnourished, 30.9% suffered SPN and 4.1% presented both entities. Prevalence of SPN was higher among patients with previous type 2 diabetes (T2DM) or ICU admission (Table 1). 76.2% of patients received nutritional treatment during hospital stay (73.2% protein supplement, 41% ONS, 11.1% enteral nutrition and 1.4% parenteral nutrition) and 24.3% at discharge (only ONS). Among patients with MUST  $\geq 2$ , 20.8% received nutritional treatment at discharge and among those with SARC-F  $\geq 4$ , 36.1%. 66.7% patients with both MN and SPN received nutritional treatment at discharge.

**Conclusion:** Nutritional screening in post-Covid patients with R-MAPP done at discharge could help in early detection of patients with MN and SPN in order to prescribe nutritional treatment, especially in those with previous T2DM or ICU stay.

**Disclosure of Interest:** None declared.

**PD-42**

**CORRELATION OF SKELETAL MUSCLE AREA AND MUSCLE ATTENUATION BETWEEN L3, C3, AND T4 LEVEL IN PATIENTS WITH CANCER: RESULTS FROM THE BODY-CONVERT STUDY GROUP**

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**Rationale:** Computed tomography (CT) scans are used to assess skeletal muscle area (SMA) and muscle attenuation (MA) in patients with cancer. SMA at lumbar 3 (L3) level is known to strongly correlate with skeletal muscle mass at whole body level. MA reflects the quality of the muscles. However, in daily practice, a whole-body scan is not always available. While cervical 3 (C3) and thoracic 4 (T4) levels are used as alternatives to L3 to measure SMA, it remains unclear how SMA and MA at C3 and T4 correlate with SMA and MA at L3 in various cancer types. In this study, we aimed to assess the correlation of SMA and MA between these three spinal levels in patients with various types of cancer.

**Methods:** Two hundred twenty CT images available from routine care from patients with four different types of cancer were analysed (34

		MUST+ (%)	p value	SARC-F+ (%)	p value
Age	<65	13.2	0.406	31.6	0.802
	$\geq 65$	6.9		34.5	
Gender	Male	11.1	0.465	19.5	0.372
	Female	8.8		38.3	
Previous T2DM	Yes	0	0.599	46.2	<b>0.023</b>
	No	12.3		28.2	
Previous Hypertension	Yes	8.3	0.825	41.7	0.607
	No	11.1		26.6	
Previous Obesity	Yes	4.5	0.931	40.9	0.758
	No	13.3		28.9	
ICU admission	Yes	25	<b>0.012</b>	66.7	<b>0.033</b>
	No	5.2		18.9	

head and neck cancer, 45 oesophageal cancer, 54 lung cancer, and 87 melanoma). MIM software (Version 7.0.1) was used to process the images and contour the muscles. After contouring, SMA and skeletal MA were calculated with MIM software. Correlations of SMA and MA between L3 and C3, and L3 and T4 were determined by Intraclass Correlation Coefficient (ICC; two way random). An ICC value of 0–0.20 was considered as poor, 0.21–0.4 slight, 0.41–0.6 moderate, 0.61–0.8 substantial, and ICC  $\geq 0.81$  as almost perfect correlation.

**Results:** A total of 156 male and 64 female cancer patients were included. SMA was  $143.8 \pm 35.0$  cm<sup>2</sup> at L3,  $43.5 \pm 11.6$  cm<sup>2</sup> at C3, and  $180.1 \pm 43.8$  cm<sup>2</sup> at T4. MA was  $30.3 \pm 8.8$  HU at L3,  $44.9 \pm 10.2$  HU at C3, and  $37.1 \pm 7.5$  HU at T4. For SMA, ICC for L3 and C3, and L3 and T4 were 0.60 and 0.91, respectively. For MA, ICC for L3 and C3, and L3 and T4 were 0.74 and 0.89, respectively

**Conclusion:** In patients with cancer, SMA and MA at T4 level is more strongly correlated with L3 than C3. If muscle status cannot be quantified and qualified at L3 level, in patients with cancer analysis at T4 level is preferred over C3.

**Disclosure of Interest:** None declared.

#### PD-43

##### SARCOPENIA DETERMINED BY HAND GRIP STRENGTH AND CALF CIRCUMFERENCE AS PREDICTOR OF MORTALITY IN OLDER INPATIENTS WITH HIP FRACTURE

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**Rationale:** The incidence of fragility hip fractures is increasing due to the aging of the population, conditioning a significant increase in mortality and costs. Our objective is to evaluate the prevalence of sarcopenia in elder hospitalized patients with hip fracture and its association with mortality.

**Methods:** Prospective study, in hospitalized patients older than 65 years with diagnosis of hip fracture. The presence of sarcopenia was assessed using European Working Group on Sarcopenia in Older People (EWGSOP2) criteria. Low muscle strength was determined using the cut-off points for hand-grip strength (Dodds, 2014). We estimated appendicular skeletal muscle mass (ASM) using calf circumference (Pozza Santos, 2019) and low muscle quantity was determined using the cut-off points for ASM (Stundski, 2014).

**Results:** 259 patients were included, 20.7% were male and 79.3% female, mean age of 82.7 years. Mean BMI was  $25.7 \pm 5$  kg / m<sup>2</sup>. Hand grip strength showed a mean of  $20.2 \pm 9.6$  kg for men and  $7.6 \pm 6.6$  kg for women (84.9% below cut-offs points). Calf circumference was  $32.5 \pm 2.9$  cm for men and  $30.8 \pm 3.9$  cm for women. Estimated ASM was  $19.7 \pm 2.4$  kg for men and  $10.8 \pm 3$  kg for women (83.3% below cut-off points). With this data, we found a prevalence of sarcopenia of 72.5%.

Mortality was 9.4%, 15.3% and 29.7% at 3, 6 and 12 months, respectively. In sarcopenic patients, mortality risk was 8 times greater than in non-sarcopenic [95% CI 1.05–60.9;  $p = 0.018$ ] at 3 months, 5.99 times greater [95% CI 1.37–26.1;  $p = 0.007$ ] at 6 months and 6.18 times greater [95% CI 1.26–15.9;  $p = 0.018$ ] at 12 months.

**Conclusion:** The prevalence of sarcopenia in patients admitted for hip fracture is high and is closely associated to 3, 6 and 12-month mortality in these patients.

Calf circumference measures may be used as a diagnostic proxy of sarcopenia for older adults in settings where no other muscle mass diagnostic methods are available.

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#### PD-44

##### APPLICABILITY OF THE SARC-F QUESTIONNAIRE BY TELEPHONE INTERVIEW

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**Rationale:** Sarcopenia is a muscle disorder associated with aging. For early detection of this condition, the European Working Group on Sarcopenia in Older People (EWGSOP) recommends using the SARC-F questionnaire as a screening tool. The objective of this study is to evaluate the applicability of the SARC-F questionnaire, by telephone interview, to non-institutionalized elderly people belonging to a cohort in southern Brazil.

**Methods:** This is a population-based study carried out with elderly population in the city of Pelotas-RS. Sociodemographic, behavioral and health data of the elderly, collected in 2014, and data referring to the SARC-F questionnaire, applied by telephone contact in 2016, were used. Those individuals with a confirmed diagnosis of sarcopenia were excluded, according to the criteria of the EWGSOP 2019. In 2014 the questionnaire was organized using the Pendragon 6.1 software, while in 2016 the questionnaires were applied using tablets installed with the REDCap platform. Data analysis was done through the Stata 16 statistical program. Associations between the outcome variable and exposure variables were tested using Pearson's chi-square test for heterogeneity and / or linear trend. For all tests, a significance level of 5%, two-tailed, was considered.

**Results:** 951 elderly people were evaluated, the majority of whom were female (62.67%), between 60 and 69 years old (59.06%), who did not practice physical activity during leisure time (79.10%), who were overweight (64.52%) and independent in terms of functional capacity (69.19%). The overall prevalence sarcopenia risk was 20.50% and it was significantly associated with the variables: sex (12.11%: men; 25.50%: women), age (14.44%: 60–69; 25, 59%: 70–79; 41.30%:  $\geq 80$  years / linear trend), education (41.90%: no year of study; 24.11%:  $< 8$ ; 8.66%:  $\geq 8$  years / trend linear), socioeconomic level (10.48%: class A / B; 25.57%: C; 37.65%: D / E / linear trend), marital status (16.55%: married / with partner; 20, 26%: single / separated / divorced; 30.08%: widowed), leisure-time physical activity (9.18%: active; 23.72%: inactive), depression (40.54%: present; 17.82 %: absent), multimorbidity (5.54%: 0–4; 29.47%: 5 or more comorbidities), functional capacity (11.85%: independent; 36.67%: dependent for 1; 78.26% : dependent for 2 or more activities / linear trend) and polypharmacy (15.04%:  $< 5$ ; 32.03%:  $\geq 5$  drugs) ( $p < 0.001$  for all associations).

**Conclusion:** The SARC-F questionnaire, applied by telephone, was associated with important sociodemographic, behavioral and health variables of the elderly population. These data reinforce the importance of building public policies aimed at preventing sarcopenia, which can be implemented in situations of social isolation.

**Disclosure of Interest:** None declared.

#### Nutritional intervention

##### PD-45

##### BENEFICIAL EFFECTS OF A SIX-MONTH NUTRITION THERAPY ON BODY COMPOSITION AND PHYSICAL FUNCTION IN OLD ADULTS AFTER HOSPITAL DISCHARGE

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**Rationale:** Malnutrition is common among old adults. Studies on various nutrition interventions show only limited effects on anthropometrics or physical function. The aim of this six-month randomized controlled study

was to investigate the effects of nutrition therapy following the principles of nutrition care process (NCP) in community-dwelling, old adults, discharged from hospital.

**Methods:** After screening, 106 participants (>65 years) were randomized into the intervention group (n = 53) and into the control group (n = 53). The intervention group received individual nutrition therapy (5 visits) and freely delivered energy- and protein rich foods. Anthropometrics, dietary intake and short physical performance battery were measured at baseline and at endpoint.

**Results:** Only two subjects dropped out. The control group experienced weight loss ( $-3.5 \pm 3.9$  kg;  $P < 0.001$ ), while the intervention group experienced weight gain ( $1.7$  kg  $\pm 2.5$  kg,  $P < 0.001$ ). Lean body mass was the main component of these weight changes in both groups. The dietary intake of both groups was similar at baseline, however it increased in the intervention group ( $937 \pm 534$  kcal/day,  $P < 0.001$ ) during the six-month study but decreased in the control group ( $-832 \pm 407$  kcal/day,  $P < 0.001$ ). SPPB score increased only in the intervention group ( $1.3 \pm 2.1$ ,  $P < 0.001$ ) and the control group was 3 times more likely ( $P = 0.019$ ) having difficulties to walk.

**Conclusion:** The time after hospital discharge leads to weight loss in the vast majority of old adults receiving the current standard care in Iceland. However, a 6-months nutrition therapy, provided by a clinical nutritionist following the principles of NCP in combination with freely delivered supplemental energy- and protein dense foods has outstanding effects on body composition, nutrition status and physical function.

**Disclosure of Interest:** None declared.

#### PD-46

### PREDICTIVE FACTORS OF CRUCIAL NUTRITION IMPACT SYMPTOM CLUSTERS IN PATIENTS WITH HEAD AND NECK CANCER WITH RADIOTHERAPY

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**Rationale:** Nutrition impact symptoms (NISs) tend to co-occur and are key factors of weight loss and worse quality of life (QoL) in patients with head and neck cancer (HNC) during radiotherapy (RT). However, there is limited evidence about NIS clusters and their predictive factor. Thus, this study aimed to explore crucial NIS clusters that related to weight loss rate (WLR) and QoL in patients with HNC receiving RT, and analyze their predictive factors.

**Methods:** This prospective study enrolled 334 patients. At baseline (T<sub>1</sub>), we collected the demographics, clinical information, weight, and QoL before RT. At the third week (T<sub>2</sub>) and the end of RT (T<sub>3</sub>), we evaluated the severity and interference of NIS using the head and neck patient symptom checklist (HNSC), weight, and QoL. Exploratory factor analysis was used to extract the symptom clusters. Cronbach's  $\alpha$  coefficient was used to evaluate the internal consistency of the symptom clusters. Generalized estimating equations (GEE) were used to analyze NIS clusters' relationship with WLR and QoL, and cluster's predictive factors.

**Results:** Four NIS clusters were identified from 15 NISs. The RT-specific symptom cluster (pain, difficulty swallowing, oral mucositis, thick saliva, difficulty chewing, and dry mouth, Cronbach's  $\alpha = 0.813$ ), the upper gastrointestinal symptom cluster (vomiting and nausea, Cronbach's  $\alpha = 0.698$ ), the psychological status cluster (anxious, depressed, and lack of energy, Cronbach's  $\alpha = 0.745$ ), and the eating experience cluster (altered smell, loss of appetite, taste change, and feeling full, Cronbach's  $\alpha = 0.496$ ). The former two NIS clusters both had a negative impact on WLR and QoL. Patients who were female, with older age, oral cavity cancer, had nutritional risk or were malnutrition at baseline were more likely to get severe RT-specific symptom cluster. Patients who were female, accepted intensive therapy were more likely to get severe upper gastrointestinal symptom cluster.

**Conclusion:** The RT-specific symptom cluster and upper gastrointestinal symptom cluster were crucial clusters that could conduct a negative impact on both WLR and QoL in HNC patients receiving RT. Female patients tended to report severe symptom cluster burden. Patients with older age, oral cavity cancer, pre-treatment nutritional risk or malnutrition were

more likely to get severe RT-specific symptom cluster, while patients accepted intensive therapy would experience more severe upper gastrointestinal symptom cluster. Healthcare professionals should recognize patients at risk and intervene early, and give early nutritional management before RT to improve HNC patients' NIS severity, nutritional status and QoL during treatment.

**Disclosure of Interest:** None declared.

#### PD-47

### STUDY PROTOCOL CAR-PREDIME (CARDIOVASCULAR PREVENTION WITH DIET IN MENOPAUSE): PRELIMINARY REPORT

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**Rationale:** Recently several scientific societies outline the gaps in research, prevention and treatment of cardiovascular disease (CVD) for women<sup>1,2</sup>. The risk of CVD increases after menopause, with unfavourable changes in body fat distribution. We have designed a study protocol titled CAR-PREDIME to evaluate the effectiveness of 4 dietary patterns (Mediterranean, DASH, low fat and low carbohydrate diet) in order to reduce the prevalence and progression of CVD.

**Methods:** Post-menopausal women free from hormone therapy, with body mass index (BMI) between 24 and 39 kg/m<sup>2</sup> and with at least one other cardio-metabolic risk factors, were randomly recruited. A 138-item food frequency questionnaire and a detailed questionnaire concerning lifestyle, medical history and physical activity were administered. All subjects underwent physical examination, including anthropometric (weight, height, waist and hip circumferences, and skinfolds) and BP measurements, body composition with bioimpedance analysis (BIA) and blood sampling. Each patient was randomly assigned to 4 dietary patterns. They will be followed-up with re-assessment of the same protocol each 3 months for two years.

**Results:** Up to now, 44 women aged 55.3 $\pm$ 4.8 years with a first 3-months follow-up were analysed. We observed a reduction in body weight ( $\Delta = -2.7$  kg,  $p = 0.01$ ), in BMI ( $\Delta = -1.02$  kg/m<sup>2</sup>,  $p = 0.0007$ ) and in systolic ( $\Delta = -5.8$  mmHg,  $p = 0.004$ ) and diastolic BP ( $\Delta = -2.3$  mmHg,  $p = 0.02$ ). Absolute values of fat mass (FM) based on skinfolds ( $\Delta = -1.05$  kg,  $p = 0.04$ ) and BIA ( $\Delta = -1.07$  kg,  $p = 0.04$ ) were reduced while no changes were observed for lean mass. The daily calorie intake was reduced by 5.7% ( $p = 0.003$ ) but also the physical activity was reduced by 54.6% ( $p = 0.008$ ).

**Conclusion:** From this very preliminary analysis, we observed that weight loss, mostly FM reduction, is only due to daily calorie intake reduction<sup>3</sup> with a positive influence on cardiovascular risk factors such as BP.

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**Disclosure of Interest:** None declared.

#### PD-48

### OUTCOMES OF EXCLUSIVE ENTERAL NUTRITION FOR INDUCTION OF DISEASE REMISSION IN PAEDIATRIC CROHN'S DISEASE IN AUCKLAND, NEW ZEALAND: A RETROSPECTIVE OBSERVATIONAL STUDY

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**Rationale:** Exclusive enteral nutrition (EEN) is the primary first line treatment to achieve disease remission in paediatric Crohn's disease (CD) in New Zealand (NZ). The aim of this study was to identify paediatric

patients in Auckland diagnosed with CD at Starship Child Health and investigate clinical outcomes of EEN use at diagnosis.

**Methods:** Paediatric patients with CD diagnosed between 2010 and 2020 were identified by a retrospective chart review. Demographics collected include age, gender, ethnicity and socioeconomic status (SES) using the NZ Deprivation Index. Disease location and behaviour were classified using the Paris classification. Remission was determined using clinical factors. Treatment, EEN duration and method were also collected with biochemical markers, anthropometric z-scores and malnutrition nutritional status at the start and end of EEN.

**Results:** Of 103 patients (60% Male, mean age 11.6 years), 60% were NZ European, with 60% of patients in the highest 2 SES quintiles however was not statistically significant.

Eighty six (83%) patients were treated with EEN for  $\geq 6$  weeks duration and 54 (63%) achieved clinical remission of disease. Of the 63%, factors significantly affecting clinical remission from baseline to end of EEN treatment were improved weight and body mass index z-scores ( $p < 0.0001$ ) and improvement in biochemical markers including C-reactive protein, erythrocyte sedimentation rate, albumin and faecal calprotectin ( $p < 0.01$ ).

Disease location, behaviour, and malnutrition status at diagnosis did not significantly affect clinical outcome, nor the number of clinician points of contact, EEN duration and method.

**Conclusion:** Exclusive enteral nutrition is an effective treatment for induction of clinical remission in paediatric CD, however remission rates in Auckland are lower than recent published literature.

**Disclosure of Interest:** None declared.

#### PD-49

##### A SIX-MONTH NUTRITION THERAPY IMPROVES QUALITY OF LIFE AND COGNITIVE FUNCTION IN OLD ADULTS AFTER HOSPITAL DISCHARGE

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**Rationale:** Malnutrition is common among old adults and related to poor quality of life (QoL) and to low cognitive function. It is not known whether a nutrition intervention can improve QoL or cognitive function. Thus, the aim of this six-month randomized controlled study was to investigate the effects of nutrition therapy following the principles of nutrition care process (NCP) in community-dwelling old adults discharged from hospital.

**Methods:** After screening, 106 participants (>65 years) were randomized into intervention ( $n = 53$ ) and control group ( $n = 53$ ). The intervention group received individual nutrition therapy (5 visits) and freely delivered energy- and protein rich foods. Mini-mental-state-examination (MMSE), QoL, depressive symptoms and self-rated health (SRH) were measured at baseline and at endpoint.

**Results:** Only two subjects dropped out. The control group experienced an increase in depressive symptoms and a decrease in SRH during the 6 months period, while the intervention group experienced increases in cognitive function, SRH and QoL resulting into significant endpoint differences between the groups: MMSE: 1.701;  $P < 0.001$ , QoL: 1.995;  $P = 0.001$ ; depressive symptoms: - 3.072;  $P < 0.001$ ; SRH: 15.876;  $P < 0.001$ , all in favour of the intervention group. Additionally, the intervention group reported less likely to feel down (OR=0.4;  $P=0.045$ ) as well as having difficulties to get going (OR=0.3;  $P=0.011$ ).

**Conclusion:** The time after hospital discharge leads to a deterioration of mental health and cognitive function in old adults receiving the current standard care in Iceland. However, a 6-months nutrition therapy, provided by a clinical nutritionist following the principles of NCP in combination with freely delivered supplemental energy- and protein dense foods has positive effects on cognitive function, QoL, depressive symptoms and SRH.

**Disclosure of Interest:** None declared.

#### PD-50

##### THE EFFECT OF PARENTERAL AMINO ACID INFUSION COMBINED WITH INTERMITTENT LOADING EXERCISE ON POSTOPERATIVE SARCOPENIC RAT MODELS

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**Rationale:** Perioperative sarcopenia is associated with worse patient outcomes in many types of surgeries. There are many reports on the intervention of protein intake and/or exercise for sarcopenia. However, the influence of peripheral parenteral nutrition, especially existence of amino acid (AA) infusion combined with exercise (Exc), in the postoperative short term period is unclear. In the present study, we made a postoperative sarcopenic animal model and evaluated the effect of AA infusion combined with Exc.

**Methods:** A postoperative sarcopenic model was generated in male F344/N rats by hindlimb suspension (HS) for five days after laparotomy and intestinal scratching as a surgical operation. The sarcopenic rats were then randomly assigned to four groups: AA(-), AA(+), AA(-) with Exc, and AA(+) with Exc. AA(-) received 10% glucose solution, while AA(+) received 3% amino acid and 7.5% glucose solution parenterally at 98 kcal/kg/day. Excs were carried out by releasing the sarcopenic rat models from HS for 1 h/day, and a sham group (no surgical operation, no HS and ad libitum feeding of diets) was also set ( $n=9-10$  in each group). Five days later, the hindlimb muscle strength, skeletal muscle weight, body weight, and lean mass were measured. In addition, the mRNA expression of MuRF1 and Atrogin-1 in the gastrocnemius were examined. The data were presented as the mean  $\pm$  SD and analysed using Tukey's multiple comparison test.

**Results:** The AA(-) group had a significant reduction in body weight ( $175.5 \pm 6.6$  vs  $212.4 \pm 12.2$  g,  $p < 0.001$ ), lean mass ( $154.1 \pm 4.7$  vs  $181.9 \pm 9.7$  g,  $p < 0.001$ ), muscle strength ( $95.5 \pm 8.9$  vs  $125.0 \pm 8.0$  mN·m,  $p < 0.001$ ), and gastrocnemius muscle weight ( $0.76 \pm 0.02$  vs  $0.99 \pm 0.04$  g,  $p < 0.001$ ) compared to the Sham group. The AA(+) with Exc group had a significant increase in muscle strength ( $116.0 \pm 9.3$  mN·m,  $p < 0.001$ ) and gastrocnemius muscle weight ( $0.82 \pm 0.05$  g,  $p < 0.05$ ) compared to the AA(-) group. Expression of Atrogin-1 in the gastrocnemius was suppressed in the AA(+) with Exc group compared to the AA(-) group ( $p < 0.05$ ).

**Conclusion:** The postoperative sarcopenic rat model exhibits a decrease in muscle strength and weight in a short-term period. Infusion of parenteral AA combined with Exc is capable of improving these decreases through suppression of ubiquitin ligase gene Atrogin-1 expression.

**Disclosure of Interest:** A. Wada Other: employed by Otsuka Pharmaceutical Factory, Inc., H. Yamashita Other: employed by Otsuka Pharmaceutical Factory, Inc., A. Togashi Other: employed by Otsuka Pharmaceutical Factory, Inc., S. Ogawa Other: employed by Otsuka Pharmaceutical Factory, Inc., A. Muroi Other: employed by Otsuka Pharmaceutical Factory, Inc., S. Kido Other: employed by Otsuka Pharmaceutical Factory, Inc., S. Furuya: None declared.

#### PD-51

##### EFFECT OF PREOPERATIVE IMMUNONUTRITION ON POSTOPERATIVE MAJOR MORBIDITY AFTER CYTOREDUCTIVE SURGERY AND HIPEC IN PATIENTS WITH PERITONEAL METASTASIS

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**Rationale:** Preoperative immunonutrition intake effect on postoperative major complications in patients following cytoreductive surgery was assessed. The predictive value of C-Reactive Protein (CRP) for detecting postoperative complications was also analyzed.

**Methods:** A retrospective study with patients treated for peritoneal carcinomatosis was accomplished. Patients were divided into two groups based on whether they had been prepared with immunonutrition supplements (IMN) at the preoperative period or not (non-IMN). Immunonutrition supplements were administered 7 days prior to surgery. Peritoneal cancer index (PCI), the number of visceral resections, and postoperative morbidity and mortality according to Clavien-Dindo classification were gathered. CRP serum levels at the early postoperative period were also recorded.

**Results:** A total of 107 patients were assessed. Of them, 48 belonged to the IMN group and 59 to the no-IMN group. Visceral resections were more frequently performed in the IMN group compared to the non-IMN patients ( $p < 0.002$ ). The median PCI was higher in the IMN group compared to the non-IMN group (10 vs 8,  $p < 0.001$ ). Postoperative major complications occurred more frequently in the non-IMN group patients compared to the IMN group (30.5% and 20.8%) although this difference was not significant. Immunonutrition emerged as independent protective factor to develop major morbidity (OR 0.38; 95%CI 0.36-0.40;  $p < 0.001$ ). CRP value over 165 mg/l throughout the postoperative days 2 and 3 with an AUC of 0.75 (95%CI 0.68-0.89) was associated to develop postoperative major morbidity.

**Conclusion:** Preoperative intake of immunonutrition supplements protected against the development of major morbidity and should be recommended to patients with peritoneal carcinomatosis following cytoreductive surgery. CRP levels may be useful to predict major morbidity early in these patients.

**Disclosure of Interest:** None declared.

#### PD-52

### COVID-19 HOSPITALIZED PATIENTS AT NUTRITIONDAY: USE OF ENTERAL NUTRITION, PARENTERAL NUTRITION OR ORAL NUTRITIONAL SUPPLEMENTS IS ASSOCIATED WITH BEING BEDRIDDEN, NOT BEING ALLOWED TO EAT, LOW APPETITE AND LOW BMI

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**Rationale:** Assessment, monitoring and treatment of malnutrition is recommended to be included in the management of COVID-19 patients. We investigated the prevalence of malnutrition risk factors in hospitalized COVID-19 positive patients and the association with nutritional support at nutritionDay 2020.

**Methods:** We included 2739 patients from the nutritionDay cohort 2020. The association between COVID status and risk factors was estimated with  $\chi^2$  test and GLM logistic regression (STATA 15.1). Units were considered as random factors. Results as Odds ratios (OR) with 95% confidence intervals (CI).

**Results:** We compared nutritional therapy in 88 COVID-19 positive patients (53% men, median age 60.5 yr [IQR[47-75]]) with 1962 patients (53% men, median age 60 [IQR[43-73]]) who never had COVID-19 from nutritionDay 2020. COVID-19 patients were less often identified as malnourished (10% vs 15%<sup>\*\*\*</sup>) but much more often at risk for malnutrition (43% vs 21%<sup>\*\*\*</sup>). Overweight or obesity prevalence (41% vs 29% and 28% vs 15%) often masked the identification of COVID-19 patients as malnourished or at risk for malnutrition by the unit staff. Twice as many COVID patients ate nothing on nutritionDay (20% vs 10%).

Most of the patients received hospital food (31% vs 59%<sup>\*\*\*</sup>) or a special diet (43% vs 32%), ONS (16% vs 18%), EN (23% vs 5%<sup>\*\*</sup>) and PN (13% vs 4%<sup>\*</sup>),

sometimes in combination. Enteral nutrition (EN) is associated with not being allowed to eat 2.45\* [1.11 5.39] and being bedridden 13.48<sup>\*\*\*</sup> [5.74 31.64], parenteral nutrition (PN) with eating nothing 4.50\* [1.07 18.87] and not being allowed to eat 3.25\* [1.26 8.41] whereas ONS use was associated with “not having my usual appetite” 3.25\* [1.26 8.41]. If considering only COVID status and eating on nutritionDay EN use but not ONS use is associated with COVID-19 and eating nothing on nutritionDay (see table). ONS are used when eating is decreased to 1/2 or 1/4 of the meal served OR 2.37\* [1.43-3.93] and 2.15\* [1.24-3.73].

Mortality rate was 24% in COVID-19 patients vs 3% in non-COVID patients.

**Conclusion:** Obesity and overweight might mask the identification of patients as malnourished or at risk for malnutrition by the unit staff. Patient status and medical decisions such as not allowing to eat have a strong effect on nutrition care choices. EN & PN are targeted to patients eating nothing and ONS to patients with reduced eating.

**Disclosure of Interest:** None declared.

#### PD-53

### MICRONUTRIENT STATUS IN PATIENTS WITH INTESTINAL FAILURE ON HOME PARENTERAL NUTRITION

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**Rationale:** Intestinal failure (IF) patients are at risk for micronutrient deficiencies and the ESPEN guideline for patients on home TPN (HPN) suggests to assess micronutrient status on a regular basis. This study aims to describe the period prevalence of micronutrient deficiencies or excess in IF type II and III patients.

**Methods:** We conducted a retrospective cohort study and included all adult patients treated with HPN in 2019. Primary outcome was the vitamin status of vitamins B1, B6, B12, A, D, E and folic acid.

**Results:** The cohort of intestinal failure patients consists of 353 patients. We excluded 215 deceased patients and patients who did not visit the outpatient clinic in 2019. Forty-one patients were excluded because they did not receive HPN or iv saline. We included 97 patients, sample sizes differ between micronutrients (range 81-88). 33 patients (34%) were men, median age was 60 (range 18-92 years). 47 patients (48%) had short bowel syndrome and 26 patients (27%) intestinal dysmotility. 79 patients (81%) were classified as type III IF. 57% and 58% of patients used daily water-soluble and fat-soluble vitamins respectively. 64% of patients used additional oral vitamin D supplementation (median 50.000 IU per week, range 2800-350000 IU per week). No patients had hypovitaminosis of vitamin B1, vitamin B12 or folic acid. B1 hypervitaminosis was present in 10% of patients of whom 50% used intravenous water-soluble vitamins daily. Vitamin B12 was high in 23% of patients and folic acid was high in 20%. 79% and 59% of these patients used daily intravenous water-soluble vitamins respectively. Remarkably, vitamin B6 was too high in 45% of patients with a median of 241.4 nmol/L (range 200.4-456.4 nmol/L). Daily use of water-soluble vitamins was significantly associated with high circulating vitamin B6 (OR 4.8, 95% CI 1.75 -14.32,  $p < 0.001$ ). Vitamin A was measured in 82 patients and 4 patients were deficient and 18 (22%) had hypervitaminosis A with a higher prevalence in men ( $n=12$ , 67%,  $p < 0.005$ ). 12% of patients were vitamin D deficient ( $< 50$  nmol/L) and age was significantly associated with low vitamin D levels ( $p=0.03$ ). Hypervitaminosis E was present in 25% of patients while only 1 patient had a low vitamin E concentration.

	EN use: OR [CI95]	PN use: OR [CI95]	ONS use: OR [CI95]
COVID (yes vs no)	5.09* [1.11 23.42]	3.76 [0.93 15.29]	1.27 [0.48 3.36]
Eating ¼ on nutritionDay	1.87 [0.53 6.59]	3.48 [0.71 17.01]	2.15 <sup>**</sup> [1.24 3.73]
Eating nothing & not allowed	7.04 <sup>***</sup> [2.43 20.41]	12.55 <sup>***</sup> [4.43 35.51]	0.46 [0.19 1.10]

**Conclusion:** In adult patients with type II and III IF on HPN, the prevalence of hypervitaminosis B6 was 45% while hypervitaminosis of the vitamins B12, B1 and A and folic acid was between 10 and 23%. Vitamin D deficiency was associated with higher age. No major other vitamin deficiencies were found. These results suggest that adjustment of the composition of the vitamin solutions or adjustment of the frequency of administration should be considered to prevent long term consequences of micronutrient deficiencies or excess.

**Disclosure of Interest:** None declared.

#### PD-54

##### SUPPORTING PATIENTS TO GET HOME AND STAY HOME: A COVID-19 CASE STUDY ON THE IMPACT OF AN ENTERAL NUTRITION NURSING SERVICE

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**Rationale:** The COVID-19 pandemic has precipitated an increased focus on National Health Service (NHS) care and resources including the value of nutrition. Discharges home on enteral nutrition (EN) and feeding tube complications requiring emergency department (ED) attendance or admission increase pressure on resources<sup>1</sup>. This study evaluated the impact of an EN homecare company nursing service on patient care and NHS resources during the pandemic.

**Methods:** An anonymised audit of nursing activity (nursing care for EN (in person and virtually via a secure app (Nutricia Homeward)), discharge EN training, tube replacements) covering 161 clinical commissioning groups and health boards across the UK was undertaken for April–December 2020, and compared with the same period in 2019. Nursing time and health care utilisation were coded using reference and unit costs<sup>2,3</sup>.

**Results:** Overall, 33,642 hours (21,820 in-hours, 463 out-of-hours) of patient care, including 8307 videocalls (2098 hours, increase of 239% vs 2019) were provided. In total 6817 feeding tubes were replaced in the community (vs 5742 in 2019, 19% increase) reducing requirements for ED attendance, saving £1.13million (ED cost £166<sup>2</sup>; £1 = €1.1613) and earlier discharges were facilitated by providing training on administering EN and using equipment to 4061 patients and families, potentially saving 2031 bed days (£897,481). A conservative estimate of cost savings to the NHS for the period was £3.02million (including £2.03million of hospital costs).

**Conclusion:** During the COVID-19 pandemic in 2020 this nursing service adapted to continue supporting home EN patients, helping them leave hospital sooner and reducing ED attendances, alleviating pressure on NHS resources and saving money. Savings likely exceed estimations as 25% of tube complications result in hospital admissions, further increasing costs<sup>1</sup>.

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#### PD-55

##### ANALYSIS OF DISPENSING PATTERNS AND NON-DISEASE SPECIFIC ORAL NUTRITIONAL SUPPLEMENT USAGE IN PRIMARY CARE: THE ONSPRES PROJECT

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**Rationale:** Oral nutritional supplements (ONS) are recommended for malnutrition when dietary optimisation is insufficient. Multi-disciplinary support to manage malnutrition is limited, and the characteristics of ONS users and patterns of usage are unclear. This analysis describes the characteristics of ONS users and dispensing patterns of ONS in primary care in Ireland.

**Methods:** Retrospective secondary analysis of dispensed pharmacy claims data for 14,282 patients aged  $\geq 18$  years dispensed ONS in 2018. Patient age, sex, residential status, ONS volume (in units) dispensed, and cost (€) were analysed. Patients were categorised by volume dispensed as 'Average' (<75<sup>th</sup> centile), 'High' (75<sup>th</sup>-89<sup>th</sup> centile) and 'Very High' ONS Users ( $\geq 90^{\text{th}}$  centile). Differences in volume and cost between groups were analysed using t-tests, Mann-Whitney U tests, and Chi-square analyses.

**Results:** Median age was 76 years, 58.2% were female, and 18.7% lived in residential care. Median ONS volume and cost dispensed was 126 units and €251. Very-high-energy sip feeds were most frequently dispensed (45% of the cohort). Males <65 years were dispensed more ONS than females (median units 135 vs 90,  $P < 0.01$ ). Residential care patients were dispensed twice the volume of those living independently (240 vs 112 units,  $P < 0.01$ ). 'Average' ONS users were dispensed median 84 ONS units (median cost €153), 'High' users were dispensed 420 units (cost €806), and 'Very High' users 892 units (cost €2,402,  $P < 0.01$ ).

**Conclusion:** Clear disparities between patient groups using ONS were identified. Further research is required to explain increased ONS usage in younger males and residential care patients. Training and support are required for health care professionals on malnutrition management and ONS prescribing to enhance patient-centred care and optimise healthcare expenditure in primary care.

**Disclosure of Interest:** None declared.

## Obesity and the metabolic disease

#### PD-56

##### IMPACT OF HIGH-INTENSITY INTERVAL TRAINING COMBINED WITH INTERMITTENT FASTING ON SHORT-CHAIN FATTY ACIDS IN OBESE WOMEN

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**Rationale:** It was evaluated whether high-intensity interval training (HIIT) combined or not with intermittent fasting (IF) in obese individuals, increased the production of short-chain fatty acids (SCFAs), important modulators of the gut microbiota and promoters of health.

**Methods:** Thirty-six obese women participated (BMI=33.9  $\pm$  3.19 kg/m<sup>2</sup>, 32.2  $\pm$  4.4 years, sedentary), randomly divided into 3 groups: 1. IF group + physical exercise (IF+ EX, n=14); 2. physical exercise group (EX, n=10); and 3. IF group (IF, n=10). There was approval Research Ethics Committee (n°13359319.3.0000.5659). The interventions took place over 8-weeks and all evaluations were before and after. The HIIT was performed 3x/week, 25

minutes/session, at 70–85% of the maximum heart rate. The IF protocol was the alternate day fasting, performed 2x/week, 18h fasting:6h restricted feeding. Stool samples were collected and SCFAs were analyzed by gas chromatography. ANOVA two-way repeated measures were performed for butyrate and Kruskal Wallis nonparametric test for acetate and propionate ( $p < 0.05$ ).

**Results:** There were no differences in fiber consumption during the interventions. There was no group\*time interaction effect, without intra-group differences for butyrate. However, the quantification of acetate the EX-group was greater than that of the IF+EX group in the post intervention ( $p = 0.048$ ). There was no difference between groups for propionate.

**Conclusion:** It was not possible to infer that the IF+HIT improved the production of SCFAs, but it's possible that the physical exercise can modulate the production of acetate. Evaluate these interventions over a longer period can contribute to further clarification about gut health in obesity.

**Disclosure of Interest:** None declared.

## PD-57

### A NEUROIMAGING META-ANALYSIS TO IDENTIFY BRAIN AREAS ASSOCIATED WITH SATIETY AND APPETITE REGULATORS

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**Rationale:** Satiety and appetite regulators act on key brain areas to control food intake. However, findings from neuroimaging human studies are inconsistent. Understanding how neurohormonal gut–brain signalling regulates food intake in healthy weight participants is an essential first step to tackle obesity and alerted eating behaviour.

**Methods:** A systematic search of MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials between November 2019 and December 2020 identified neuroimaging studies assessing brain activity in response to satiety/appetite regulators in healthy weight participants. Activation likelihood estimation (ALE) meta-analysis methods were used to assess the concurrence of brain areas reported across neuroimaging studies and to quantitatively generate a brain activation map for the brain-gut interactions. We also assessed whether the interaction of endogenously

released satiety/appetite regulators, following food intake, differed from exogenously administered regulators.

**Results:** The results revealed significant overlap in brain areas suppressed with satiety regulators in satiety [hypothalamus, MNI (4,-2,-12, ALE value=13.4  $\times 10^{-3}$ , cluster volume=1664mm<sup>3</sup>,  $P < 0.001$ )], reward [caudate nucleus, MNI (-10,12, 2, ALE value=18.6  $\times 10^{-3}$ , cluster volume=2864mm<sup>3</sup>,  $P < 0.001$ )] and multimodal food processing areas [insula, MNI (-38,-4,2), ALE value=18.7  $\times 10^{-3}$ , cluster volume=1976mm<sup>3</sup>,  $P < 0.001$  and thalamus, MNI (-16,-26,4), ALE value=15.1  $\times 10^{-3}$ , cluster volume=2056mm<sup>3</sup>,  $P < 0.001$ ]. Whereas the concurrence of appetite regulators (ghrelin) was associated with increased in thalamus activity [MNI (8,-12,-4), ALE value=9.9  $\times 10^{-3}$ , cluster volume=1024mm<sup>3</sup>,  $P < 0.001$ ]. The neurohormonal gut–brain signalling for endogenously released satiety regulators correlated with the insula and thalamus, whereas exogenously administered hormones correlated only with the caudate nucleus.

**Conclusion:** This is the first quantitative meta-analysis of functional neuroimaging data to determine which brain regions are most consistently activated in response to appetite/satiety regulators in healthy weight adults. The results confirm the importance of the insula, hypothalamus and thalamus for appetite and satiety processing. The generated brain activation map can be used for comparison in future studies to define alterations with obesity or altered eating behaviours, and the effect of exogenously administered hormones to regulator food intake.

**Disclosure of Interest:** None declared.

## PD-58

### ASSOCIATION BETWEEN GASTRIC MYOELECTRIC ACTIVITY AND BODY COMPOSITION IN ADULTS WITH AND WITHOUT OBESITY

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**Rationale:** Functional disturbances of the gastric myoelectric activity might be associated with obesity pathogenesis. Yet, it remains under-investigated. This study analyzed the association between gastric myoelectric activities and body composition in adults with and without obesity.

**Methods:** A total of 43 adults (31.03 $\pm$ 11.98 years) from the Nutrition Clinic, College of Applied Medical Sciences at King Saud University, KSA, were included in a case-control study (control group: CG, n=20, 55% men, and Obesity group: OG, n=23, 65% men). Controls were of body mass index (BMI) < 30 kg/m<sup>2</sup>, free of any gastric problems or disease and not taking

**Table 1:**

Spearman correlations between body composition parameters and gastric myoelectric activities.

Variables	Control group (n=20)			Obesity group (n=23)		
	PBF	FMI	FFMI	PBF	FMI	FFMI
Water load (ml)	-0.155	-0.107	0.178	<b>-0.454*</b>	-0.184	<b>0.488*</b>
BL. Bradygastria (%)	0.169	0.146	-0.187	-0.020	0.025	0.068
BL. Normogastria (%)	0.414	0.364	<b>-0.475*</b>	0.304	0.217	-0.010
BL. Tachygastria (%)	-0.231	-0.211	0.159	0.107	0.114	-0.002
BL. Duodenal (%)	-0.347	-0.292	0.419	-0.208	-0.120	0.147
10 min. Bradygastria (%)	-0.180	-0.137	0.020	0.144	0.045	-0.175
10 min Normogastria (%)	0.437	0.295	-0.391	0.405	<b>0.520*</b>	0.263
10 min Tachygastria (%)	0.137	0.129	-0.091	-0.187	-0.233	-0.067
10 min. Duodenal (%)	-0.359	-0.292	0.351	<b>-0.491*</b>	-0.393	0.118
30 min. Bradygastria (%)	0.363	0.308	-0.229	<b>0.627**</b>	<b>0.652**</b>	0.091
30 min Normogastria (%)	-0.365	-0.308	-0.229	-0.372	-0.353	0.146
30 min Tachygastria (%)	0.003	0.144	0.105	-0.153	-0.274	-0.256
30 min. Duodenal (%)	-0.215	-0.068	0.354	-0.405	-0.381	-0.032

BL= Baseline, \* =  $p < 0.05$ , and \*\* =  $p < 0.01$ .

any medications affecting gastric motility. Cases of the OG were diagnosed with obesity or morbid obesity and free of any gastric symptoms, gastro-intestinal surgeries, or any acute medical conditions. Gastric myoelectric activity was measured at baseline (for 10 mins) and postprandial state (for 30 mins) using a multichannel electrogastrography with a water load satiety test<sup>1</sup> (3CPM, USA). Based on the distribution of average power by frequency region, bradygastria was considered if the rhythm equal 1.0–2.5 cpm, normogastria if 2.5–3.75 cpm; tachygastria if 3.75–10.0 cpm, and duodenal-respiration if 10.0–15.0 cpm. Body composition measurement was done via bioelectric impedance analysis (Tanita BC-418, Japan). Percent body fat (PBF), fat mass index (FMI=FM/height<sup>2</sup>), and fat-free mass index (FFMI=FFM/height<sup>2</sup>) were selected for analysis.

**Results:** The means BMI, PBF, FMI, FFMI of the CG vs OG were 26.67±2.67 vs 38.45±5.99 kg/m<sup>2</sup>, 29.24±7.81 vs 38.94±7.67 %, 7.92±2.49 vs 15.19±4.82 kg/m<sup>2</sup>, 18.75±1.71 vs 23.26±3.21 kg/m<sup>2</sup>, respectively. Patients with obesity presented with lesser percentages of normogastria (0% vs 100%), more percentages of bradygastria (75% vs 25%), slightly more tachygastria (55.6% vs 44.4%), and slightly more mixed dysrhythmia diagnoses (56.5% vs 43.5%) than the control group. As shown in Table 1, the volume of water loading was negatively correlated with the PBF and positively correlated with FFMI. Also, at 30-min postprandial assessment, PBF and FMI were highly correlated with percentages of bradygastria times.

**Conclusion:** Obesity may be associated with disturbances of gastric myoelectric activity in form of decreasing normogastria and increasing bradygastria times. Future work is warranted to understand the underlying mechanisms.

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**Disclosure of Interest:** None declared.

#### PD-59

### MATERNAL HIGH FAT DIETS BASED ON OLIVE OIL PROTECT OFFSPRING AGAINST NAFLD FEATURES THROUGH EPIGENETIC ALTERATIONS

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**Rationale:** Dietary fatty liver composition plays a role in nonalcoholic fatty liver disease (NAFLD) pathogenesis, being the main hepatic manifestation of metabolic syndrome. Maternal obesogenic diet exposure contributes to NAFLD susceptibility. We examined if a maternal high fat diet (HFD) based on extra virgin olive oil (EVOO), rich in mono-unsaturated fatty acids, reduces the risk of offspring NAFLD through epigenetic microRNA changes.

**Methods:** Female C57BL/6J mice were fed a standard diet (LFD), a lard-based HFD (HFD-L), an olive oil-HFD (HFD-OO) or an EVOO-HFD for 12 weeks and continued on these diets during pregnancy. Livers from embryos of 17 days of each group and their mothers were recollected in order to carry out an epigenetic study focused in microRNA expression. Other group of mothers continued their pregnancy and lactation with the same diets. After weaning, pups were all fed a HFD-L for 12 weeks. We analyzed body weight gain, lipid plasmatic profile, transaminases and liver histology.

**Results:** The maternal dietary interventions epigenetically reprogram microRNA expression in offspring. We were able to identify the differentially expressed microRNA between mother and embryos of each groups. These epigenetic changes affected males and females differently. Maternal olive oils-based HFD protected female pups, but not males, from body weight gain and reduced transaminases levels. However, liver fibrosis development of male pups was attenuated in maternal olive oils-based HFD groups.

**Conclusion:** Results upon this point suggest that EVOO and OO-based HFD cause transgenerational epigenetic modifications in microRNA expression that protects offspring against the risk of NAFLD development.

**Disclosure of Interest:** None declared.

#### PD-60

### PRE-OPERATIVE PHASE ANGLE PREDICTS BODY COMPOSITION AFTER BARIATRIC SURGERY

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**Rationale:** Obesity is associated to chronic low-grade inflammation that causes alterations in body cell mass and cell membrane dysfunction. Phase angle (PhA) is a bioelectrical impedance analysis (BIA) parameter that reflect cellular health and quality of lean body mass. The aim of this study was to determine whether pre-operative PhA predict weight loss outcomes and body composition after bariatric surgery.

**Methods:** This prospective study was conducted at bariatric surgery clinic, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand. We enrolled 87 participants (75% female) who underwent bariatric surgery between January 2018 and December 2019. Body composition and PhA were determined, using multifrequency bioelectrical impedance analysis (BIA) with eightpoint tactile electrodes (InBody 770; Biospace, Seoul, Korea), at pre-operative visit and at 6- and 12-month after operation.

**Results:** In all, 63 patients (72.4%) underwent laparoscopic Roux-en Y gastric bypass, and 24 patients (27.6%) underwent laparoscopic sleeve gastrectomy. Baseline mean age (SD) and mean body mass index (SD) was 35.8 ± 9.9 years and 46.9 ± 9.7 kg/m<sup>2</sup> respectively. Preoperative PhA was negatively associated with percent body fat (%BF;  $r = -0.338$ ;  $p < 0.05$ ) at 12-month post-operative. Moreover preoperative PhA was positively associated with percent skeletal muscle mass (%SMM;  $r = 0.430$ ;  $p < 0.05$ ) at 12-month post-operative. The associations remained significant even after adjusting with age, sex, and comorbidities. However, we could not demonstrate the significant correlation between preoperative PhA and percent excess weight loss at 12-month after surgery.

**Conclusion:** Our study demonstrated that higher preoperative PhA is associated with higher %SMM and lower %BF at 12 months after surgery. Pre-operative PhA may be a useful predictor of weight loss surgery outcomes.

**Disclosure of Interest:** None declared.

#### PD-61

### BENEFICIAL EFFECTS OF THE KETOGENIC DIET ON GLUCOSE INTOLERANCE AND HEPATIC LIPID ACCUMULATION IN OBESE MICE MODEL

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**Rationale:** Metabolic diseases are a major societal concern due to their increasing prevalence. The ketogenic diet (KD), a high-fat and low-carbohydrate diet, is a nutritional strategy which shows promising results in reducing diabetes symptoms. However, scientific proof of its beneficial effects in metabolic diseases remains unclear. The aim of this study was to show that reducing sugar intake with KD is effective to prevent and cure obesity and diabetes.

**Methods:** Obesity was induced in C57BL/6 mice by using a high-fat high-sugar diet (HFD). After 10 or 16 weeks of HFD, six-week effects of KD were explored by measuring weight gain, body composition, hepatic lipid accumulation and glucose metabolism with an intraperitoneal glucose tolerance test. Both HFD and KD were isocaloric and compared with a control group fed a standard diet.

**Results:** After 10, 16 and 22 weeks of HFD, mice developed obesity which worsened with HFD intake duration (weight gain increased by 64%, 75% and 80% respectively, compared to control mice,  $p < 0.001$ ). Mice became



diabetic starting from the 16<sup>th</sup> week. After 10 weeks of HFD, KD feeding decreased weight gain (-15%,  $p < 0.001$ ), reduced lipid accumulation in visceral adipose tissue (-26%,  $p < 0.01$ ) and liver (-30%,  $p < 0.001$ ) and also protected the mice from glucose intolerance development (Area Under Curve (AUC): -14%,  $p < 0.05$ ), compared to 16-week HFD mice. After 16 weeks of HFD, KD feeding induced a tendency to decrease weight gain (-6%,  $p = 0.09$ ). It improved glucose tolerance (AUC: -24%,  $p < 0.05$ ) and reduced lipid accumulation in liver (-31%,  $p < 0.05$ ), compared to 22-week HFD mice.

**Conclusion:** KD shows beneficial effects regarding weight loss, glucose tolerance and hepatic lipid accumulation. These results demonstrate the importance of reducing sugar intake and suggest that KD could be an effective strategy for obesity and diabetes management.

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## PD-62

### ROLE OF ADIPOSITY IN SYSTEMIC RESPONSE TO 60 H FASTING AND 48 H REFEEDING IN WOMEN

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**Rationale:** Fasting induces decline in insulin secretion and sensitivity in order to spare glucose and simultaneously stimulates lipolysis in adipose tissue (AT) providing FFA and glycerol. To decipher the impact of adiposity on these processes, we employed a model of 60h fasting followed by 48h refeeding in lean and obese women.

**Methods:** This work is based on interim results of DELISA trial (NCT 04260542). 25 healthy premenopausal women were divided into two groups according to their BMI: lean (BMI 18–25,  $n = 16$ ) and obese (BMI 30–40,  $n = 9$ ). During the fasting women were hospitalized, then refed with individually isocaloric diet. Circulating levels of glucose, insulin, glycerol, FFA were evaluated during OGTT at baseline, fasting and refeeding phase and used for calculation of insulin function measures.

**Results:** 60h fasting resulted in weight loss that was not completely reverted by subsequent 48h refeeding. Glucose tolerance was comparable among groups at baseline and changed similarly throughout the intervention. Insulin levels and AdipoIR index were lower in basal and refed conditions in lean, but the difference between groups disappeared in fasting. OGTT AdipoIR reflecting dynamic response of AT to insulin secretion was lower in lean in basal and refed conditions, but increased in fasting to the same extent in both groups. Levels of glycerol were lower in lean vs. obese in basal conditions and increased in response to fasting only in lean, despite fasting-induced increase of FFA levels in both groups.

**Conclusion:** Despite different initial insulin function, 60h fasting decreased glucose tolerance and increased AdipoIR to the same extent in both lean and obese women. AT lipolysis was stimulated by fasting in both groups, though fasted obese women tended to have glycerol levels paradoxically lower than in basal conditions, suggesting enhanced glycerol utilization in liver.

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**Disclosure of Interest:** None declared.

## PD-63

### VISCERAL ADIPOSITY INDEX AND CARDIOVASCULAR DISEASE IN INDIVIDUALS WITH TYPE-2 DIABETES MELLITUS

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**Rationale:** Visceral Adiposity Index (VAI) is being related with visceral adipose tissue accumulation and dysfunction, but little is known about its association with cardiovascular disease (CVD) in a high-risk population. The aim of this study was to assess the association between VAI and CVD in individuals with diagnosis of type-2 diabetes mellitus (T2DM).

**Methods:** This was a cross-sectional analysis conducted with baseline data from a multicenter randomized clinical trial (NUGLIC study, NCT03793855), in which individuals with T2DM aged  $\geq 30$  years who consented to participate were included. A standardized protocol was used for demographic, clinical, anthropometric, and biochemical data collection. Systolic and diastolic blood pressure (SBP/DBP) were obtained from an automated oscillometric monitoring device. CVD was defined by previous diagnosis of heart attack, unstable angina, stroke, and heart failure. VAI was calculated and log-transformed according to specific mathematical formulas for men and women. Pearson's correlation and ANCOVA model were used to evaluate correlations and associations respectively.

**Results:** In total, 285 individuals were evaluated being 42.8% men, with mean age  $60.8 \pm 9.5$  years and body mass index  $30.2 \pm 4.6$  kg/m<sup>2</sup>. About 62% had dyslipidemia, 81.8% hypertension and 31.9% had previous diagnosis of CVD. Mean VAI (log) was  $1.6 \pm 0.7$ ; it was positively correlated with glycated hemoglobin ( $r = 0.15$ ;  $P = 0.01$ ), fasting glucose ( $r = 0.16$ ;  $P = 0.007$ ), and total cholesterol ( $r = 0.15$ ;  $P = 0.009$ ), and negatively correlated with HDL-c ( $r = -0.57$ ;  $P < 0.0001$ ); no correlation was detected between VAI and LDL-c, SBP or DBP. After adjustment for age, LDL-c and SBP, means of VAI were higher in individuals with previous CVD in comparison to those without CVD ( $1.7 \pm 0.7$  vs.  $1.5 \pm 0.7$ ;  $P = 0.02$ ).

**Conclusion:** VAI was associated with previous diagnosis of CVD in individuals with T2DM.

**Disclosure of Interest:** None declared.

## PD-64

### CHANGES IN TRYPTOPHAN METABOLISM AFTER BARIATRIC SURGERY

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**Rationale:** Bariatric surgery can affect amino acids metabolism, which might contribute to postoperative metabolic improvements. We evaluated changes in tryptophan and its metabolites three months after of Roux-en-Y gastric by-pass surgery (RYGB).

**Methods:** The study included 30 women who undergone RYGB. Plasma, urine and fecal samples were collected before and 3 months after the surgery. Plasma and urine tryptophan and as its metabolites were determined by untargeted metabolomic analysis, performed by mass spectrometry in a multiplatform approach. Fecal tryptophan and serotonin were determined by target metabolomic analysis performed by liquid chromatography coupled to mass spectrometry. Fold change (FC) was applied to determine metabolite relative changes after RYGB (vs. preoperative) and the Wilcoxon test assessed the significance of these changes at a 5% level. Data were collected from the SURMetaGIT cohort study, approved by local ethics committee, and registered at Clinical Trials (NCT01251016).

**Results:** Three months after RYGB tryptophan was reduced in plasma (FC -1.75;  $p = 0.001$ ) and in urine (FC -1.42;  $p = 0.005$ ), but it was unchanged in feces. N-acetyl-5-hydroxytryptamine (FC 1.30;  $p = 0.0003$ ) and serotonin (FC 1.73;  $p = 0.014$ ) increased in plasma and in feces, respectively. Indole-3-acetate was also increased in both plasma (FC 1.68;  $p = 0.001$ ) and urine (FC 1.51;  $p = 0.005$ ). Anthranilic acid decreased only in plasma (FC -1.83;  $p = 4.83 \times 10^{-5}$ ). In urine, glutamic acid was increased (FC 2.06;  $p = 8.33 \times 10^{-7}$ ) and L-alanine was decreased (FC -2.11;  $p = 0.0002$ ).

**Conclusion:** Tryptophan and some of its metabolites were changed three months after bariatric surgery. The role of this changes leading to metabolic improvements needs further evaluation.

**Disclosure of Interest:** None declared.

#### PD-65

### PREVALENCE OF OBESITY IN EUROPEAN NURSING HOMES BETWEEN 2007 AND 2018 – A NUTRITIONDAY ANALYSIS

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**Rationale:** In nursing home (NH) residents, obesity (OB) is associated with an increased risk of poor health outcomes, e.g. care complications, infections, falls. However, about the prevalence of OB in European NH-residents through the years and potential regional differences little is known.

**Methods:** Data from European NH-residents ( $\geq 65$  years, with available BMI data) of nutritionDay (nDay) from 2007-2018 were analysed ( $n=31,944$ ). Prevalence rates (%) of OB (BMI  $\geq 30$  kg/m<sup>2</sup>) and of OB classes (I BMI 30-34.99 kg/m<sup>2</sup>; II BMI 35-39.99 kg/m<sup>2</sup>; III BMI  $\geq 40$  kg/m<sup>2</sup>) from 2007 to 2018 were calculated based on reported weight and height at nDay and descriptively compared between the years and between European regions (WHO classification).

**Results:** Mean age of the participants was  $84.7 \pm 8.2$  years, 66.8% were female. Overall, 16.5% were obese. OB prevalence was 16.0% in 2007 and 17.8% in 2018 and ranged from 14.5% (2013, 2014) to 18.5% (2011) without a clear trend over time. Regarding European regions, OB prevalence was highest in central eastern (19.3%) and lowest in southern Europe (12.2%). Prevalence of OB class I ranged between 9.3 and 14.2%, and prevalence in OB class III was ~1% (see table).

**Methods:** We performed a randomized clinical trial in pediatric patients between 6-10 years old. Children signed in to follow an eight-week nutrition program in one of these three groups Standard diet group (SG), High protein diet group (HP) and high protein with calcium caseinate group (HPC). Variables were measured at baseline and every two weeks for a total of eight weeks. Resting energy expenditure (REE) and body composition was measured before and after dietary treatment. Weight, height and body mass index (BMI) were evaluated with its percentile evaluation considering CDC charts. Students *t*-test for paired samples and ANOVA test were used to determining statistical differences.

**Results:** A total of 56 pediatric patients were included, 53.6% were male. Body composition assessment showed statistical differences between groups in body composition variables Lean Mass percentage (LMP) and (Fat Mass Percentage) FMP at the end of the intervention: SG=  $69.29 \pm 4.68$ , HP:  $64.85 \pm 3.58$ , HPC:  $66.50 \pm 3.57$  ( $p = 0.004$ ) and SG:  $30.62 \pm 4.67$ , HP:  $35.14 \pm 3.58$ , HPC:  $33.5 \pm 3.57$  ( $p = 0.004$ ), respectively.

**Conclusion:** SG proved to be the most effective dietary intervention in pediatric patients. More research is needed to show the effectiveness of nutritional interventions in metabolic indicators and weight.

**Disclosure of Interest:** None declared.

### Nutritional assessment

#### P001

### POSITIVE EFFECTS OF BREAD ENRICHED WITH A-CYCLODEXTRIN OR A COMPOUND OF HYDROXYTYROSOL ENCAPSULATED IN A-CYCLODEXTRIN ON POSTPRANDIAL GLUCOSE, INSULIN AND APPETITE RESPONSES OF HEALTHY SUBJECTS.

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Obesity prevalence in European regions (2007-2018)

	South eastern (n=1,267)	Central eastern (n=8,575)	Western (n=16,651)	Southern (n=4,030)	Nordic (n=1,421)	Europe (total) (n=31,944)
All obesity classes (%)	18.2	19.3	16.3	12.2	12.5	16.5
Obesity class I (%)	14.2	13.8	12.0	9.3	10.6	12.2
Obesity class II (%)	3.2	4.1	3.3	2.3	1.4	3.3
Obesity class III (%)	0.8	1.4	1.0	0.7	0.5	1.0

**Conclusion:** Every sixth European NH-resident participating in nDay was obese with slight differences between European regions. No tendency towards an increasing OB prevalence was found between 2007 and 2018. More information is needed about characteristics and nutritional care of this specific group of NH-residents.

**Disclosure of Interest:** None declared.

#### PD-66

### EFFECTS OF A NUTRITIONAL INTERVENTION WITH CALCIUM CASEINATE ON BODY COMPOSITION IN CHILDREN WITH OBESITY

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**Rationale:** To assess the effect of three different nutrition intervention based on high-protein diets vs standard diet in body composition and diet adherence in scholar children with obesity. It is necessary to design more effective strategy for an optimal dietary intervention.

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**Rationale:** Attenuation of postprandial blood glucose and insulin levels is a beneficial health effect. Alpha-cyclodextrin (a-CD) is a dietary fiber known for its beneficial effects on the reduction of postprandial glycaemic responses. Hydroxytyrosol (HT) is a phenolic compound with antioxidant and antidiabetic effects. Enrichment of bread with a-CD or a compound of HT encapsulated in a-CD was performed to examine potential postprandial benefits.

**Methods:** Ten healthy normoglycemic adults participated in the study and were provided with either a solution of glucose (reference food, GS) or bread enriched with 5 g of a-CD (a-B) or bread with 5 g a-CD complexed with HT in molar ratio 1:1 (aH-B), with 1-week intervals in amounts that yielded 50 g of available carbohydrates. Venous blood samples were collected before consumption and at 30, 45, 60, 90, 120 and 180 min postprandially. Glucose and insulin responses as well as glycaemic index (GI) and subjective appetite ratings were evaluated.

**Results:** Ingestion of a-B and aH-B elicited lower incremental area under the curve (iAUC) for 120-min glycaemic response compared to the GS ( $P < 0.05$ ). A statistically significant difference in glucose values was reported 45 minutes after the consumption of aH-B compared to a-B ( $P < 0.05$ ). Both breads demonstrated a low GI. A significantly lower desire to eat and higher fullness were detected postprandially after a-B and aH-B consumption ( $P < 0.05$  compared to GS). No significant differences in insulin responses were reported among the two breads.

**Conclusion:** Enrichment of bread with a-CD or a compound of HT encapsulated in equal amount of a-CD induced similar effects on glucose and insulin responses and resulted to greater fullness ratings. The development of bread products which cause improved metabolic effects is of great importance for the promotion of public health.

**Disclosure of Interest:** None declared.

### P002

#### POSITIVE EFFECTS OF DAILY CONSUMPTION OF BISCUITS ENRICHED WITH LEGUME FLOURS ON THE RESULTS OF A 12-WEEK DIETARY INTERVENTION ON HEALTHY SUBJECTS WITH OVERWEIGHT/ OBESITY

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**Rationale:** Legumes, as low glycemic index foods with beneficial effects on human health, are a very promising ingredient for food enrichment. The aim of the present study was to investigate the effect of daily consumption of biscuits enriched with legume flours in the context of a dietary intervention aiming to weight loss.

**Methods:** Seventy apparently healthy volunteers with overweight/obesity (44 female, 26 male) participated in the study and were randomized into two groups regarding the snack they were receiving which was either wheat biscuits (control group) or legume-enriched biscuits (intervention group). Both groups were daily provided an isocaloric amount of biscuits for a 12-week period, as well as individualized guidance along with a weekly diet plan (daily caloric deficit 20%). A detailed clinical examination was performed and anthropometric characteristics and biochemical parameters were measured during the first and last session.

**Results:** Significant differences in weight loss were observed between the two groups after 12 weeks. Participants in the intervention group experienced greater weight loss compared to those in the control group ( $-6.6 \pm 0.43$  and  $-5.3 \pm 0.43$  respectively,  $P < 0.05$ ). Moreover in the first group a trend for higher reduction of body fat mass was observed ( $-4.9 \pm 0.38$  and  $-3.8 \pm 0.40$  respectively,  $P = 0.059$ ). No significant differences in biochemical markers or hormone levels were observed between the two groups, except for a trend for higher reduction in the leptin value in the intervention group ( $P = 0.066$ ).

**Conclusion:** Daily consumption of snacks fortified with legume flours as part of a balanced hypocaloric diet may contribute to better appetite management and therefore greater weight loss compared to the consumption of conventional wheat snacks. Legumes are a quality choice for food enrichment, as they improve their nutritional profile and eventually greater feelings of fullness and satiety may occur. Further clinical trials are needed to draw safe conclusions.

**Disclosure of Interest:** None declared.

### P003

#### CUTOFF VALUES OF REDUCED MUSCLE MASS IN CHINESE PATIENTS WITH HEAD AND NECK CANCER DURING RADIOTHERAPY

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**Rationale:** Reduced muscle mass is an essential criterion for nutrition assessment. Bioelectrical impedance analysis (BIA) is a simple and validated method to measure body composition. However, there is no cutoff values of reduced muscle mass in Asian patients using BIA. This study

aimed to find the cutoff values of reduced muscle mass in Chinese patients with head and neck cancer (HNC) during radiotherapy (RT).

**Methods:** In this prospective longitudinal study, patients with HNC during RT from March 2017 to December 2018 in a cancer hospital in Beijing were enrolled. In addition to socio-demographic data and disease treatment related data, BIA was used to measure the body composition of patients before, during and at the end of radiotherapy respectively, including fat free mass index (FFMI) and appendicular skeletal muscle index (ASMI). Overall survival (OS) was followed up by telephone call. Survival analysis was performed using the Survival package in R software. Standardized Log Rank Statistics was used to find the optimal cutoff values of FFMI and ASMI, and Cox regression analysis was used to analyze the influencing factors of patients' prognosis.

**Results:** A total of 345 patients were enrolled. After excluding missing patients, 316 patients were included in the analysis. The median follow-up time was 34.4 months (24.3–44.0 months) and 241 patients (76.3%) survived, with 3-year survival rates of 75.0%. The results showed that the cutoff value of FFMI before radiotherapy was  $15.2 \text{ kg/m}^2$  (male, Log Rank Statistic=2.399,  $P=0.009$ ) and  $13.5 \text{ kg/m}^2$  (female, Log Rank Statistic=2.344,  $P=0.008$ ). The cutoff value of ASMI were  $6.6 \text{ kg/m}^2$  (male, Log Rank Statistic=2.508,  $P=0.007$ ) and  $5.2 \text{ kg/m}^2$  (female, Log Rank Statistic=2.6699,  $P=0.004$ ). Multivariate Cox stepwise regression analysis showed that after controlling for covariates such as sex, age, and tumor stage, low FFMI and low ASMI before RT were independent risk factors for OS ( $HR=3.071$ , 95%CI: 1.567–6.019,  $P=0.001$ ;  $HR=2.398$ , 95%CI: 1.272–4.521,  $P=0.001$ ).

**Conclusion:** In this study, the cutoff values of FFMI and ASMI in patients with HNC receiving RT was preliminarily explored in combination with the OS. And the values were lower than the international recommended level. Therefore, further multi-disease and multi-center studies were needed to verify the clinical significance of the cutoff values.

**Disclosure of Interest:** None declared.

### P004

#### COMPARATIVE OF HAND GRIP STRENGTH AND LEG STRENGTH BETWEEN TWO DIFFERENT GROUPS VS CONTROL

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**Rationale:** Sarcopenia is defined by a low muscle strength and low muscle quantity and quality. Its presence can affect quality of life and increase the risk of worst evolution of a disease.

The objective of this study was to assess the muscle strength and efficiency of the muscle with two different procedures (handgrip strength test and leg strength test) in two different groups of patients compared to a control group.

**Methods:** Prospective study performed in Complejo Asistencial Universitario de León (Spain) from May 2019 to April 2021. A control group (GC) included healthy population (female healthcare professionals under 40). Female patients that had a medical appointment in the Endocrinology and Nutrition department (Bone metabolism and obesity clinics) were offered to participate in the study. All patients signed a written informed consent and the study was approved by our Ethics Committee (Number 19142). Patients were split in two groups according to the main disease: low bone density (femoral neck T score  $< -1.0$ ), obesity ( $\text{BMI} > 35 \text{ kg/m}^2$ ). The study included electrical bioimpedance (Tanita MC780; Tanita Corp, Tokyo, Japan), hand grip strength (HGS) in the dominant hand (Dynx, Akern) and leg strength (LS), stability and standing speed using a Tanita platform BM-220 (Tanita Corp, Tokyo, Japan). The indexes between fat free mass (FFM) and HGS and the values obtained with Tanita BM-220 were calculated. The statistical analysis included ANOVA Tests.

**Results:** 117 female patients were included, 45 patients were included in the low bone density group, 30 in the obesity group, and 43 in the control group. Characteristics and body composition and the comparison between HGS, LS, stability, standing power and the indexes with FFM of the three groups are detailed in table 1.

**Table 1.**  
Body composition, strength tests and strength index.

	Low bone density (n= 45)	Obesity (n=30)	Control Group (n=43)
*Age (years)	71.9 (SD 13.7)	44.1 (SD 11.2)	30.8 (SD 5.7)
*Weight (kg)	58.0 (SD 10.3)	126.3 (SD 21.0)	58.8 (SD 9.6)
*BMI (kg/m <sup>2</sup> )	25.5 (SD 3.8)	47.6 (SD 6.8)	21.7 (SD 3.4)
*FFM (kg)	37.9 (SD 4.9)	65.8 (SD 9.1)	43.4 (SD 4.1)
*FM/FFM	0.53 (SD 0.14)	0.91 (SD 0.11)	0.35 (SD 0.11)
*ASM (kg)	15.1 (SD 2.1)	26.4 (SD 4.4)	17.4 (SD 1.6)
*ASMI (kg/m <sup>2</sup> )	6.6 (SD 0.6)	10.0 (SD 1.3)	6.4 (SD 0.5)
*HGS (kg)	17.2 (SD 5.1)	24.0 (SD 6.1)	25.5 (SD 4.3)
*Leg Strength	1.12 (SD 0.09)	1.13 (SD 0.07)	1.39 (SD 0.14)
*Stability	41.11 (SD 13.12)	48.59 (SD 10.06)	54.00 (SD 5.62)
*Standing power (kgf/seg/kg)	6.52 (SD 2.06)	6.63 (SD 1.39)	11.55 (SD 1.84)
*HGS / FFM	0.45 (SD 0.13)	0.37 (SD 0.09)	0.59 (SD 0.07)
*Leg Strength / FFM	0.03 (SD 0.01)	0.02 (SD 0.00)	0.03 (SD 0.00)
*Stability / FFM	1.10 (SD 0.35)	0.75 (SD 0.16)	1.26 (SD 0.15)
*Standing speed / FFM	0.17 (SD 0.54)	0.10 (SD 0.03)	0.27 (SD 0.05)

\*p<0.001

BMI: Body mass index; FM: Fat mass; FFM: Fat free mass; HGS: Handgrip Strength; ASM: appendicular muscle mass; ASMI: appendicular skeletal muscle mass index

**Conclusion:** People with obesity had a higher fat free mass and appendicular skeletal muscle mass index but the appears to be less efficient when compared to people with low bone density group who are supposed to be more fragile, and also compared to the control group.

**Disclosure of Interest:** None declared.

**P005**

**VALIDATION OF GLIM CRITERIA AS A METHOD FOR NUTRITIONAL DIAGNOSIS IN DIFFERENT AGE GROUPS IN THE ROUTINE CLINICAL PRACTICE OF A THIRD-LEVEL HOSPITAL**

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**Rationale:** Estimate the degrees of agreement in the nutritional diagnosis between the criteria proposed by the Global Leadership Initiative on Malnutrition (GLIM), the Subjective Global Assessment (SGA) and the 10<sup>th</sup> Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) based on the Nutritional Status Assessment (NSA), with the objective of validating its use as a method for nutritional diagnosis.

**Methods:** A prospective, cross-sectional, observational study in admitted adult patients from the Hospital Universitario de La Paz, assessed through a nutrition consultation between August 2019 and November 2020. The nutritional status was evaluated with GLIM, SGA and NSA criteria. The degrees of agreement between the diagnoses were calculated through the Cohen Kappa Coefficient (k).

**Results:** A total of 1037 patients were evaluated, with an average age of 64 years ± 17.22, 45.4% women. A 57.6% of the sample (a total of 596) were under 70, and the remaining 42.5% were over 70 years old (411 patients). The malnutrition diagnosis in the under 70's group, of any seriousness, under GLIM criteria was of 63.1%, SGA 64% y ICD-10 62.4%. Comparing GLIM criteria with SGA, a good correlation is evidenced, with a coincidence of 92% in the diagnosis (k=0.82 p<0.001). Equally, the GLIM criteria present a good agreement with ICD-10 (k=0.94 p<0.001), classifying evenly 97% of the patients. The malnutrition diagnosis in the over 70's group under GLIM criteria was of 63.6%, SGA 65.8%, ICD-10 62.5%. GLIM criteria in

people over 70 years old present a good correlation with SGA (k=0.80 p<0.001), with an identical diagnosis in 91% of the cases. The degrees of agreement between GLIM and ICD-10 are very high (k= 0.91; p<0.001), with a 96% of coincidence in the diagnosis.

**Conclusion:** The degrees of agreement of GLIM criteria comparing them with the SGA and ICD-10 in the diagnosis of nutritional status in hospitalized patients, is very good both in age groups of over 70 and under 70 years. Therefore, this diagnosis method could be used in the standard clinical practice of the Nutrition Clinic Units of third-level hospitals.

**Disclosure of Interest:** None declared.

**P006**

**CHANGES IN THE ENERGY EXPENDITURES OF PATIENTS AT THE STAGE OF EARLY NEUROREHABILITATION DEPENDING ON THE TYPE OF PHYSICAL ACTIVITY**

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**Rationale:** Physical rehabilitation plays an important role in recovery from severe brain damage. However, the restoration of motor activity is limited by endurance (energy-plastic capabilities). Thus, the patient's nutritional and metabolic status fundamentally affects the type and volume of rehabilitation measures performed.

**Methods:** 38 patients at the stage of early neurorehabilitation in the ICU, 28 men and 8 women, average age 52±15 years. All patients underwent indirect calorimetry at rest and under various types of stress (depending on the rehabilitation program being carried out): articular gymnastics, landing in the "chair" position and landing on the bed with lowered legs (with minimal support).

**Results:** Increase in energy expenditure during different types of physical activity.

However, when recalculated considering one and two 30-minute sessions, the daily requirement increases by 7,9% to the maximum.

**Conclusion:** The highest patients' energy expenditure at the stage of early neurorehabilitation is observed during articular gymnastics with pain and

	articular gymnastics (no pain and spastic)	articular gymnastics (with pain and spastic)	"chair" position	landing with lowered legs
average	+25,9% (+4,5±5,7kcal/kg)	+36,5% (+3,2±17,9kcal/kg)	+34,2% (+8,5±7,3kcal/kg)	+27,9% (+4,7±6,5kcal/kg)
range (min/max)	-8,3% / +100,0%	-39,0% / +214,3%	-3,4% / +76,9%	-13,3% / +92,8%

spastic syndrome. When conducting courses of passive-active articular gymnastics to assess energy needs, one should consider the presence of pain and spastic syndromes because of strong individual dependence. The program of early physical neurorehabilitation requires an individual approach to assessing energy needs, considering the patient's condition, the type of physical activity and the duration of the sessions.

**Disclosure of Interest:** None declared.

## P007

### RELATIONSHIP BETWEEN SWALLOW QUALITY OF LIFE QUESTIONNAIRE AND SARCOPENIA AND FRAGILITY IN GERIATRIC PATIENTS

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**Rationale:** Swallowing disorders are common in older adults, and it must be evaluated. As, sarcopenia is characterized by loss of muscle mass, strength and performance, it may cause sarcopenic dysphagia. The aim of this study is to evaluate the relationship between swallow quality of life questionnaire (Swal-qol) and sarcopenia.

**Methods:** Swal-qol was applied to the patients who were admitted to geriatrics outpatient clinic. Sarcopenia was diagnosed according to EGSWOP-2 criteria.

**Results:** A total of 132 patients (65.7%, female) were included in the study. The patients were divided into sarcopenic (n=9) and non-sarcopenic groups (n=123). The rate of sarcopenia was 6.8% (n:9) consistent with the community. The relationship between Swal-qol's total score and 11 domains with sarcopenia and frailty was evaluated. Swal-qol total ( $p<0.034$ ), burden ( $p<0.002$ ), desire ( $p<0.029$ ), symptom frequency/bother ( $p<0.010$ ), food selection ( $p<0.008$ ), communication ( $p<0.008$ ), fear ( $p<0.001$ ), mental health ( $p<0.003$ ), social ( $p<0.038$ ) scores are significantly lower in sarcopenic patients.

**Table-1.**

The frequency of Swal-qol domains between sarcopenic and non-sarcopenic group

	Sarcopenic (n=9)*	Non-sarcopenic (n=123)*	P
SWAL-QoL Domains			
Burden	93.7 (21.8)	100 (0)	<b>0.002</b>
Desire	91.6 (52)	100 (8.3)	<b>0.029</b>
Duration	93.7 (43.7)	100 (12.5)	0.065
Symptom frequency/bother	86.6 (32.1)	100 (8.9)	<b>0.010</b>
Food selection	87.5 (56.2)	100 (0)	<b>0.008</b>
Communication	100 (25)	100 (0)	<b>0.008</b>
Fear	87.5 (42.1)	100 (0)	<b>0.001</b>
Mental health	97.5 (26.2)	100 (0)	<b>0.003</b>
Social	100 (23.7)	100 (0)	<b>0.038</b>
Fatigue	58.3 (56.2)	91.6 (41.6)	0.141
Sleep	68.7 (71.8)	100 (50)	0.285
SWAL-QoL-total	79.4 (31.9)	94.4 (13.6)	<b>0.034</b>

\*Median (IQR)

**Conclusion:** We found a close relationship between swal-qol and sarcopenia in this study. Swal-qol may be routinely assessed in geriatric patients.

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**Disclosure of Interest:** None declared.

## P008

### ACCURACY OF BIA EQUATIONS TO MEASURE BODY COMPOSITION IN A COHORT OF 2134 OBESE PATIENTS

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**Rationale:** Measuring body composition is an important issue to phenotype obese patients and to follow the nutritional care efficiency. Bioimpedance (BIA) is a simple and rapid technique. However, validity of BIA in patients with obesity remains controversial. Thus, we aimed to evaluate the validity of several BIA equations to assess body composition in a large cohort of obese patients by using dual X ray absorptiometry (DXA) as reference.

**Methods:** Nine BIA equations (Deurenberg et al, Kyle et al, Sun et al, Bedogni et al, Roubenoff et al, Lucaski et al, Lohman et al, Kushner et al, Scalfi et al) have been retrospectively applied on electrical data measured by BIA in obese patients with BMI equal or higher than 30 kg/m<sup>2</sup> and Results were compared to DXA-derived fat mass (FM) and fat-free mass (FFM). BIA (Bodystat Quadscan 4000) and DXA (Lunar Prodigy Advance) were done the same day after an overnight fasting. Results were compared with Bland-Altman method and Pearson correlation. We also calculated the accuracy defined as the percentage of patients with DXA-BIA difference within  $\pm 10\%$  of DXA measures for FFM and FM.

**Results:** Data from 2134 patients with class I and II obesity (ob1/2, n=1452, 47.4  $\pm$  14.2 y ; 35.0  $\pm$  2.7 kg.m<sup>-2</sup>) and class III obesity (ob3, n=682, 48.2  $\pm$  13.9 y ; 44.1  $\pm$  3.5 kg.m<sup>-2</sup>) were analyzed. The best results to evaluate FFM both in ob1/2 and ob3 groups were obtained with Roubenoff's equation: Bland Altman bias at -1.96 and -0.82 kg, Pearson correlation r at 0.93 and 0.87, accuracy at 75.7% and 83.3%, respectively. However, limits of agreements at 95% were high: [-9.42; 5.49 kg] and [-8.16; 6.52 kg]. For FM evaluation, Roubenoff's equation also showed best results for ob1/2 group (bias at -1.17 kg; correlation r at 0.89 and accuracy at 79.1%) but not for ob3 group. In this latter group, Deurenberg's equation exhibited the best results (bias at 2.09 kg; correlation r at 0.81 and accuracy at 76.8%). However, limits of agreements remained high.

**Conclusion:** In obese patients, Roubenoff BIA equation provides the best Results to assess fat free mass, even if limits of agreements remain high.

**Disclosure of Interest:** None declared.

## P009

### COMPARATIVE STUDY OF R-MAPP VERSUS CLASSIC NUTRITIONAL ASSESSMENT TESTS

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**Rationale:** ESPEN has recently proposed Remote-Malnutrition APP (R-MAPP) as a simple remote nutritional screening tool for telemedicine processes. It consists: MUST for identifying nutritional risk and SARC-F for loss of muscle mass and function (SARC-F). The

objective of this study is to compare the Results of the new R-MAPP against nutritional assessment tools in patients hospitalized for hip fracture.

**Methods:** The R-MAPP assessment is carried out first by telephone in patients admitted for hip fracture in the first 48 hours of hospital admission. The caregiver was the person who answered the telephone questions for the most part. Subsequently, on the same day, a face-to-face nutritional assessment was performed using a complete MNA, GLIM, bioimpedance, referenced weight and height, arm and calf circumferences, triceps crease, and hand grip of the dominant hand. In addition, blood analysis data were collected at hospital admission. Statistical tests: Chi square, Kappa index, Spearman correlation and multiple logistic regression. The study was approved by the local ethics committee. TA 43-B-2021.

**Results:** 1- R-MAPP vs GLIM: Sensitivity 53.3%, Specificity 54.3%, Kappa index 0.058 (p: 0.6). 2- R-MAPP vs MNA: Spearman correlation (Rho: -0.55); Multiple logistic regression OR 0.712 (95% CI: 0.56-0.9) adjusted for age, sex and BMI. 3- R-MAPP vs Hand Grip: Spearman correlation (Rho: -0.53). 4- R-MAPP vs plasma albumin: Spearman correlation (Rho: -0.45). 5-R-MAPP vs Free fat mass index (FFMI): Spearman correlation (Rho: -0.02). 6-R-MAPP vs Body mass index (BMI): Spearman correlation (Rho: 0.018).

**Conclusion:** Conclusions: R-MAPP in patients with acute hospital admission for hip fracture is related to MNA, (specific nutritional assessment test for the elderly) and Hand grip (functional capacity). But it is poorly related to GLIM, which takes into account long-term nutritional parameters such as FFMI or BMI.

**Disclosure of Interest:** None declared.

## P010

### PROGNOSTIC RISK STRATIFICATION OF INFLAMMATORY MARKERS RELATED TO C-REACTIVE PROTEIN AND ALBUMIN IN PATIENTS WITH ADVANCED CANCER IN PALLIATIVE CARE

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**Rationale:** The prognostic significance of systemic inflammation markers has been regarded as an outcome predictor in patients with advanced cancer. However, few studies have explored its prognostic role according to different thresholds. Thus, this study aimed to evaluate the prognostic value of C-reactive protein (CRP), albumin, CRP/albumin ratio (CAR), and modified Glasgow Prognostic Score (mGPS) according to different thresholds in patients with cancer in palliative care.

**Methods:** Prospective cohort study that includes patients evaluated at the Palliative Care Unit of the National Cancer Institute (Brazil) between May 2016 and March 2020.

The thresholds analyzed were CRP: <5 vs. 5-10 vs. >10mg/L, albumin: <2.4 vs. 2.4-2.9 vs. 3.0-3.5 vs. >3.5g/dL, CAR: <1.2 vs. 1.2-2.0 vs. >2.0, and mGPS: 0 vs. 1 vs. 2. Kaplan-Meier curves and Cox proportional hazard models were used to evaluate prognostic value and C-statistic was used to test the predictive accuracy of these thresholds within 90 days.

**Results:** A total of 1,877 patients (mean age: 62 years; female: 57.5%) were included. The median of overall survival was 51 (interquartile range: 19-124) days and decreased progressively according to the severity of the thresholds evaluated. According to Cox's proportional hazard models, inflammatory markers can predict mortality within 90 days, with hazard ratios increasing as the thresholds worsen (CRP: 1.74 to 2.30; albumin: 1.77 to 2.60; CAR: 1.47 to 2.69; mGPS: 1.74 to 2.79). In addition, all inflammatory markers evaluated showed good discriminatory accuracy for predict death (C-statistic >0.70), with CAR as the best parameter (C-statistic: 0.80).

**Conclusion:** Our Results suggest that the inflammatory markers related to C-reactive protein and albumin can be used as clinically meaningful biomarkers to stratify patients with advanced cancer in palliative care into different prognosis-related risk groups.

**Disclosure of Interest:** None declared.

## P011

### ASSESSMENT OF BODY COMPOSITION IN PATIENTS WITH CROHN'S DISEASE USING BIOELECTRICAL IMPEDANCE ANALYSIS

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**Rationale:** Crohn's disease (CD) is chronic inflammation of the gastrointestinal tract. The precise body composition of patients with CD who receive newly developed medical treatments, such as biologics, is still unclear. Therefore, we aimed to assess the body composition in CD patients recently undergoing treatment to clarify their nutritional status and mechanisms of any nutritional disorders.

**Methods:** 73 ambulatory participants with CD and 52 healthy controls (HC) were enrolled between December 2019 and March 2020. Anthropometric measurements including grip strength and body composition were recorded for both groups. Body composition was measured using the bioelectrical impedance analysis (BIA) method.

**Results:** Although physical measurements such as body weight, body mass index, and grip strength in the CD group were similar to those in the control group, muscle mass (MS) and skeletal muscle mass index (SMI) in the CD group were significantly decreased in both women (CD:HC, MS:35.05±3.53kg vs 38.04±3.51kg, p=0.04, SMI:6.15±0.63kg/m<sup>2</sup> vs 6.35±0.53kg/m<sup>2</sup>, p0.03) and men (CD:HC,MS:49.71±5.48 kg vs 52.72 ±4.99 kg, p=0.02, SMI: 7.73±0.66kg/m<sup>2</sup> vs 8.13±0.55kg/m<sup>2</sup>, p=0.000) compared to that in the control group participants. In the CD group, MS and SMI were correlated with both phase angle and extracellular water ratio (EWR) in men, whereas MS and SMI were correlated only with phase angle in women.

**Conclusion:** Body composition must be measured to evaluate the nutritional status of ambulatory patients with CD. Since the phase angle and EWR measured by the BIA method are thought to reflect the nutritional status, the decrease in MS and SMI in the CD group might be related to a nutritional disturbance.

**Disclosure of Interest:** None declared.

## P012

### PERFORMANCE OF SURROGATE METHODS IN ESTIMATION OF MUSCLE MASS IN CHRONIC KIDNEY DISEASE

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**Rationale:** Patients with chronic kidney disease (CKD) are vulnerable to loss of muscle mass due to metabolic derangements. Reference methods for body composition evaluation such as dual energy X-ray absorptiometry (DXA) are usually unfeasible in clinical setting. The aim of this study was to evaluate the accuracy of predictive equations in estimating fat free mass (FFM) and appendicular FFM (AFFM), compared to DXA, in non-dialysis-dependent (NDD), hemodialysis (HD), peritoneal dialysis (PD) and kidney transplant (KTx) CKD patients

**Methods:** We performed a cross-sectional and prospective study (10±2 mo) in 83 NDD, 81 HD, 23 PD and 79 KTx adult CKD patients. FFM and AFFM were evaluated by DXA and by bioelectrical impedance analyze (BIA)

(Body Composition Monitor, FMC) (Sergi, Kyle, Janssen and MacDonald equations) and anthropometry (Hume, Lee, Tian and Noori equations) predictive equations. Body composition and low muscle mass diagnosis was assessed by DXA (Hologic, GE) analysis. Intra-class correlation coefficient (ICC), Bland-Altman plots with limits of agreement and multiply regression analysis evaluated performance of equations. Linear regression analysis was performed for bias assessment between measured and estimated values. ROC curves and Kappa coefficient evaluated reproducibility of equations for low muscle mass diagnosis. Binary logistic regression analysis was performed to estimate the odds ratio (OR) for low muscle mass. OR adjusted by sex, age and weight was also calculated ( $p \leq 0.05$ ).

**Results:** In total sample (48±10 years old) and in each CKD group, the predictive equations presenting the best accuracy were AFFM<sub>Sergi</sub> (men,  $n=137$ ; ICC=0.91, 95%CI=0.79-0.96, bias=1.11kg; women,  $n=129$ ; ICC=0.94, 95%CI=0.92-0.96, bias=-0.28kg) and AFFM<sub>Kyle</sub> (men: ICC=0.93, 95%CI=0.89-0.95, bias=-0.73kg; women: ICC=0.93, 95%CI=0.81-0.96, bias=-0.83kg). AFFM<sub>Sergi</sub> presented  $R^2=0.91$  and SEE=1.58kg and AFFM<sub>Kyle</sub> presented  $R^2=0.91$  and SEE=1.57kg, in total sample. The reproducibility and inter-agreement to diagnose low muscle mass by AFFM<sub>Sergi</sub> (men, kappa = 0.68, AUC = 0.83; women, kappa = 0.65, AUC = 0.85) was better than by AFFM<sub>Kyle</sub> (men, kappa = 0.58, AUC = 0.64; women, kappa = 0.34, AUC = 0.82). Bias for both predictive equations were affected by sex, impedance ratio, total body water, AFFM and fat mass (AFFM<sub>Sergi</sub>  $r^2=0.95$ ; AFFM<sub>Kyle</sub>  $r^2=0.94$ ). None of the prediction equations was able to accurately predict changes in AFFM and FFM, with all ICC lower than 0.5. AFFM<sub>Sergi</sub> (men: ICC=0.36, 95%CI=-0.19-0.67, bias=2.09kg; women: ICC=0.17, 95%CI=-0.11-0.50, bias=3.47=kg; total sample:  $R^2=0.14$  and SEE=1.50kg) and AFFM<sub>Kyle</sub> (men: ICC=0.34, 95%CI=-0.19-0.65, bias=2.43kg; women: ICC=0.15, 95%CI=-0.08-0.48, bias=2.43kg; total sample:  $R^2=0.13$  and SEE=1.51) also failed. OR for low muscle mass in adjusted analysis were 2.0 (95%CI=1.6-2.6) and 1.8 (95%CI=1.5-2.1) for total fat mass and fat mass of the trunk. For HD, OR=5.15 and for Ktx, OR=3.15, in comparison with NDD.

**Conclusion:** AFFM<sub>Sergi</sub> presented the best performance to assess muscle mass including evaluation of low muscle mass diagnosis. However, assessments of changes in body composition were biased, mainly due to variations in fluid status and gain/loss in muscle mass, limiting its applicability for longitudinal evaluations. Adiposity is a risk factor for low muscle mass in CKD, HD and KTx patients were at higher risk to develop low muscle mass.

**Disclosure of Interest:** None declared.

### P013

#### COMPARISON OF STANDARD TRAINING AND DIFFERENT TRAINING METHODS IN PATIENTS USING ORAL NUTRITIONAL SUPPLEMENTS DUE TO MALNUTRITION AND EVALUATION OF ITS EFFECT ON PATIENT COMPLIANCE

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**Rationale:** It is a well-known fact that patients should be adequately educated to increase compliance with Oral Nutrition Supplements (ONS). The purpose of our study is to investigate the effect of different education methods on compliance.

**Methods:** Thirty-five patients were included in the study. Isocaloric standard ONS, which was preferred and tasted before, was started. Patients were randomized and divided into two groups. The first group was educated orally, and the second group was educated orally and given written information. Patients were told to put the written educational material in a visible place. Sixty ONS was given to all patients. In order to determine compliance to ONS, it was asked to bring the empty boxes or lids one month after the beginning. Questions were asked about the education after one month later, and the side effects were recorded.

**Results:** Median age was 81(82-94) and 63% were female. There were no differences in body mass index, mini nutritional assessment score, and handgrip strength between the two groups. The median rate of ONS consumed within one month was 61(1-100). Only 20% of the patients consumed all the ONS given. The amount of drunk ONS of the second group, which was educated by orally and written material, was significantly higher than the first group [ 56(1-60) vs. 33 (1-60)  $p=0.028$ , respectively]. While the incidence of side effects was 4% in the second group, this incidence increased to 17% in the other group ( $p=0.002$ ). The number of ONS consumed in one month was significantly lower in those who have side effects. We noticed that the most common mistake (48%) was to drink ONS for a short time, such as 5-10 minutes, and 65% of these patients also had side effects.

**Conclusion:** Complying with ONS in older malnourished patients can be increased by giving the proper education before the product is started.

**Disclosure of Interest:** None declared.

### P014

#### MALNUTRITION PREVALENCE USING GLIM AND SUBJECTIVE GLOBAL ASSESSMENT IN ARGENTINIAN INSTITUTIONS WITH NUTRITIONAL SUPPORT UNITS

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**Rationale:** Hospital malnutrition is common in acute general hospitals and has a very large impact on clinical outcomes. A timely and accurate diagnosis will allow prescribing a proper nutritional support treatment. So, it is necessary to use validated nutritional assessment tools and to know the exact prevalence of malnutrition in our institutions. Subjective global assessment (SGA) is a worldwide validated tool and the Global Leadership Initiative on Malnutrition (GLIM) is a recently designed tool (2019), that impress being more accurate and practical. This work aims to assess the prevalence of malnutrition in Argentinian institutions with Nutritional Support Units (NSU).

**Methods:** Argentinian NSU carried out this observational study. Were included patients who had been evaluated by an NSU team during the period March-April 2021, using screening tool NRS2002, and nutritional assessment by SGA and modified GLIM (without muscle mass assessment). The information collected was stored in a database, results are expressed in average, standard deviation, and percentage. All statistical analyzes were performed in the SPSS-IBM® 24 program. We considered a difference to be significant when the  $\alpha$  risk was 5% ( $P=0.05$ ).

**Results:** During the study period, a total of 161 patients have been evaluated by NSU. Table 1-A shows characteristics of patients. 77% (124) of these patients were at nutritional risk using NRS 2002 screening tool. All the patients were evaluated through SGA and modified GLIM, and malnutrition was SGA B+C 66.5% and GLIM 63.4%.

Combining GLIM malnutrition "YES" and SGA "B+C", 52.8% (85) patients were malnourished, and 27.3% (44) present a severe form of malnutrition (see Table 1-B). When comparison of malnourished and non-malnourished patients, we found statistical differences in weight, BMI, and BMI categories. If we look at the Results of NRS 2002 between malnourished and non-malnourished patients, a statistically significant difference was observed, presenting a much higher value in malnourished patients. We can infer a good correlation between this nutritional risk assessment tool and the subsequent diagnosis of malnutrition. Also, the presence of oncological diseases was statistically more frequent in the malnourished patients (see Table 1-A).

**Conclusion:** Malnutrition has a high prevalence in Argentinian institutions. The combining use of GLIM and SGA helps to improve the diagnosis of malnourished patients among general ward and ICU

TABLE 1-A	N 161	MALNOURISH (SGA B+C and GLIM YES) n 85	NON-MALNOURISH (SGA A + GLIM NO) n 39	P
AGE (years)	65,5+/- 16	64,5+/-16,9	61,4+/-15,1	0.033
GENDER	M 58,4% : F 41,6%	M 56,5% : F 43,5%	M 61,5% : F 38,5%	0.601
PATOLOGY				
MEDICAL	72,0%	75,3%	69,2%	0.477
SURGICAL	20,5%	20,0%	17,9%	0.789
NEUROLOGICAL	6,2%	4,7%	10,3%	0.248
TRAUMA	1,2%	-	2,6%	0.137
ONCOLOGIC PATIENT	21,7%	<b>27,1%</b>	<b>10,3%</b>	<b>0.0362</b>
WARD				
GENERAL	52,8%	72,9%	82,1%	0.268
ICU	47,2%	27,9%	17,9%	0.232
HEIGHT (cm)	166,4+/-8,7	167,7+/-9,2	166,6+/-9,9	0.547
WEIGHT (Kg)	69,9+/-18,2	<b>65,0+/-15,9</b>	<b>86,2+/-18,5</b>	<b>&lt;0.0001</b>
BMI	25,3+/-6,9	<b>22,9+/-4,4</b>	<b>31,5+/-9,1</b>	<b>&lt;0.0001</b>
BMI CATEGORIES				
Underweight	10,6%	20,0%	-	0.0027
Normal	42,9%	<b>57,6%</b>	15,4%	<b>&lt;0.0001</b>
Overweight	31,7%	18,8%	46,2%	<b>0.0016</b>
Obese	14,9%	3,5%	38,5%	<b>&lt;0.0001</b>
NRS 2002	3,7+/-1,3	4,2+/-1,1	2,8+/-1,4	<b>&lt;0.0001</b>
<b>TABLE 1-B</b>		<b>SGA B+C</b>		Total n
		YES	NO	
GLIM MALNUTRITION	YES	85 (52,8%)	17	102
	NO	20	39 (24,2%)	59
	Total n	105	56	<b>161</b>
		<b>SGA C</b>		Total n
GLIM SEVERLY MALNOURISH	YES	44 (27,3%)	8	52
	NO	14	19	33
	TOTAL	58	27	<b>85</b>

populations. Perhaps using full GLIM criteria will allow a better match between SGA and GLIM for diagnosis and perhaps a more precise severity of malnutrition diagnosis.

**Disclosure of Interest:** None declared.

## P015

### CUT-OFF VALUES FOR THE ULTRASONOGRAPHIC ASSESSMENT OF MUSCLE MASS FOR THE EVALUATION OF SARCOPENIA IN OLDER ADULTS

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**Rationale:** The use of muscle ultrasound (US) is a trending method in clinical practice. It's reliable and valid for the assessment of muscle size in older adults.<sup>1</sup> The aim of the study is to define muscle US cut-off values for the evaluation of sarcopenia in older outpatients.

**Methods:** A total of 400 patients (≥65 years) applied to geriatric outpatient clinic were assessed and 312 of them (64.5%, female) were involved. Comprehensive geriatric assessment (including frailty status), anthropometric measurements and handgrip strength (HGS) were evaluated. Rectus femoris muscle cross-sectional area (RF-CSA) was measured and cut-off values that predict low muscle strength were determined.

#### Table-1:

Cut-off values for RF-CSA, RF-CSA/BMI and RF-CSA/HEIGHT<sup>2</sup>

Parameters	AUC (95% CI)	Cutoff	Sensitivity	Specificity	PPV	NPV	P-value
RF-CSA F							
Female	0.741 (0.674-0.801)	≤5.66	88.5	48.1	57.9	83.9	<0.001
Male	0.737 (0.643-0.818)	≤6.96	80.4	57.4	58.7	79.5	<0.001
RF-CSA/BMI							
Female	0.677 (0.606-0.742)	≤0.137	59.8	73.1	64.2	69.3	<0.001
Male	0.689 (0.592-0.775)	≤0.251	75.6	55.7	55.7	75.6	<0.001
RF-CSA/HEIGHT <sup>2</sup>							
Female	0.721 (0.653-0.783)	≤2.140	69	63	60	71.6	<0.001
Male	0.692 (0.550-0.777)	≤2.457	73.9	55.7	55.7	73.9	<0.001

**Results:** The median age was 72 (min-max, 65-93), 64.5 % were female, and 43.8 % (n= 137) had low HGS. 25.2% and 23.3% of patients were pre-frail and frail, respectively according to Clinical Frailty Scale. RF-CSA had a good correlation with HGS (r:0.578, p<0.001). Cut-off values to predict low HGS for RF-CSA, body mass index (BMI) adjusted RF-CSA and height square adjusted RF-CSA are given in Table-1.

Abbreviation: RF-CSA, rectus femoris cross-sectional area; BMI, body mass index (kg/m<sup>2</sup>); AUC, area under curve; PPV, positive predictive value; NPV, negative predictive value

**Conclusion:** The cut-off values for muscle US for the assessment of muscle mass as a part of the sarcopenia evaluation in clinical practice to guide for future studies are defined.

#### References:

Cruz-Jentoft AJ, Bahat G, Bauer J, et al. Sarcopenia: revised European consensus on definition and diagnosis. *Age Ageing*. 2019; 48(1): 16-31.

**Disclosure of Interest:** None declared.

## P017

### NUTRITIONAL STATUS AND ITS IMPACT ON PATIENTS HOSPITALIZED FOR COVID-19

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**Rationale:** During COVID-19 infection, undernutrition appears to be a prognostic factor for morbidity and mortality. The objectives were to study the nutritional status of patients admitted with COVID-19 on admission and its evolution until discharge, ii) to compare patients who lost more or less than 5% of their body weight, iii) to study the factors associated with weight loss over 5% during hospitalization and length of stay.

**Methods:** Patients admitted to the COVID-19 hospitalization units, acute care (except intensive care) and rehabilitation from February to May 2020 were included. Socio-demographic, clinical, radiological, biological (serum albumin, C-reactive protein [CRP]), nutritional (body mass index [BMI], weight at admission and at the end of hospitalization) and nutritional care (food enrichment [FE], oral nutritional supplement [ONS], enteral [EN] and parenteral nutrition [PN]) data were collected. Nutrition status was defined according to French Guidelines. Statistical analyses included Student's t-test, Chi2 test, Kaplan-Meier test and multivariate regression. Results are expressed as median (interquartile range).

**Results:** Among the 127 hospitalized patients, 58 patients with weight at admission and discharge were included with a sex ratio of 1, an age of 76.0 years (67.0–87.0) and a BMI of 25.9 kg/m<sup>2</sup> (22.6–29.2). Serum albumin was decreased at 30.3 g/l (27.4–35.4) in inflammatory context with CRP at 57.0 mg/l (27.8–98.0). Undernutrition was found in 32.8% of cases at admission and increased to 49.1% at discharge (p=0.07). During hospitalization FE was prescribed in 59.3%, ONS in 61.1% (2/day), EN in 8.8% and PN in 1.8%. FE was more prescribed in case of weight loss over 5% (86.7% vs. 51.3%; p=0.03). Nevertheless, the other nutritional support did not differ between the two groups. Patients with a weight loss of over 5% during hospitalization were more often men (73.3% vs. 41.9%; p=0.04), had a higher admission weight (80.0 kg vs. 65.8 kg; p=0.019) and a longer duration of hospitalization in acute care (13.0 d vs. 9.0 d; p=0.03). Weight loss over 5% was positively associated with an increased risk of higher length of stay in acute care (HR = 1.70 [95%CI: 1.004–2.9]; p=0.04). In multivariate analysis, factors associated with weight loss over 5% were male gender (OR = 3.8 [1.1–15.6]; p=0.04). In multivariate analysis, factors positively associated with length of stay in acute care were an history of coronary artery disease ( $\beta$ = 4.74 [1.96–7.5]; p= 0.001), a lymphopenia (lymphocyte < 1.2 G/l) ( $\beta$ = 3.4 [0.85–5.95]; p= 0.01) and a PN ( $\beta$ = 9.96 [1.69–18.2]; p= 0.02).

**Conclusion:** A COVID-19 infection is at major risk of undernutrition from the moment of admission to hospital and with worsening during the hospitalization. A weight loss of more than 5% during hospitalization was associated with the length of hospitalization in acute medicine. These findings emphasize the value of early nutritional screening and management upon admission to hospital for COVID-19 infection and reassessment during hospitalization.

**Disclosure of Interest:** None declared.

## P018

### ESTIMATION OF BODY COMPOSITION AND WATER DATA DEPENDS ON THE BIOELECTRICAL IMPEDANCE DEVICE

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**Rationale:** Overweight, obese and chronic kidney disease patients have an altered and negative body composition. Bioelectrical impedance analysis (BIA) is an available method to evaluate body composition and water status. This study aimed to compare data from single-frequency (SF BIA) and multi-frequency spectroscopy bioelectrical impedance (BIS) devices applied in subjects with different body sizes, adiposity, and hydration status.

**Methods:** We evaluated 386 adults without chronic kidney disease (204 females and 182 males, 20–40 y, BMI from 17 to 40 kg/m<sup>2</sup>), 30 patients in peritoneal dialysis (PD) and 95 in hemodialysis (HD). Both groups of patients were under treatment for at least 3 months, 53 were females and 70 males, aged from 15 to 81 y. BIA, body composition, and body water data were assessed with SF BIA (Quantum II, RJL Systems, for the non-CKD group; TBW, Biodynamics, for CKD groups) and BIS (BCM, FMC), after 12 h fasting, with a drained abdominal cavity, and just after the mid-week HD session. BIA provided data of resistance (R) and reactance (Xc); intracellular water (ICW), extracellular water (ECW), total body water (TBW), fat free mass (FFM) and fat mass (FM) were estimated. Hyperhydration and dehydration were determined by over-hydration (OH) values of >1.1 L and <1.1 L. BMI was calculated and used for stratifying the non-CKD group. Differences (BIS-SF BIA; 95%CI) and agreement (Bland-Atman analyze) between devices were evaluated. The intraclass correlation coefficient (ICC) was used to measure the strength of agreement and Pearson's correlation to measure the association. Regression analyze was performed to test the association between device difference with BMI and OH.

**Results:** In the non-CKD group, SF BIA underestimated R, Xc, and FM, and overestimated ECW and FFM. For the underweight subgroup, the lowest agreement occurred for FM (ICC=0.07, r=0.27, bias=8.8±5.1) and the best agreement was for TBW (ICC=0.38, r=0.47, bias=-3.4±4.1) and ICW (ICC=0.45, r=0.44, bias=-0.4±2.5). For normal weight group, the lowest agreement occurred for FM (ICC=0.21, r=0.25, bias=3.6±8.3) and the best agreement for ECW (ICC=0.58, r=0.66, bias=-1.3±2.1), FFM (ICC=0.52, r=0.71, bias=-3.6±8.5) and TBW (ICC=0.51, r=0.62, bias=2.1). For overweight, the greatest agreement was for ECW (ICC=0.65, r=0.70, bias=-0.9±2.2) and the lowest agreement was for FM (ICC=-0.07, r=-0.13, bias=9.6±11). For obese, FM (ICC=0.16, r=0.61, bias=19±9.1) presented the lowest agreement and ECW (ICC=0.79, r=0.82, bias=-0.8±1.9) had the best agreement. For PD group, SF BIA underestimated FM and overestimated TBW, ECW, ICW and FFM. The best agreement occurred for ECW (ICC=0.59, r=0.75, bias=-4.2±4.2) and the lowest one for FM (ICC=0.14, r=0.44, bias=11±7.7). For the HD group, SF BIA underestimated R, Xc, and FM and overestimated TBW, ECW, and FFM. The greatest agreement was for ICW (ICC=0.68, r=0.68, bias=-0.01±0.32) and the worst for FM (ICC=0.32, r=0.58, bias=11±8.2). The difference between devices was greater as BMI increased and was worse in the extremes of water imbalance.

**Conclusion:** In conclusion, data obtained with SF BIA and BIS were highly correlated with poor agreement; the devices cannot be used interchangeably and the agreement between the devices was worse as BMI and FM increased and in the extremes of OH.

**Disclosure of Interest:** None declared.

## P019

### A NEW METHOD IN ESTIMATING MUSCLE MASS IN SARCOPENIC OBESITY: ULTRASONOGRAPHIC MUSCLE MEASUREMENT ADJUSTED WITH BODY MASS INDEX

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**Rationale:** Sarcopenic obesity is the coexistence of sarcopenia and obesity in an individual. However, its definition and diagnosis are debated. Ultrasonography, which has been widely used in muscle evaluation in sarcopenia, has also been started to be used in sarcopenic obesity. In this study, we aimed to investigate the importance of ultrasonographic muscle measurements adjusted with body mass index (BMI) to diagnose sarcopenic obesity.

**Methods:** 145 community-dwelling older participants with a body mass index of 30 and above were included in this study. Comprehensive geriatric assessment evaluating cognition, nutrition, mood, and functional status of the patients, as well as handgrip strength (HGS) and bioimpedance analysis (BIA), was performed. In six different types of muscle [gastrocnemius medialis (GM), rectus femoris (RF), rectus abdominis (RA), external abdominal oblique (EAO), internal abdominal oblique (IAO), transversus

abdominis(TA)] ultra-sonographic evaluation of the patients was carried out. The Results were noted by dividing the muscle measurements by the BMI of the patients. Sarcopenic obesity was diagnosed as low muscle strength (male <27 kg, female <16 kg) with a BMI  $\geq$  of 30.

**Results:** The median age of the patients was 72 (65-89) and 82% (n = 119) were women. Patients with sarcopenic obesity were older and had lower physical functionality. While anthropometric measurements (waist and hip circumference, BMI) related to obesity, and estimated muscle mass measurement obtained from bioimpedance analysis were similar in both groups, anthropometric parameters estimating muscle mass (calf circumference, middle-upper arm circumference) were lower in patients with sarcopenic obesity. All ultrasonographic muscle measurements adjusted with BMI were lower in the sarcopenic obese group, while the statistically significant measurement was found to be the cross-sectional area (CSA) of the rectus femoris (RF) muscle [0.12 (0.05-0.24) versus 0.15 (0.06-0.31), p = 0.01]. Receiver operating characteristic (ROC) analysis suggested that the optimum cut-off point of BMI adjusted RF CSA for sarcopenic obesity was  $\leq$  0.128 cm<sup>2</sup> with 65.12% sensitivity, 67.95% specificity (AUC: 0.643).

**Conclusion:** Ultrasonographic muscle measurement by adjusting the body mass index, especially for rectus femoris muscle, an easy, non-invasive, radiation-free, cheap, and easily portable method, may be used for sarcopenic obesity muscle assessment.

#### References:

**Disclosure of Interest:** None declared.

#### P020

##### MUSCLE PHENOTYPING OF A MINIPIG MODEL OF MALNUTRITION

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**Rationale:** Better understanding of the pathophysiology of malnutrition and development of new therapies need the development of preclinical models. Main aim: to characterize the muscle protein phenotype of minipigs exposed to experimental diets mimicking the two different forms of malnutrition, the marasmus and the kwashiorkor. Secondary aim: to compare body composition and the muscle fiber areas according to diets. **Methods:** 16 Yucatan minipigs were subjected to one of the three following diets for 8 weeks: a standard diet (10.33 MJ/kg and 15% protein,

**Table.1**

Hand grip strength measurements

	Electronic dynamometer		mechanical dynamometer	
	Dynx, Akern® (DD)	Saehan® (SED)	Jamar® (gold standar) (JGSD)	Smedlay® (SMD)
CG	30.1 (SD 9.2)	32.0 (SD 8.6)	31.5 (SD 8.6)	32.8 (SD 7.8)
PG	25.7 (SD 9.7)	28.3 (SD 10.0)	27.9 (SD 10.6)	29.6 (SD 10.0)
ICC CG	0.900 (0.798-0.951); p<0.001	0.960 (0.919-0.980); p<0.001	reference	0.812 (0.620-0.907); p<0.001
ICC PG	0.967 (0.951-0.979); p<0.001	0.977 (0.965-0.985); p<0.001	reference	0.963 (0.944-0.976); p<0.001
Bias (Jamar-other dynamometer)	2.0 (SD 4.1)	-0.4 (SD 3.2)	reference	-1.6 (SD 4.7)
Upper LOA	10.1	5.8	reference	9.2
Lower LOA	- 6.1	- 6.6		- 10.8

ST, n=5), a low-calorie normoprotein diet (5.16 MJ/kg and 15%, HN, n=5), and a low-calorie low-protein diet (5.18 MJ/kg and 8.6% protein, HH, n=6). Body composition was measured by CT scan before (T0) and after 8 weeks of diet (T8). Muscle fiber cross-sectional areas (CSA) of the trapezius and biceps femoris were measured at T8 using hematoxylin-eosin staining. Proteins involved in energy metabolism and protein turnover were quantified by Western Blot.

**Results:** A significant reduction of body weight, visceral fat mass and muscle surface areas were observed after 8 weeks in HH group (p=0.03),

whereas these parameters remained unchanged in ST and HN groups. Trapezius and biceps femoris fiber CSA were significantly lower in HH group compared to ST group (p<0.001; 0.003, respectively). Trends of increase of AMPK phosphorylation were reported in HH compared to ST group in trapezius (p=0.10) and biceps femoris (p=0.09). Protein catabolism: expression of ubiquitinated proteins, MURF1, BAX, BCL2, remained unchanged in the different muscles in HN and HH groups. Protein synthesis: Akt phosphorylation increased in HH compared to ST groups in trapezius (trend, p=0.10) and biceps femoris (p=0.015).

**Conclusion:** In our minipig model, the low-calorie low-protein diet (HH) could be the more relevant to explore the pathophysiology and therapies of adult malnutrition.

**Disclosure of Interest:** None declared.

#### P021

##### COMPARISON OF THREE DYNAMOMETERS VS GOLD STANDARD

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**Rationale:** Handgrip strength (HGS) is used to assess the maximum muscle strength and low levels suggest presence of sarcopenia. The aim of this study was to compare Jamar dynamometer, considered as the *gold standard*, against three other existing dynamometers.

**Methods:** Prospective study performed in Complejo Asistencial Universitario de León (Spain) from October 2020 to April 2021. A control group (CG) included healthy population (healthcare professionals under 40) and the patients group (PG) included all those who had a medical appointment in the Endocrinology and Nutrition department and were offered to participate in the study. A written informed consent was signed and the study was approved by our Ethics Committee (Registry number: 2138). The higher of three consecutive measurements of the hand grip strength (HGS) in the dominant hand was registered. HGS was measured with four different dynamometers: two electronic dynamometers (Dynx, Akern® (DD), Jamar, Saehan® (SED)) and two mechanical dynamometers (Jamar® (gold standar) (JGSD), Smedlay® (SMD)). The statistical analysis included intraclass correlation coefficient, Bland-Altman plots and limits of agreement.

**Results:** 124 people were included in the study. The CG included 33 subjects (78.8% female) mean age 32.3 (SD 7.3) years-old. In PG, 91 patients were included (60.4% female) mean age 55.0 (SD 14.3) years-old. Diagnosis in the PG were previous bariatric surgery (28.6%), obesity (24.2%), cancer (15.4%), inflammatory bowel syndrome (11.0%), other (20.8%). According to

GLIM criteria, in the PG 23.1% were malnourished according to GLIM criteria.

The measures with the four dynamometers, the intraclass correlation coefficient, the mean differences and limits of agreement are shown in table 1.

**Conclusion:** All three tested dynamometers show a good correlation with the reference one (Jamar), although Dynx tends to slightly underestimate and Smedlay's to overestimate hand grip strength. This fact should be taken into account when interpreting values obtained with different devices.

**Disclosure of Interest:** None declared.

## P022

### BODY COMPOSITION IN RECOVERED COVID-19 PATIENTS

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**Rationale:** Obesity is a clinical characteristic of Covid patients. However, patients are discharged from the hospital with an elevated weight loss.(1) ¿What is the evaluation of body composition and weight change of patients recovered from COVID-19 at the first post-covid patient nutritional care?

**Methods:** This is a cross-sectional study that included patients with the diagnosis of COVID-19 assessed after their hospitalization. We evaluated weight changes according to time of change between discharge and first nutritional counseling after hospitalization. Actual body weight, Body mass index (BMI), change of weight was assessed. Body composition characteristics of patients were describe and measured using the medical body composition analyzer SECA mBCA 514. Sarcopenia was assessed according Musclesqueletical mass (kg/m<sup>2</sup>) using international criteria (2). Descriptive analysis used percentage, median, and standard deviation for Results.

**Results:** This study recruited 24 patients: 62.5% men and 37.5% women. The average age was 55.87±12.6 years, and comorbidities were present in 58% of patients, such as diabetes, hypertension, asthma, dyslipidemia. The referred percentage of weight loss in hospitalization was 15.9±12.5 during an average length of stay reported of 27.3±178 days. Change weight average after hospitalización was 7.4±10.2 kg during 126±73 days between discharge and nutritional counseling after hospitalization. Gain weight was present in 87% and weight loss in 13% of patients. Most patients present excess body weight according to body mass index (BMI): 29.56±5.61kg/m<sup>2</sup>. Normal weight was presented in 16.7%, overweight in 45.8%, obesity grade I 25%, obesity grade II 4.2%, and obesity grade III 8.3%. Body composition analysis presented in Table 1 showed a high amount of fat mass and visceral fat in the general population. Musclesqueletical mass corrected by height in the general population and according to sex (male and female) were 9.4±1.9 kg/m<sup>2</sup>, 9.9±2 kg/m<sup>2</sup>, and 8.4±1.3 kg/m<sup>2</sup>,

**Table 1**

Body composition of pos covid patients at first nutritional counseling after discharge.

Characteristics	Mean ± SD
Actual body weight	78.3±15.8
Height	1.6±0.1
Waist circumference	98.4±13.5
Fat mass (%)	32.6±11.6
Fat free mass (%)	67.3±11.6
Total body water (%)	49.7±11.2
Musclesqueletical mass (kg)	25.4±7.2
Visceral fat (L)	7.8±20.3

respectively. Only 1 female patient showed to be sarcopenic.

**Conclusion:** Covid-19 patients recovered their weight after hospitalization. Body composition showed an important high amount of fat and visceral fat mass. It is important to assess nutritional status in order to give the right nutritional treatment.

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**Disclosure of Interest:** None declared.

## P023

### VALIDITY OF HAND GRIP STRENGTH, ANTHROPOMETRY AND BIOIMPEDANCIOMETRY AS DETERMINANTS OF REDUCED MUSCLE MASS IN APPLICATION OF GLIM CRITERIA IN OLDER INPATIENTS WITH HIP FRACTURE

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**Rationale:** The incidence of fragility hip fractures is increasing due to the aging of the population. The estimated prevalence of malnutrition in patients with hip fracture is around 20-30%.

Our objective is to evaluate the prevalence of malnutrition in elder hospitalized patients with hip fracture, as well as the clinical application of the GLIM criteria for the diagnosis of malnutrition, using anthropometry, bioelectrical impedance analysis (BIA) and hand grip strength as determinants of muscle mass.

**Methods:** Prospective study, in hospitalized patients older than 65 years with diagnosis of hip fracture, between September 2019 and February 2021. Nutritional assessment was performed using Mini Nutritional Assessment Short Form (MNA-sf) replacing calf circumference for the BMI item, Subjective Global Assessment (SGA) and GLIM criteria. For the definition of reduced muscle mass in application of the GLIM criteria, the population's 5th percentile of hand grip strength (Jamar) and the ESPEN cut-off points for low fat-free mass index (FFMI) were used, this being determined by anthropometry and by bioelectrical impedance analysis (BIA).

**Results:** 266 patients included, 20.7% were male and 79.3% female, mean age of 82.7 years. Mean estimated BMI was 25.7 ± 5 kg / m<sup>2</sup>, with a FFMI by anthropometry of 19.4 ± 8.8 kg / m<sup>2</sup> for men (25% below 17 kg / m<sup>2</sup>) and 17.4 ± 2.9 kg / m<sup>2</sup> for women (20.1% below 15 kg / m<sup>2</sup>). FFMI by BIA was 20.9 ± 9.8 kg / m<sup>2</sup> for men (8.7% below 17 kg / m<sup>2</sup>) and 17.6 ± 2.1 kg / m<sup>2</sup> for women (8% below 15 kg / m<sup>2</sup>). Hand grip strength showed a mean of 20.2 ± 9.6 kg for men (65.4% below population p5 percentile) and 7.6 ± 6.6 kg for women (73.4% below population p5 percentile).

MNA-sf found 19.9% of normonourished, 42% at risk of malnutrition and 38% of malnourished. SGA found 35.7% of normonourished, 41.7% with moderate malnutrition and 22.6% with severe malnutrition (kappa coefficient of 0.51 with MNA-sf; p<0.001).

Using hand grip strength to apply GLIM criteria, we found 84.5% of malnourished patients; we being 47% when using anthropometry and 44.5% when using BIA (kappa coefficient of 0.39, 0.37 and 0.39 with SGA respectively; p <0.001). We found a strong agreement between using anthropometry and BIA when applying GLIM criteria (kappa coefficient of 0.95; p <0.001).

**Conclusion:** The prevalence of malnutrition in patients admitted for hip fracture is high. The use of hand grip strength as a determinant of fat-free mass reports a higher prevalence of malnutrition, which could be underestimated with the use of anthropometry and BIA.

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## P024

### NUTRITIONAL STATUS OF PATIENTS WITH CRITICAL ILLNESS MYOPATHY AND/OR NEUROPATHY AFTER COVID-19 FROM THE VIEWPOINT OF PHYSICAL REHABILITATION

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**Rationale:** Patients admitted to rehabilitation after COVID-19 are at high nutritional risk (1). The aim of our study was to assess the frequency of nutritional disorders, associated conditions and laboratory changes (affecting nutritional and metabolic status) in patients with critical illness myopathy and/or neuropathy after COVID-19, and to analyse values of their body composition parameters in relation to physical abilities.

**Methods:** The empirical prospective study included 30 patients with critical illness myopathy and/or neuropathy after COVID-19, hospitalized at the University Rehabilitation Institute, Republic of Slovenia, from November 2020 until March 2021. Laboratory parameters (albumin, anaemia, markers of inflammation, vitamin D) and body composition parameters (phase angle, hydration, fat-free mass index and dry lean mass) were monitored. Based on those parameters and clinical status (tests and instruments to assess muscle strength, functioning and independence, the latter using Functional Independence Measure - FIM), nutritional disorders and associated conditions were diagnosed. We prescribed medical nutrition therapy and monitored the patients until discharge. Univariate and bivariate statistical analyses were performed.

**Results:** GLIM criteria for malnutrition were met in twenty-nine patients out of thirty, twenty-five of whom were severely malnourished (Grade 2). Most patients lost 11-15% of body mass during acute hospitalization (duration: mean 51, SD 15 days), some even more than 25%. Nineteen patients (63%) had associated conditions that affect the nutritional and metabolic status, mostly pressure sores. All patients had low phase angle (PA) at admission (mean 3.1, SD 0.5). Improvement in PA during rehabilitation was statistically significant ( $p < 0.001$ ), but the values were still below the fifth percentile of the healthy population. Correlation between PA and FIM was positive, but not statistically significant ( $r = 0.3$ ,  $p = 0.141$ ). **Conclusion:** The majority of our patients after COVID-19 are malnourished upon admission to rehabilitation, so an active screening for malnutrition is necessary. Optimal nutritional and metabolic management can contribute to a better rehabilitation outcome and higher level of independence after discharge.

#### References:

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**Disclosure of Interest:** None declared.

#### P025

### EARLY NUTRITIONAL RISK DETECTION AND INTERVENTION IN HOSPITALIZED COVID-19 PATIENTS THROUGH THE IMPLEMENTATION OF ELECTRONIC AUTOMATIZED ALARMS

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**Rationale:** This pilot-study evaluates the implementation of an automatized nutritional screening tool for the follow-up of hospitalized COVID-19 patients who received nutritional support according to an institutional protocol.

**Methods:** Observational prospective registry by using a daily automatized warning message provided by the Information Systems department of a tertiary hospital. Successive inclusion of all adult patients admitted for COVID-19 from November 2020 to February 2021 was performed. Dietary intake was registered daily by nurses in all COVID-19 patients, and those with a dietary intake <50% during 48 hours were detected by the system and identified as at high nutritional risk (NR). An alert was sent then to Endocrinology & Nutrition Department by email where a dietitian performed a nutritional assessment and decided the best nutritional support.

**Results:** 205 patients out of 1176 (17.4%) were detected as presenting a high NR. Of those 100% presented NR by SNAQ (61.7% moderately malnourished; 38.3% severely malnourished). Demographic characteristics were: 57.6% female; age  $76.1 \pm 13.2$  years; BMI  $27.3 \pm 5.7$  Kg/m<sup>2</sup>. NR was detected at 4 days ( $p_{25} = 2.5$ - $p_{75} = 7.0$ ) after hospital admission with a 48-hours dietary intake of  $22.5 \pm 14.6\%$  of the diet supplied. The type of nutritional support performed was: 77.6% dietary adaptation + oral

nutritional supplements; 9.3% Enteral Nutrition (EN) by nasogastric tube; 1.5% Parenteral Nutrition (PN); 1% EN+PN; and in 10.7% no nutritional support was performed due to end-of-life situation. Weight loss during hospitalization was 2.5 kg ( $p_{25} = 0.25$ - $p_{75} = 6$ kg).

**Conclusion:** The implementation of an electronic automatized NR screening tool was possible on daily basis, and allowed an early nutritional assessment and intervention in COVID-19 hospitalized patients.

**Disclosure of Interest:** None declared.

#### P026

### NUTRITION DIAGNOSIS AND LENGTH OF HOSPITAL STAY BASED ON GLIM CRITERIA

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**Rationale:** At our hospital, we have started nutritional diagnosis based on the GLIM Criteria (The Global Leadership Initiative on Malnutrition) for scheduled inpatients. We report on the prevalence of sarcopenia and length of hospital stay in patients diagnosed with malnutrition by GLIM.

**Methods:** The subjects visited our patient support center from April to December 2020 and evaluated nutrition based on MUST (Malnutrition Universal Screening Tool, SGA (Subjective Global Assessment), body composition measurement, handgrip strength measurement, and GLIM. The subjects were divided into two groups, a normal group (N group) and a malnourished group (M group), and the following items were examined. The items to be examined were gender, age, prevalence of sarcopenia, and length of hospital stay. The prevalence of sarcopenia was assessed on an AWGSP 2019 basis.

**Results:** 1127 patients (mean age  $6.9 \pm 13.4$  years; 494 males and 633 females) were included in the analysis. According to the GLIM criteria, 491 patients (43.6%; 224 males and 267 females) were undernourished, and the prevalence of sarcopenia in group M was 84 males; 37.5% and 72 females; 27.0%. The age was  $63.7 \pm 13.5$  years in the N group and  $71.1 \pm 12.0$  years in the M group (0.0001).

**Conclusion:** According to the GLIM, about 40% of the planned inpatients were malnourished. Sarcopenia complications were also observed in about 30% of cases. Elderly people are at high risk of malnutrition and tend to stay longer, so we think that nutritional intervention before admission is necessary.

**Disclosure of Interest:** None declared.

#### P027

### PHASE ANGLE, FAT-FREE MASS INDEX AND THE RISK OF DIGITAL ULCERS IN PATIENTS WITH SYSTEMIC SCLEROSIS

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**Rationale:** Digital ulcers (DUs) represent a major and invalidating complication of Systemic Sclerosis (SSc). We hypothesized that changes in body composition (BC) may increase the risk of developing new DUs in SSc.

**Methods:** Phase angle (PhA) and fat free mass index (FFMI) were assessed by BIA at enrollment and after 12 months. Development of new DUs at 12 months was assessed and DUs classified according to Amanzi et al.<sup>1</sup> Major vascular complications were also recorded. Results are expressed as mean  $\pm$  SD. Student's unpaired 2-tailed t test, Mann-Whitney test, Pearson product-moment correlation coefficient or Spearman's rank correlation coefficient, chi-square test or Fisher's exact test, receiver operating characteristic (ROC) curve analysis (to analyze the prognostic accuracy of FFMI or PhA toward development of new DUs) were used as appropriated. In multivariate analysis, we inserted only variables with  $p$  value < 0.05 in univariate analysis.

**Results:** Seventy-nine SSc patients (67 females) aged  $53 \pm 13$  years were enrolled. In SSc patients with a DUs history, phase angle (PhA) value was

higher ( $p < 0.01$ ) while FFMI was lower ( $p < 0.05$ ) with respect to patients without a DUs history. After 12 months follow-up, 30 patients (38%) presented at least one new episode of DUs. Patients with reduced PhA had a relative risk (RR) of 10.1 for new DUs (CI 3.5–29.5,  $p < 0.0001$ ), while patients with reduced FFMI had a RR of 6.7 for new DUs (CI 2.1–21.8,  $p < 0.001$ ). In multivariate analysis, FFMI and PhA were associated with major vascular complication (DUs, pulmonary arterial hypertension, and scleroderma renal crisis). FFMI reduction at 12 months was greater in SSc patients with short ( $\leq 3$  years) than in patients with long duration [0.4 (0–0.50) vs  $-0.10$  ( $-0.2$ – $0$ ),  $p=0.01$ ].

**Conclusion:** Both PhA and FFMI may predict the risk for development of new DUs and major vascular complications after 12 months in SSc patients.

#### References:

<sup>1</sup>Amanzi L, et al. *Rheumatology* 2010.

**Disclosure of Interest:** None declared.

## P028

### PREOPERATIVE NUTRITIONAL ASSESSMENT WITH COMPUTED TOMOGRAPHY IN PATIENTS WITH HEAD AND NECK CANCER

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**Rationale:** Malnutrition is common in patients with head and neck cancer and Results in increased postoperative complications and length of hospital stay, decreased quality of life and increased mortality. Nutritional assessment is important for patients who are at nutritional risk and essential to determine a more appropriate nutritional therapy. The use of computed tomography (CT) to assess body composition has been recommended for cancer patients, as it allows the quantification of muscle mass, and this exam is already used in cancer staging. The aim of the study was assess the nutritional status of patients with head and neck cancer in the preoperative period through CT and different nutritional assessment methods, and to correlate the nutritional status with postoperative complications and length of hospital stay

**Methods:** 63 patients with head and neck cancer and no prior treatment were evaluated in the preoperative period. Nutritional assessment was performed through the analysis of muscle mass area on CT at L3 level, Patient-Generated Subjective Global Assessment (PG-SGA), handgrip strength and anthropometry (body mass index [BMI] and mid-arm muscle circumference [MAMC]). Muscle mass on CT at C3 and T4 levels, as well as psoas muscle morphology were also analyzed and compared with the Results of L3 level.

**Results:** Most patients had low muscle mass on CT at L3 level (73%), low BMI (44.4%), PG-SGA with risk of malnutrition or malnutrition already present (82.5%) and adequate mid-arm muscle circumference (MAMC) (55.6%). However, there was no statistical significance in the association of BMI ( $p = 0.059$ ), PG-SGA ( $p = 0.149$ ) and MAMC ( $p = 0.111$ ) with muscle mass on CT. The length of hospital stay showed a significant difference only for BMI ( $p = 0.019$ ), MAMC ( $p = 0.023$ ) and PG-SGA ( $p = 0.002$ ). The complications rate was significantly higher in patients at risk of malnutrition or malnutrition already present at PG-SGA ( $p = 0.018$ ). The analyzes of the psoas muscle morphology, and muscle mass on C3 and T4 levels showed good accuracy when compared to L3 level (psoas: AUC: 0.749; 95% CI: 0.606–0.892; C3: AUC: 0.737; 95% CI: 0.595–0.860; T4: AUC: 0.727; 95% CI: 0.583–0.891).

**Conclusion:** Malnutrition and low muscle mass have a high prevalence in patients with head and neck cancer, disfavoring clinical Results. The analysis of C3, T4 and the psoas muscle may be alternatives for assessing muscle mass on CT in these patients

**Disclosure of Interest:** None declared.

## P029

### HOUSEHOLD FOOD INSECURITY IN PORTUGUESE YOUNG CHILDREN AFTER THE FINANCIAL CRISIS

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**Rationale:** Families' daily lives were affected by the global economic crisis of 2009, in particular children's household food insecurity, which may increase the risk of overweight/obesity. This study aimed to evaluate household food insecurity in Portuguese children after the global financial crisis, according to age, nutritional status and socio-economic status.

**Methods:** 4737 Portuguese children aged from 3 to 11 years ( $6.5 \pm 1.8$  yrs) old from public and private kindergartens and primary schools in the districts of Porto, Coimbra and Lisboa (three of the largest districts in the north, center-north and center-south of Portugal, respectively) were evaluated between November 2016 and April 2017. The Food Insecurity Scale adapted and validated for the Portuguese population was applied to parents, among other instruments. Overweight and obesity were defined according to the WHO criteria when the BMI z-score was  $>1$  and  $>2$ , respectively. The children's socio-economic status was categorized into low ( $<9$  years of education), middle (10–12 years) and high socio-economic status (university degree). Children were divided as preschool aged ( $n=2246$ , 3–6yrs.) and school-aged ( $n=2491$ , 7–11yrs.). The significance level was 5% ( $p < 0.05$ ).

**Results:** In general, household food insecurity was prevalent in 13.2% of the children with schoolers showing a slightly higher prevalence (14.2%) than preschoolers (12.0%). Significant differences were observed between age, nutritional status, socio-economic status and household food insecurity, since both groups of overweight preschool and school children were at risk of experiencing household food insecurity ( $p < 0.05$ ), as well as those with parents with low levels of education ( $p < 0.01$ ), with slightly higher prevalence in the youngest. Regardless of the children's age, living in the center-north of Portugal was significantly associated with experiencing household food insecurity ( $p < 0.05$ ).

**Conclusion:** Increasing awareness of the risks of household food insecurity in children's daily lives and their costs in short and long-term is important, as well as it is planning prevention strategies and adapt them specifically to the most vulnerable families and in the most affected geographical areas.

#### References:

Rodrigues et al. Socioeconomic inequalities in the prevalence of overweight and obesity among Portuguese preschool-aged children: changes from 2009 to 2016. *Am J Hum Biol.* 2021.

**Disclosure of Interest:** None declared.

## P030

### AT WHICH DEPARTMENT AND WHEN HAVE WE REACHED THE TARGET IN NUTRITION THERAPY?

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**Rationale:** All hospitalized patients should be checked in terms of their nutritional status and be treated based on individual requirements. As a concept, one size does not fit all, and the amount of applied calories and protein differs depending on the type of hospitalized department, such as non-surgical departments (NSD), surgical departments (SD), and intensive care units (ICU).

**Methods:** The clinical and demographic findings of the patients who were followed between January 2017 and December 2019 by the Clinical Nutrition Unit of Hacettepe University were retrospectively recorded using the university registry database and patient files.

	Non-surgical Departments (n=760)	Surgical Departments (n=606)	Intensive Care Units (n=451)	P
Age	61.8 ± 18.6	59.5 ± 14.9	62.6 ± 16.7	<b>0.006</b>
Gender (female)	423 (%55.7)	354 (%58.4)	252 (%55.9)	0.553
Height	165.2 ± 9.4	166.3±8.7	165.4 ± 9.7	0.063
Weight	56 (50-70)	66 (56-75)	70 (60-80)	<b>&lt;0.001</b>
BMI	21.4(18-24.4)	23.1(20.6-26.6)	24.9(22.4-29.9)	<b>&lt;0.001</b>
NRS 2002	4.43 ± 0.8	4.54 ± 0.8	5.12 ± 1	<b>&lt;0.001</b>
Follow-up duration (days)	23 (11-39.5)	15 (9-25)	15 (8.25-29)	0.523
Enteral nutrition	324 (%42.6)	66 (%10.9)	140 (%31)	
Parenteral nutrition	397 (%52.2)	517 (%85.3)	282 (%62.5)	<b>&lt;0.001</b>
Enteral + Parenteral nutrition	39 (%5.1)	23 (%3.8)	29 (%6.4)	
The rate of reaching the target calories				
2017	144 (%65.8)	115 (%56.4)	98 (% 59.8)	0.135
2018	165 (%65.5)	84 (%42.9)	52 (%43)	<b>&lt;0.001</b>
2019	123 (%51.8)	91 (% 55.2)	90 (% 43.8)	0.089
The rate of reaching the target protein				
2017	124 (%56.6)	78 (%38.4)	98 (% 59.8)	<b>0.001</b>
2018	144 (%57.4)	72 (% 36.9)	52 (%43)	<b>&lt;0.001</b>
2019	118 (%46.3)	89 (% 43.8)	90 (% 43.8)	<b>0.036</b>

**Results:** In total, 1817 patients were included in the study. The mean age of the patients was 61.8 ± 18.6 years in NSD, 59.5 ± 14.9 years in SD and 62.6 ± 16.7 years in ICU (**p = 0.006**). In 2017, 144 (65.8%) patients in NSD, 115 (56.4%) patients in SD, 98 (59.8%) patients in ICU reached the target calorie values (**p = 0.135**). In 2018, 165 (65.5%) patients in NSD, 84 (42.9%) patients in SD, and 52 (43%) patients in ICU reached the target calorie values (**p <0.001**). In 2019, 123 (51.8%) patients in NSD, 91 (55.2%) patients in SD, 90 (43.8%) patients in ICU reached the target calorie (**p = 0.089**). On the other hand, 124 (56.6%) patients in NSD, 78 (38.4%) patients in SD, 81 (49.7%) patients in ICU reached the target protein level in 2017 (**p = 0.001**). One hundred forty four patients in NSD (57.4%), 72 (36.9%) patients in SD, and 42 (35%) patients in ICU reached the target protein level in 2018 (**p <0.001**). One hundred eighteen (46.3%) patients in NSD, 89 (43.8%) patients in SD, and 54 (33.8%) patients in ICU reached the target protein (**p = 0.036**) in 2019.

**Conclusion:** Although achieving the calorie and protein goals in the NSD department is higher than SD and ICU; the amount remains low. In addition to starting nutritional therapy, multidisciplinary nutrition teams should also notice whether the patients take the planned calorie and protein notably in all departments. The most important way to increase the rate of reaching the goal in nutritional therapy is to increase the awareness of malnutrition and remember that nutritional therapy is an essential part of the medical treatment of the patient.

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**Disclosure of Interest:** None declared.

#### P031

##### NUTRITIONAL STATUS, MENSTRUAL CYCLE, FOOD HABITS AND STRESS OF UNIVERSITY STUDENTS AMONG THE ACADEMIC SEASON

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**Rationale:** University students are surrounded by many stressors factors in their everyday lives, which impact on their physical and mental well-

being. It has been found that stress is affected by gender, with females experiencing higher levels than males, social and academic commitment, along with changes in food habits, such as skipping meals, eating high energy density food between meals, and increasing food intake through the consumption of fast foods, since students are away from home. Therefore, this study aims to characterize nutritional status, menstrual cycle, food habits and stress of female university students before and during academic exams.

**Methods:** A questionnaire was applied to 148 Portuguese female students (21.2±4.2 years), which collected the following data: sociodemographic, anthropometric, clinical and gynecological (menstrual cycle pattern: menstrual irregularities and intermenstrual hemorrhages), eating habits (by a semi-quantitative food frequency questionnaire), sleep in weekdays and weekends and stress (by the Portuguese version of the Stress Perception Scale; Pais Ribeiro and Marques, 2009). This was applied in two phases: before and during the exam season. The significance level was 5% (**p<0.05**).

**Results:** Participants' nutritional status changed from before to during the exam season with a decrease in body mass index (22.3±3.0 to 20.8±3.2 kg/m<sup>2</sup>), as well as, sleep duration on weekdays and weekends, and menstrual function (length of menstrual cycle: 22.3±10.5 days to 20.1±8.3 days, and menstruation duration: 4.8±2.1 to 4.0±1.3 days) and increase of appetite (chocolate, 16.8% and candies and fried foods, 9.0%, **p<0.05**) and stress (23.1±5.0 to 26.3±4.3, **p<0.05**). Stress was negatively associated with meat, fish, vegetables, fruits and alcohol, but positively associated with sugar and fat enriched foods, and coffee consumption (**p<0.05**).

**Conclusion:** Stress can change eating habits of university students with consequences upon to their nutritional status, sleep and menstrual cycle, especially in particular moments of their academic life. Therefore, it is important to promote the awareness about the importance of a healthy diet (complete, balanced and varied) adequate to individuals' physical and mental needs, especially in particular moments of the students' academic life.

#### References:

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**Disclosure of Interest:** None declared.

#### P032

##### THE RELATIONSHIP BETWEEN GERIATRIC NUTRITION RISK INDEX (GNRI) AND DISEASE PROGNOSIS IN DIABETIC GERIATRIC PATIENTS HOSPITALIZED FOR COVID-19

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**Rationale:** COVID-19 is known to have a worse course in older adults and patients with comorbid diseases. Geriatric nutrition risk index (GNRI) is an effective and simple risk index used to determine the nutritional risk of patients. Although it is known that malnutrition affects the prognosis of

many diseases, there is not enough data about the effects on the course of COVID-19. In this study, we aimed to evaluate the relationship between the GNRI index and the prognosis of the disease in geriatric diabetic patients hospitalized in our hospital due to COVID-19.

**Methods:** The study included 110 diabetic patients aged 65–80 years who were hospitalized in our pandemic service due to COVID-19 infection. A detailed anamnesis was taken from all patients and physical examinations were performed. Biochemical blood tests (fasting plasma glucose, glycosylated hemoglobin, total cholesterol, high density lipoprotein cholesterol, triglyceride, creatinine, albumin, d-dimer, fibrinogen) were analyzed. GNRI index is calculated. As a result of GNRI, patients were divided into 4 groups according to their scores as <82: severe risk, > 82- <92: moderate risk, > 92- <98: low risk, > 98: no risk. By comparing all these parameters in these 4 groups, the relationship between the GNRI index and the prognosis of COVID-19 disease was evaluated.

**Results:** According to the GNRI index, while 11.8% of the patients had severe malnutrition risk, 20.9% moderate malnutrition risk and 8.1% mild malnutrition risk, 59.0% of the patients did not have a malnutrition risk. There was a statistically significant difference in age, urea, creatine, procalcitonin, calcium, leukocyte, lymphocyte, hemoglobin, thrombocyte, po2 and spo2 levels, intubation and transfer rates to intensive care between the GNRI groups ( $p < 0.05$ ). In the correlation analysis performed between the GNRI index and other parameters, we found a significant negative correlation between height, hospitalization time, crp, d-dimer, wbc, neutrophil, neutrophil lymphocyte ratio and type of discharge (Table 1).

**Table 1**  
Correlation analysis between GNRI index and other parameters

	GNRI İndeksi	
Height	r: -0,466	p: 0,009
Kilo	r: +0,01	p: 0,008
BMI	r: +0,315	p: 0,037
Albumin	r: +0,01	p: 0,005
Hospitalization Time	r: -0,366	p: 0,049
C-reactive protein	r: -0,353	p: 0,018
D-dimer	r: -0,450	p: 0,045
Leukocyte	r: -0,445	p: 0,040
Neutrophil	r: -0,548	p: 0,040
Neutrophil Lymphocyte Rate	r: -0,01	p: 0,020
Type of Discharge	r: -0,349	p: 0,017

**Conclusion:** There is a clear relationship between the GNRI and the prognosis of the disease in diabetic geriatric patients hospitalized for COVID-19. Patients at risk of malnutrition have a longer hospital stay, need more intensive care and mechanical ventilation, and have a worse prognosis.

**Disclosure of Interest:** None declared.

### P033

#### MALNUTRITION IN COVID-19 HOSPITALIZED PATIENTS: A CROSS-SECTIONAL STUDY

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**Rationale:** Considering the nutritional impact of COVID-19 and the prognostic significance of malnutrition, the aim of this study is to assess the prevalence of malnutrition in a sample of COVID-19 hospitalized patients at the time of admission and the possible correlation with clinical severity, prognosis and length of hospitalization.

**Methods:** From 20/01/21 to 20/02/21 all patients admitted to a COVID Internal Medicine Unit of Ferrero Hospital in Verduno were enrolled in the study. The patients' assessment was performed within the first 48 hours after admission (T0) with NRS-2002. The data regarding clinical severity, prognosis and length of stay were taken from the medical record at the end of the hospitalisation. The clinical severity indexes used are the increase in

intensity of care (transition to sub-intensive or intensive regimen) and death.

**Results:** 30 patients aged 43 to 91 years (mean  $70 \pm 12.9$ ) were evaluated. 1 patient suffered from an oncological disease; 4 patients had chronic neurological diseases; 6 patients had T2DM; 17 patients had high blood pressure. Patients' BMI on admission ranged from 18.8 to 38.6 (mean  $27.5 \pm 4.6$ ). The nutritional risk on admission (score  $\geq 3$ ) was present in 22 out of 30 patients (73.3%). Among the patients characterized by lower clinical severity (n.15) 60% were at nutritional risk at T0; while among the patients with high clinical severity (n.15) 87% were at nutritional risk at T0 (Chi Square: p-value 0.09). Among the surviving patients (n.24) 66% were at nutritional risk at T0; while among the deceased (n.6) 100% were at nutritional risk (Chi Square: p-value 0.09). Patients with nutritional risk at T0 were hospitalized for an average of 18 days, while those without nutritional risk at T0 were hospitalized for an average of 10 days (T-test: p-value 0.02).

**Conclusion:** NRS-2002 showed a high prevalence of nutritional risk in COVID-19 hospitalized patients although none had a BMI lower than 18.5 and only 5 patients had previous chronic oncological or neurological diseases. The correlation between nutritional risk and length of stay was statistically significant (p-value 0.02); while the correlations between nutritional risk on admission and clinical severity and prognosis were not statistically significant, probably due to the limited number of enrolled patients. Because a definitively effective treatment for COVID-19 has not yet been performed, the factors that could be associated with the worsening of the clinical course should be recognized and managed, including nutritional risk. Early nutritional screening is therefore an important step in order to perform an adequate nutritional intervention as integral part of COVID-19 management. Further and larger studies will be necessary to better investigate the prognostic value of nutritional status in acute diseases in general and in COVID-19 disease in particular.

**Disclosure of Interest:** None declared.

### P034

#### HOME ENTERAL NUTRITION (HEN): AN ADDITIONAL TOOL IN THE CARE PROCESS OF UNDERNOURISHED PATIENTS WITH ANOREXIA NERVOSA (AN)?

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**Rationale:** AN is a severe eating disorder which can lead to undernutrition and somatic complications. EN is the most appropriate and safe tool for nutritional care and weight gain in extremely undernourished AN inpatients (BMI < 13). Evidence for HEN in this pathology remains scarce\*. This study aimed to explore the efficacy of HEN associated with multidisciplinary ambulatory care in order to limit the hospitalization stay.

**Methods:** We performed in a specialized tertiary nutritional care unit, a longitudinal pilot study of weight evolution in discharged patients with AN under HEN.

**Results:** Thirty-four patients were included: age:  $42 \pm 19$  years, BMI at admission:  $13.2 \pm 2.8$ , BMI at discharge:  $14 \pm 1.4$ ; AN types: 23 (67.6 %) restrictive AN type, 5 (14.7%) atypical type and 6 (17.6%) binge-purging type\*\*. Only 5 (14%) patients decided to stop HEN. Sixteen patients (47%) had a significant improvement in weight gain with HEN ( $4 \pm 4.4$  kg in 5 months)  $p < 0.05$ , most of them had a restrictive type of AN and received a shorter period of HEN. No complications were reported during HEN.

**Conclusion:** HEN could be, if associated with a multidisciplinary ambulatory care, an interesting tool to limit the length of hospital stay and provide weight gain in AN patients. Further studies are needed to confirm these Results.

**References:**

\*Rigaud et al. Tube feeding at home in anorexia nervosa patients, Presse Med, 2009

\*\* American Psychiatric Association. Mental Disorders, 5th Edition (DSM-5)

**Disclosure of Interest:** None declared.

## P035

### COMPARISON OF LATERALIZED BIOELECTRICAL IMPEDANCE ANALYSIS DATA AND LATERALIZED MANUAL MUSCLE TESTING SCORE IN AMYOTROPHIC LATERAL SCLEROSIS (ALS) DURING THE INITIAL AND FINAL NUTRITIONAL ASSESSMENT

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**Rationale:** Amyotrophic lateral sclerosis (ALS) is a rare disease with a poor prognosis. During follow-up, manual muscle testing (MMT) makes it possible to determine the laterality of the functional impairment. Bioelectrical impedance analysis (BIA) determines the body composition and therefore the fat-free mass (FFM), reflecting muscle mass. The BIA can be lateralized by right or left hemi-body. The objectives of this work were to determine if there was a link between the lateralized changes in body composition in BIA and the lateralized motor deficit objectified by MMT, and to determine if this link was stable during the course of the disease.

**Methods:** This observational study concerned ALS patients followed at the Limoges University Hospital Center between July 2005 and January 2017. The patients had to be assessed by BIA and MMT, carried out closely (time <1 month), during the initial and final evaluation. Quantitative variables were presented as mean  $\pm$  standard deviation, qualitative variables as percent (%). The potential association between the lateralized BIA data and the lateralized MMT data was investigated by simple linear regression. The significance level for all statistical values was set at  $p < 0.05$ .

**Results:** 55 patients were included, with an age at diagnosis of  $66 \pm 12.6$  years and a male / female sex ratio of 1.1. The FFM for BIA was  $45.4 \pm 9.1$  kg at the initial assessment and  $44.4 \pm 9.1$  at the final assessment. The initial MMT was  $134.9 \pm 13.7$  and ultimately  $98 \pm 38.2$ . The correlation between the impedance lateralized data and the MMT lateralized data was positive, moderate, and significant at the initial assessment ( $r = 0.38$  [0.12–0.59],  $p = 0.0039$ ) and positive, weak, and significant during the final evaluation ( $r = 0.27$  [0–0.50],  $p = 0.0446$ ).

**Conclusion:** There was a positive correlation between impedance and lateralized MMT data at initial and final assessment. Due to the moderate or weak nature of this association, BIA doesn't seem to be a good test for predicting neurological functional evolution.

**Disclosure of Interest:** None declared.

## P036

### MORPHOFUNCTIONAL ASSESSMENT OF MALNUTRITION IN CANCER PATIENTS: ANALYSIS OF PROGNOSTIC FACTOR

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**Rationale:** Patients with advanced cancer have a high mortality related to different prognostic factors related to their disease and clinical situation. Phase angle (PhA), standardized phase angle (SPhA) and hydration status have been related to mortality in patients with several diseases. Inflammation, a consequence of cancer, affects fluid status and can be identified with PhA. The aim of this study was to determine the predictive role of PhA on 1 year survival.

**Methods:** Observational and prospective study of clinical practice. Outpatients were admitted from the Division of Oncology and began a comprehensive program for the morphofunctional assessment of malnutrition that included bioelectrical impedance analysis (BIA), nutritional ultrasound, dynamometry, Timed Up & Go Test (TUG), biochemical parameters (albumin, PCR/prealbumin), anthropometric data, intake assessment, GLIM criteria, Nutriscore nutritional screening tool, and Subjective Global Assessment (SGA).

**Results:** A total of 55 patients were included, 61,8% males, mean aged  $60,9 \pm 11,9$  years. Clinical changes were reported after 3 months nutritional

intervention program: Nutriscore 72,2% to 36,8%. From SGA C (64,8%) at baseline to C (21,1%) at the end of the program.

The morphofunctional assessment of malnutrition reported:

-Classic Parameters: mean values of weight  $64,8 \pm 14,1$ , height  $167,5 \pm 9,4$  cm, BMI  $23,0 \pm 4,0$  Kg/m<sup>2</sup>. weight loss 11,3% , reduced food intake  $\leq 50\%$  (24,1%).

-BIA: Phase angle (PhA)  $5,4 \pm 1,0^\circ$ ; standardized phase angle (SPhA)  $0,3 \pm 1,6$ ; Body Cell Mass  $26,3 \pm 7,0$  Kg; Fat free mass index  $18,4 \pm 2,6$  Kg/m<sup>2</sup>; fat mass index (FMI)  $4,6 \pm 2,6$  Kg/m<sup>2</sup>, appendicular lean mass (ALM)  $19,3 \pm 4,6$  Kg; appendicular skeletal muscle index (ASMI)  $8,9 \pm 1,7$  Kg/m<sup>2</sup>; and hydration  $73,4 \pm 1,1$  Kg.

-Nutritional ultrasound: in a subgroup of 24 patients the *rectus femoris* muscle cross-sectional area (RFCSA) was  $3,75 \pm 1,7$  cm<sup>2</sup>; X-axis  $3,6 \pm 0,9$  cm; Y-axis  $1,3 \pm 0,7$  cm; and adipose tissue  $0,6 \pm 0,3$  cm. Abdominal adipose tissue ultrasound: total  $2,65 \pm 4,82$  cm; preperitoneal visceral adipose tissue  $0,65 \pm 0,31$  cm.

-Functional tests: dynamometry  $26,7 \pm 10,7$  Kg and TUG  $8,6 \pm 0,4$  s.

-Biochemical parameters: albumin  $3,15 \pm 0,6$  g/dL; PCR/prealbumin  $0,34 \pm 1,0$ ;

There were a good correlation with body composition, PhA  $R = 0,53$   $p < 0,05$ , ALM  $R = 0,71$   $p < 0,05$  and BCMI  $R = 0,55$   $p < 0,05$  with handgrip. The RFCSA has a correlation of  $R = 0,65$   $p < 0,01$  with dynamometry and of  $R = 0,6$   $p < 0,05$  with ALM.

The median follow-up for the entire cohort was  $12 \pm 6,5$  months (4–22) with a mortality, disease progression and hospitalization rates of 38,2%, 49,1% and 10,9%, respectively, during the follow-up period.

Significant differences ( $p < 0,05$ ) were found between survivors and non-survivors in PhA  $5,82 \pm 1,2$  vs  $4,99 \pm 0,76$ ; SPhA  $1,39 \pm 2$  vs  $-0,45 \pm 1,18$ ; albumin  $3,44 \pm 0,6$  vs  $2,92 \pm 0,6$  g/dL. Trend towards statistical significance in PCR/prealbumin  $0,12 \pm 0,3$  vs  $0,56 \pm 1,4$  ( $p = 0,069$ ); and TUG  $7,1 \pm 1,4$  vs  $9,66 \pm 5,0$  ( $p < 0,054$ ).

The nutritional intervention program is effective as it significantly reduces malnutrition.

Morphofunctional assessment incorporates muscular and functional assessment tools and could provide a relevant prognostic and diagnostic vision in patients with advanced cancer. The prognostic analysis of cancer patients is associated with new morphofunctional markers such as phase angle and hydration status.

**Conclusion:** The nutritional intervention program is effective as it significantly reduces malnutrition.

Morphofunctional assessment incorporates muscular and functional assessment tools and could provide a prognostic and diagnostic vision of relevance in patients with advanced cancer. The prognostic analysis of cancer patients is associated with new morphofunctional markers such as phase angle and hydration status.

**Disclosure of Interest:** None declared.

## P038

### CONTROLLING NUTRITIONAL STATUS (CONUT) SCORE AS A PREDICTIVE MARKER OF IN-HOSPITAL MORTALITY IN ELDERLY PATIENTS: A POOLED ANALYSIS OF COHORT STUDIES

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**Rationale:** The controlling nutritional status (CONUT) score assesses nutritional status and is associated with short-term and long-term prognosis in some diseases, but the significance of CONUT score for the prognosis of in-hospital mortality in elderly patients is unknown.

**Methods:** We retrospectively analyzed data from 12,663 elderly patients from two multicenter prospective cohort studies. Receiver operating characteristic curve analyses for in-hospital mortality as the endpoint were performed, and the appropriate cut-off value of CONUT score was determined by Youden index. Univariate and multivariate analyses of predictive factors for in-hospital mortality were performed. The patients were then divided into two groups according to the CONUT cutoff value, and the differences in clinical characteristics and in-hospital clinical outcomes between the two groups were compared.



**Results:** Among all of the patients, 178 (14%) patients experienced an in-hospital death. The optimal cut-off values were 5.5 for the CONUT score. Multivariate analyses identified CONUT was an independent predictor for postoperative short-term complications (OR 3.242; 95% CI 2.148–4.892;  $P < 0.001$ ). We further explored that patients with high CONUT score had a higher incidence of in-hospital complications (13.1% vs 8.6%,  $P < 0.001$ ) and prolonged hospital stay ( $14.86 \pm 9.95$  vs  $13.83 \pm 9.46$ ,  $P < 0.001$ ), but total hospital costs were not significantly higher ( $3.37 \pm 28.83$  vs  $2.74 \pm 4.08$ ,  $P = 0.105$ ).

**Conclusion:** The present study demonstrated that the CONUT score was an independent predictor for in-hospital mortality in elderly patients.

**Disclosure of Interest:** None declared.

### P039

#### COMPARISON OF DIETARY INTAKE, PHYSICAL ACTIVITY, AND SLEEP BEFORE AND DURING RAMADAN AMONG SAUDI ADULTS

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**Rationale:** During the holy month of Ramadan, healthy adult Muslims must abstain from eating and drinking from dawn to sunset. Notable lifestyle changes can occur due to the sudden shift in eating routine with fasting during daylight hours. Therefore, this study aimed to examine the changes in dietary intake, physical activity level (PAL), and sleep duration before and during Ramadan among healthy Saudi adults.

**Methods:** The study was conducted in Jeddah city, Saudi Arabia, and a total of 115 Saudi adults (96 females and 19 males) were recruited. Inclusion criteria were: healthy Saudi aged 18–45 y, with no self-reported history of serious medical conditions, not under medications, not dieting or seeking to lose weight (weight stable during the past 3 months), and not pregnant or lactating females. To compare lifestyle changes before and during Ramadan, dietary intake, PAL, and sleep duration were collected over three months in two separate periods: the first period was before Ramadan (during the two months before Ramadan, 2019), and the second period was during Ramadan (the last three weeks of Ramadan, 2019). Dietary intake was assessed using 24-hour food recall. PAL was assessed using the International Physical Activity Questionnaire Short Form (IPAQ-SF). Sleep duration was assessed using a sleep record for seven consecutive days. Anthropometric measurements including height, body weight, BMI, waist circumference and body composition were also taken before and during Ramadan. Paired t-test, and Chi-square test were used to assess the changes in the study variables in the two periods.

**Table 1:**

Characteristics of study participants before and during Ramadan (n=115).

Variables	Before Ramadan	During Ramadan	*P-value
Height (cm)	158.2±8.41	158.2±8.41	-
Weight (kg)	66.4±18.1	66.1±17.8	<b>0.04</b>
BMI (kg/m <sup>2</sup> )	26.4±6.1	26.3±6.0	<b>0.04</b>
Waist circumferences (cm)	86.1±15.1	86.9±14.9	0.09
Body fat (%)	37.43±0.1	37.32±0.1	0.61
Visceral fat	6.6±3.8	6.5±3.7	0.35
Energy (kcal/day)	1482.9±536.4	1635.5±635.1	<b>0.01</b>
CHO (%)	48.2 ±9.1	48.1±8.3	0.90
Protein (%)	16.3±4.9	14.8±4.6	<b>0.01</b>
Fat (%)	35.6±9.2	37.1±9.0	0.19
CHO (g/day)	180.8±72.1	202.6±88.7	<b>0.00</b>
Protein (g/day)	59.3±23.0	59.1±23.2	0.90
Fat (g/day)	65.4±63.6	69.7±32.3	0.46
<b>PAL</b>			0.19
Sedentary	60 (52.20)	56 (48.70)	
Moderate	37 (32.20)	47 (40.90)	
Vigorous	18 (15.60)	12 (10.40)	
Sleep duration (hour)	7.54±1.7	7.59±1.0	0.83

**Note:** Data expressed as mean±SD or frequency and percentage N (%). \*p-value tested by paired t-test for continuous variables and Chi-square test for categorical variables, p-value significant < 0.05. Abbreviations: BMI, Body mass index; CHO, carbohydrates; PAL, physical activity level; SD, standard deviation.

**Results:** Table 1 displays characteristics of study participants across the study periods. The results revealed significant increases in the mean daily energy intake and carbohydrates (CHO, g/day) during Ramadan compared with before Ramadan ( $p$ -value < 0.05), whilst the percentage of energy from protein (%) was significantly decreased in Ramadan ( $p$ -value < 0.05). No significant changes in PAL or sleep duration before and during Ramadan were observed. However, there were significant decreases in body weight and BMI during Ramadan compared with before Ramadan ( $p$ -value < 0.05).

**Conclusion:** This study indicates that during Ramadan, there was greater daily energy and CHO intake with no changes in PAL or sleep duration. The study also suggests that Ramadan fasting may be a promising weight loss strategy. Future investigation concerning the potential benefits of Ramadan fasting is needed.

**Disclosure of Interest:** None declared.

### P040

#### DIETARY HABITS AND LIFESTYLE CHANGES DURING THE COVID-19 PANDEMIC IN ANKARA, TURKEY

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**Rationale:** COVID-19 pandemic has caused changes on human health, behavior and lifestyle in worldwide since the outbreak in December 2019. Lockdowns, quarantine measurements, working and studying from home and stress can affect eating habits during this period. Therefore, the aim of the current study was to evaluate dietary habits and lifestyle changes during the pandemic.

**Methods:** A cross-sectional study was conducted through an online questionnaire consisting of sociodemographic characteristics, anthropometric measurements, nutrition, physical activity and lifestyle habits. A total number of 379 individuals, 117 men (30.9%) and 262 women (69.1%), participated to the study. Individuals were asked to declare their consumption of certain foods and food groups, and lifestyle habits comparing before and during the pandemic period. Statistical evaluation of the data was carried out with the SPSS 23 program.

**Results:** A total of 379 respondents whose the mean age is  $33.8 \pm 10.9$  years have been included in the study. The mean body mass index of the participants is  $24.8 \pm 4.6$  kg/m<sup>2</sup>. In the pandemic, it was determined that the consumption of fresh fruits and vegetables ( $p > 0.05$ ), homemade meals ( $p > 0.05$ ), and herbal tea increased ( $p \leq 0.001$ ), whereas the consumption of takeaway meals ( $p \leq 0.01$ ) and fast food decreased ( $p \leq 0.05$ ). While 39.6% of all participants stated that they feel more hungry than usual during the lockdown and this rate is higher for women (49.6%,  $p \leq 0.05$ ). 22.7% of the participants stated that they had difficulty in purchasing food. 2.6% of smokers indicated that they quit smoking during the pandemic. It was observed that 67.5% of the participants used supplements and 28.9% of them started using supplements during the pandemic period. While 38.3% of the participants stated that they did physical activity in the pre-pandemic period, the rate of participants who continued to do physical activity during the pandemic period was determined as 30.3%.

**Conclusion:** Due to the pandemic lockdown, sedentary lifestyle might be increased in adults. It has been shown that the food groups and amounts consumed differed compared to the pre-pandemic. While lockdown is a necessary to protect public health, Results in this study indicate that it alters adults' lifestyle changes, physical activity and eating behaviors in Ankara.

**Disclosure of Interest:** None declared.

### P041

#### INTAKE AND SOURCES OF TOTAL SUGAR AMONG FILIPINO CHILDREN AND ADOLESCENTS AGED 7 MONTHS TO 18 YEARS

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**Rationale:** The Philippines is identified as a diabetes "hot spot" in Southeast Asia. One recommendation to reduce diabetes is reducing the sugar content of processed foods (1). The study examined intake levels and sources of added sugar among Filipinos aged 7 months to 18 years using nationally representative food consumption data.

**Methods:** The amount and major sources of total sugar consumed by a sample of 9901 Filipino children and adolescents aged 7 months to 18 years were estimated using two non-consecutive 24-hour recalls. All foods consumed were grouped into minimally processed and processed food categories. Total sugar content of consumed foods was obtained from food composition tables. Usual or habitual sugar intake was estimated using PC-SIDE software to reduce measurement error. Percentage of calories from sugar by demographic characteristic was calculated. The proportion of sugar contributed by foods in each category was determined. Change in consumption of foods from 2008 to 2013 was examined.

**Results:** Total sugar intake varied by demographic characteristic, ranging from 15.6 to 59.6 grams per day across all ages and comprising 5.3% to 30.9% of energy. Processed foods contributed 64% to 75% of total sugar intake. Major food categories that contributed >10% of sugar among children aged 7 months to 2 years were milk formula and milk products, baked products, sugar and confectionery. For children aged 1 to 18 years, major contributors were baked products, sugar and confectionery, and non-alcoholic/sugar-sweetened beverages. From 2008 to 2013, consumption of non-alcoholic/sugar-sweetened beverages and baked products increased significantly.

**Conclusion:** Reducing the added sugar content of certain processed foods and offering unsweetened alternatives will benefit the health of young Filipinos. These foods include milk formula and milk products, baked products, confectionery, and non-alcoholic/sugar-sweetened beverages.

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**Disclosure of Interest:** None declared.

## P042

### RELATIONSHIP BETWEEN THE THICKNESS AND ECHOGENICITY OF THREE MUSCLE GROUPS WITH FUNCTIONAL ASSESSMENT

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**Rationale:** Ultrasound provides scope for the efficient assessment of muscle quality helping the diagnosis of low muscle mass. The relationship between muscle size, quality and function is as yet incompletely characterised and a move to assessing both size and quality would improve our understanding. Ultrasound echogenicity has been highlighted as a technique to measure muscle quality and might play an important role.

**Methods:** This is a prospective longitudinal study of 101 elderly patients admitted for hip fracture. All individuals underwent ultrasonographic measurements at admission of the masseter, biceps and quadriceps muscle thickness and echogenicity. The ability to climb stairs and feed themselves was assessed with the Barthel index. Finally dysphagia was assessed by the EAT-10 screening questionnaire.

**Results:** The mean age was  $86 \pm 9$  years and 70% were women. Dysphagia was present in 13.9% (14.1% women and 13.3% men) and 26.8% eat a triturated diet. 31.7% have the ability to climb stairs (26.8% women and 42.1% men) and 71.7% have the ability to feed themselves (75.6% women and 63.2% men). The thickness of the masseter muscle was related to dysphagia; biceps brachii with the ability to eat independently; and quadriceps with mobility on level surfaces and ability to climb stairs.

**Conclusion:** The ultrasonographic measure of muscle thickness would indicate the functional status of the localized area.

**Disclosure of Interest:** None declared.

## P043

### WEIGHT STATUS AND BODY COMPOSITION IN PATIENTS WITH CROHN'S DISEASE

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**Rationale:** Recent studies report high prevalence of overweight and obesity in patients with Crohn's Disease (CD), whereas multifactorial alterations in their body composition have been also recorded. The aim of the present study was to assess body weight status and body composition indices in patients with CD.

**Methods:** 250 adult CD patients were evaluated [54.8% men, mean age  $41.2 \pm 14.1$  years, 37.2% active disease according to the Harvey-Bradshaw index (HBI <5: remission)]. Anthropometric parameters [body weight, height, body mass index (BMI), waist circumference] were measured. Body composition analysis was performed by dual x-ray absorptiometry and appendicular skeletal muscle mass index (ASMI) and fat-free mass index (FFMI) were calculated and compared with relevant guidelines for the assessment of muscle mass.

**Results:** Mean BMI was  $27.2 \pm 6.1$  kg/m<sup>2</sup> and the prevalence of overweight (BMI 25–29.9 kg/m<sup>2</sup>) and obesity (BMI  $\geq 30$  kg/m<sup>2</sup>) was 60.8% (33.9% overweight and 26.9% obese, respectively) in the whole sample. Prevalence of overweight and obesity did not differ between males and females ( $p > 0.05$ ). 45% of males and 58.2% of females had high waist circumference ( $\geq 92$ cm for males,  $\geq 80$ cm for females). Males had higher waist circumference compared to females ( $92.9 \pm 13.8$  cm vs.  $85.3 \pm 14.1$  cm,  $p$ -value < 0.001), lower total body fat compared with females ( $25.3 \pm 8.3\%$  vs.  $38.0 \pm 9.5\%$ ,  $p$ -value < 0.001) and higher values for ASMI [ $8.5$  (7.9, 9.3) kg/m<sup>2</sup> vs.  $6.8$  (6.4, 7.2) kg/m<sup>2</sup>,  $p$ -value 0.001] and FFMI [ $19.6 \pm 2.3$  kg/m<sup>2</sup> vs.  $16.2 \pm 1.9$  kg/m<sup>2</sup>,  $p$ -value < 0.001]. 7.2% and 18.3% of CD patients had low ASMI and FFMI, respectively. 2.4% of overweight and 1.7% of obese patients had low ASMI and 9.8% of overweight and 1.7% of obese had low FFMI, respectively. Interestingly, 11.8% and 31.8% of normal-weight patients had low ASMI and FFMI, respectively. No statistically significant differences were observed in the aforementioned parameters between patients with active disease and in remission.

**Conclusion:** Six out of ten patients of our sample were overweight/obese. However, increased body weight seems to protect against low muscle mass that was found more prevalent in normal weight patients.

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**Disclosure of Interest:** None declared.

## P044

### INCREASED WAIST CIRCUMFERENCE AS A PREDICTOR OF OUTCOME AMONG HOSPITALIZED PATIENTS WITH ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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**Rationale:** This cohort observational study aimed to investigate whether baseline waist circumference (WC) values - using cut-off points as described by World Health Organization (WHO, 2008) [1]- during hospitalization, were associated to 12 months disease outcome differences among hospitalized patients with acute exacerbation (AE) of Chronic Obstructive Pulmonary Disease (COPD).

**Methods:** In this study 60 participants with COPD AE were consecutively admitted to Evangelismos Hospital Pulmonary Department (protocol ID:

53/27-01-2016). Within first 48h of admission, participants' WC were measured as described by WHO [2]. Participants were categorized in two main groups according to WHO cut-off points: Group A, as those with increased risk for metabolic complications (MCs) [IRMCs] and Group B, as those with no risk for MCs [1]. Length of hospital stay (LOS) was calculated by subtracting day of admission from day of discharge. After discharge, participants were prospectively followed-up for 12 months with four structured phone interviews (every three months), focusing on new incidence of COPD AE defined as previously described [3].

**Results:** Sixty participants (mean age=68.3±8.3 years, mean WC=104.3 ± 16.3 cm) were analyzed. Forty-eight out of 60 participants belonged to Group A (80%), while a subgroup of 42 patients had severe IRMCs. Group A participants had on average lower median LOS by 4.5 days (95% CI: -8.10, -0.99,  $p=0.016$ ) and presented lower risk for COPD AE incidence (RR=0.78, 95% CI 0.71-0.85 and RR=0.75, 95% CI 0.6-0.9, respectively) compared to those who had no risk for MCs (Group B).

**Conclusion:** Among patients hospitalized with COPD AE, increased WC values may serve as a protective factor for future AE incidence.

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**Disclosure of Interest:** None declared.

#### P045

### MASSETER, BICEPS BRACHII AND QUADRICEPS FEMORIS MUSCLES THICKNESS AND ECHOGENICITY IN HIP FRACTURE PATIENTS

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**Rationale:** The current literature does not allow to make conclusive recommendations about the use of muscle ultrasound in hospitalized people. However, this technique is very promising, in the context of sarcopenia assessment because proofs very useful for rapidly obtaining information on muscle mass and architecture. Nowadays there is no data of the ultrasonographic muscle measurement in Spanish population with hip fracture.

**Methods:** This is a prospective longitudinal study of 113 elderly patients admitted for hip fracture. Of the 113 patients in the study 12 were excluded. All individuals underwent ultrasonographic measurements at admission of the masseter, biceps and quadriceps muscles thickness and echogenicity. We use the Heckmatt scale to assess muscle echogenicity.

**Results:** The mean age was 86 ± 9 years. Masseter muscle thickness was 10.4 (± 2.73) mm (10.35 ± 2.05 mm in women and 11.5 ± 3.2 mm in men) and 44.6% presented a Heckmatt scale 3-4. Biceps brachii thickness was 22.3 (± 7.2) mm (22.2 ± 7.07 mm in women and 23.5 ± 8.4 mm in men) and 69.6% presented a Heckmatt scale 3-4. Quadriceps thickness was 22.1 (± 6.45) mm (22.1 ± 6.3 mm in women y 22.2 ± 6.98 mm in men) and 75% presented a Heckmatt scale 3-4.

**Conclusion:** The ultrasound measurement of the masseter, biceps brachii and quadriceps femoris muscular thickness and echogenicity might be a not invasive and easy to perform method to assess muscle mass in hospitalized people.

**Disclosure of Interest:** None declared.

#### P046

### MINI NUTRITIONAL ASSESSMENT AND NUTRITIONAL RISK SCREENING ARE GOOD TOOLS FOR NUTRITIONAL SCREENING IN HOSPITALIZED ELDERLY PATIENTS

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**Rationale:** Several parameters and indicators of nutritional diagnosis are being studied in elderly hospitalized patients, as well as analysis of comparison and correlation between nutritional screening instruments. Thus, this study investigated and compared clinical variables with nutritional screening instruments in hospitalized elderly patients.

**Methods:** A retrospective study was carried out with hospitalized elderly patients aged over 65 years (n = 277). The agreement between the nutritional risk screening (NRS) and the mini nutritional assessment (MNA) and its relationship with clinical variables were investigated. For statistical analysis, the kappa coefficient, Chi-square, Fischer, Mann Whitney and McNemar tests were used.

**Results:** Upon admission, it was found that 45.8% (n=127) of the patients were at nutritional risk by the NRS and 56.7% (n=157) were at risk of malnutrition or malnutrition by the MNA. There was a significant difference ( $p=0.0002$ ) between the nutritional risk classifications of the two instruments (MNA and NRS). The MNA showed a higher percentage of risk of malnutrition or malnutrition than the NRS. Using the Kappa coefficient, there was moderate agreement ( $k=0.5430$ ) between the screening instruments. Age, length of stay, gender and disease were associated with NRS. Evolution of body weight, length of stay and disease were associated with MNA.

**Conclusion:** The findings showed moderate agreement between the two instruments, which may indicate that both could continue to be used routinely in clinical and nutritional hospital practice.

**Disclosure of Interest:** None declared.

#### P049

### RELATIONSHIP BETWEEN ADHERENCE TO MEDITERRANEAN DIET AND NUTRITIONAL ADEQUACY

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**Rationale:** Adequate intake of essential nutrients required for optimal nutrition and health status is called nutritional adequacy (1). Mediterranean diet (MD) is suggested as the one of the healthiest nutritional models. The MD reduces the risk of chronic diseases, especially cardiovascular diseases and cancer, due to its low carbohydrate ratio and high dietary fiber, healthy fat, and antioxidants contents (1). The aim of this study is to examine the nutritional adequacy of the MD in healthy adults.

**Methods:** This cross-sectional descriptive study included 926 healthy individuals aged 19 to 64, between February and June 2020. The questionnaire, consisting of general information, Mediterranean Diet Assessment Tool (PREDIMED), and a 24-hour dietary recall, was applied by phone due to COVID-19 pandemic restrictions. Percentage of meeting the energy and nutrient requirements calculated according to the recommendations of Turkey Specific Food and Nutrition Guidelines-2015 by a trained dietitian.

**Results:** The average age of the participants were 35.1±13.40 and 50.4% of individuals were female. The average PREDIMED scores were 5.9±2.21 (out of 12 points). There were significant positive correlations between the PREDIMED score and the percentage of meeting the dietary fiber, vitamin K, and vitamin C requirements and negative correlations between the percentages of meeting the energy, vitamin E, and iron requirements ( $p<0.05$ ) (Table 1). In addition, PREDIMED scores were positively

**Table 1.**

The relationship between the Mediterranean Diet Adherence Score and the percentages of meeting the energy and some nutrients requirements.

	Mediterranean Diet Adherence Score	
	r	p
Percentage of meeting the energy requirement	-0.077	0.019
Percentage of meeting dietary fiber requirement	0.083	0.012
Percentage of meeting the vitamin E requirement	-0.094	0.004
Percentage of meeting the vitamin K requirement	0.109	0.001
Percentage of meeting the vitamin C requirement	0.113	0.001
Percentage of meeting the iron requirement	-0.102	0.002
MUFA/SFA ratio	0.217	0.000

correlated with the ratio of dietary monounsaturated fatty acids (MUFA)/saturated fatty acids (SFA), showing a healthier fat intake profile ( $p < 0.001$ ). **Conclusion:** In this study, the average PREDIMED scores were found low. The low consumption of red wine in the Turkish population and/or not wanting to specify its consumption, and the higher intake of SFA and lower intake of MUFA, as previously shown in the Turkey National Nutrition and Health Survey (TNHS)-2019 study, negatively affected the overall PREDIMED score. Since consumption of vegetables and fruits are high in Turkish population and they are rich in dietary fiber and vitamins K and C, positive correlations were found with these nutrients. In addition, the MD is associated with less energy intake due to the healthy eating principles. MUFA intake, the main fatty acids of olive oil, was increased with adherence to the MD.

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1. Castro-Quezada, I., Román-Viñas, B., & Serra-Majem, L. (2014). The Mediterranean diet and nutritional adequacy: a review. *Nutrients*, 6(1), 231-248.

**Disclosure of Interest:** None declared.

#### P050

### ASSOCIATION OF HYPERCHOLESTEROLEMIA OR HYPERTRIGLYCERIDEMIA WITH DEGREE OF HEPATIC STEATOSIS IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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**Rationale:** Non-alcoholic fatty liver disease (NAFLD) is the most metabolic disease in liver. NAFLD pathogenesis is associated with Insulin resistance, hyperinsulinemia, deposition of triglycerides (TGs) and liver inflammation. In this study we are evaluating the association between severity of hypertriglyceridemia and cholesterolemia with stage of liver steatosis.

**Methods:** This cross-sectional study was carried out among 268 patients with NAFLD older than 13 years old. We assessed the levels of fasting blood sugar (FBS), triglyceride (TG), total cholesterol (TC), lipid profile and liver enzymes (AST, ALT, and GGT). Hepatic steatosis and fibrosis were determined using an echo scene 502 fibro scan.

**Results:** For TC, the analysis was performed on 268 subjects (146 male and 122 female) with following frequency of steatosis stages: S0 = 57; S1 = 46; S2 = 57; S3 = 108. Compared with subjects with TC levels less than 200 mg/dl, patients with hypercholesterolemia had a significant higher odds ratio (OR) of steatosis [stage 2: OR = 3.03 (95% confidence interval (CI): 1.08, 8.51,  $P = 0.035$ ) and stage 3: OR = 3.90 (95% CI: 1.52, 9.98,  $P = 0.004$ )]. After evaluated of TG we found that patients with hypertriglyceridemia compared with subjects with normal TG levels (<150 mg/dl) had higher odds ratio of steatosis [stage 2: OR = 4.81 (95% CI: 1.98, 11.67,  $P = 0.001$ ) and stage 3: OR = 6.00 (95% CI: 2.64, 13.61,  $P < 0.001$ )]. However, no significant association was observed between hypercholesterolemia [OR = 0.81 (95% CI: 0.21, 3.05)] or hypertriglyceridemia [OR = 1.27 (95% CI: 0.45, 3.62)] and steatosis stage 1.

**Conclusion:** Hypercholesterolemia or triglyceridemia can be positively associated with higher odds of hepatic steatosis, then each patient with hyper triglyceridemia > 200 or cholesterol > 150 exam for fatty liver steatosis before of progress of disease to cirrhosis.

**Disclosure of Interest:** None declared.

#### P051

### COMPARISON BETWEEN WHOLE-BODY AND SEGMENTAL BIOELECTRICAL IMPEDANCE FOR BODY COMPOSITION

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**Rationale:** Chronic kidney disease patients have an altered and negative body composition associated with higher mortality risk. Bioelectrical impedance analysis (BIA) is an available method to evaluated body composition. This study aimed to compare data from whole-body wrist-to-

ankle BIA (WBBIA) and segmental BIA (SEGBIA) applied in subjects with chronic kidney disease.

**Methods:** CKD patients under non-dialysis-dependent (NDD), hemodialysis (HD), peritoneal dialysis (PD) and kidney transplant (KTx) treatment were evaluated. WBBIA and SEGBIA provided body composition data (BCM, FMC). BIA provided data of fat free mass (FFM) and index (FFMI) and fat mass (FM) and index (FMI). Measurements were performed consecutively after an 8-hour fasting, emptying of the urinary bladder, drainage of the peritoneal dialysate and immediately after the mid-week hemodialysis session. Cross-sectional and prospective analyses were carried out after 10±2 months. Differences (WBBIA - SEGBIA; 95%CI) and agreement (Bland-Atman analyze) between devices were evaluated with limits of agreement (LOA) calculated (mean bias ± 1.95\*standard deviation). The intraclass correlation coefficient (ICC) was used to measure the strength of agreement.

**Results:** Patients had a mean age of 48±10 years old, 51% (n=136) men, 31% in NDD (n = 83), 29% in HD (n = 78), 9% in PD (n = 23) and 31% in KTx (n = 81) groups. For cross-sectional data, agreement between FFM from WBBIA and SEGBIA had an ICC = 0.142 for men and an ICC = 0.122 for women, for FFMI had an ICC = 0.096 for men and an IC = 0.050 for women, for FM had an ICC = 0.288 for men and ICC = 0.448 for women, for FMI had an ICC = 0.330 for men and ICC = 0.517 for women. Bias between WBBIA and SEGBIA for FFM was -14.83±6.13 for men (LOA= 11.06; 18.37) and -11.50±4.80 for women (LOA= -20.81; -2.09), for FFMI was -5.25±2.26 for men (LOA= -9.67; -0.82) and -4.75±2.20 for women (LOA= -9.07; -0.44), for FM was 8.37±8.15 for men (LOA= -7.60; 24.34) and 0.00±7.47 for women (LOA= -14.64; 14.64) and for FMI was 2.85±2.77 for men (LOA= -2.58; 8.29) and -0.06±3.03 for women (LOA= -6.00; 5.88). For body composition change data (longitudinal assessment - cross sectional data) agreement between FFM from WBBIA and SEGBIA had an ICC = 0.473 for men and an ICC = 0.518 for women, for FFMI had an ICC = 0.424 for men and an IC = 0.500 for women, for FM had an ICC = 0.581 for men and ICC = 0.495 for women, for FMI had an ICC = 0.590 for men and ICC = 0.488 for women. Bias between WBBIA and SEGBIA for FFM was 1.03±3.50 for men (LOA= -5.83; 7.89) and -0.58±2.59 for women (LOA= -5.60; 4.56), for FFMI was 0.19±1.31 for men (LOA= -2.37; -2.76) and -0.15±1.03 for women (LOA= -2.17; 1.86), for FM was -0.11±3.42 for men (LOA= -6.82; 6.60) and -0.09±2.74 for women (LOA= -5.47; 5.28) and for FMI was -0.05±1.20 for men (LOA= -2.40; 2.30) and -0.21±1.17 for women (LOA= -2.51; 2.09).

**Conclusion:** In conclusion, data obtained with WBBIA and SEGBIA had poor agreement; the protocols cannot be used interchangeably and the agreement between the protocols was worse for FFM and FFMI.

**Disclosure of Interest:** None declared.

#### P052

### ASSESSMENT OF THE CLINICAL USABILITY OF ADULT UNDERNUTRITION DIAGNOSTIC CRITERIA IN AN ACADEMIC HOSPITAL, GAUTENG, SOUTH AFRICA

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**Rationale:** Are the GLIM diagnostic criteria for adult undernutrition on admission in a resource-limited academic hospital situated in Gauteng, South-Africa.

**Methods:** A descriptive, observational, cross-sectional study was used to assess the usability of the criteria to determine undernutrition. A total of 95 adult patients in one urban, public hospital participated in the study. Non-random convenient sampling was used.

GLIM phenotypical criteria include non-volitional weight loss, BMI, reduced muscle mass where Mid Upper Arm Circumference (MUAC) and Handgrip Strength (HGS) are diagnostic measurements. The etiological criteria include reduced food intake and assimilation, disease burden or prevalence of inflammation.

All participants were screened with above-mentioned criteria and reasons for not being able to test criteria were recorded.

**Results:** 56.84% of patients were diagnosed with undernourishment using researchers' equipment, but if the hospital's equipment was used, only 11.58% of patients would have been given the same diagnosis. 77.89% and 75.59% of the sample could have their weight and height effectively measured respectively, although MUAC could be measured in 98.95% of

patients. Handgrip strength could be measured successfully 94.74% of times, but percentage weight loss could be determined in only 45.26% of patients. Inflammatory conditions could be obtained from 77.89% of patient files, and C-reactive protein (CRP) was obtained from 43.16% of patient files. 96.84% of patients were able to report on intake.

**Conclusion:** Undernutrition diagnoses in adult patients in South Africa are high if using available, working and calibrated equipment. Inadequate resources may cause undernourished patients to remain undiagnosed. Therefore, a reliable, quick, and easy method of identifying undernourishment should be made available. The GLIM criteria provide an effective means with which to diagnose undernutrition in a clinical setting. However, in third world countries like South Africa, it remains a problem to source certain diagnostic tools such as dynamometers, maintain equipment and ensure regular calibration due to poor funding in government hospitals. Of all the phenotypic criteria, MUAC could be used as a reliable measurement. Asking about the patient's oral intake seems to be most usable etiologic criterion, as CRP values obtained do not always correlate with the presence of inflammation.

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**Disclosure of Interest:** None declared.

### P053

#### ASSOCIATION OF CT SKELETAL MUSCLE AREA AND DENSITY WITH AGE: A PROSPECTIVE STUDY IN 200 NON-CRITICALLY ILL PATIENTS

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**Rationale:** The CT skeletal muscle area (SMA) at L3 highly correlates with whole-body muscle mass. The CT skeletal muscle density (SMD) is a measure of muscle quality. The higher the SMD is, the less myosteatosis there is. The goal was to study the variations of SMA and SMD with age in 200 non-critically ill patients.

**Methods:** 200 non-critically ill patients were prospectively recruited in the USVALID study. Adult patients, who had a CT scan at the level of the third lumbar vertebra (L3) for any clinical reason in the last 48 hours before the study examination, were included.

**Results:** 118 men and 82 women were included from surgical and medical services. Patients' mean BMI was  $24,9 \pm 4,8$  kg.m<sup>-2</sup>. Patients' median (IQR) [range] age was 61,3 (51,0 – 70,1) [19,7 – 86,2] years. SMA had no correlation with age. SMD decreased by 0,3 HU for every one-year increase in age (Table 1).

**Table 1.**

Correlation of Skeletal Muscle Area and Skeletal Muscle Radiation Attenuation with Age

	R <sup>2</sup>	Estimate	95% CI of Estimate	P
SMA (cm <sup>2</sup> )	0	-0,08	-0,35 to 0,20	0,59
SMD (HU)	0,23	-0,30	-0,38 to -0,22	<0,001

**Conclusion:** SMD, but not SMA showed a variation with age. Younger patients had higher SMD and therefore less myosteatosis.

**Disclosure of Interest:** None declared.

### P054

#### HOW TO USE PATIENT INVOLVEMENT TO DEVELOP A NEW A LA CARTE FOOD CONCEPT AT HOSPITALS

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**Rationale:** Hospitalized patients often have difficulties reaching their nutritional needs and hospital food is the first line of intervention. To involve patients in the development of a new a la carte food concept in a Danish hospital, we aimed to investigate preferred dishes and portion sizes by asking inpatients.

**Methods:** A quantitative survey was conducted between June and August 2020. Participants were recruited from Oncology, Gastroenterology, Urology and Medical wards at Herlev-Gentofte Hospital. The survey examined the patient's thoughts about the new concept, such as types of food, number of desired dishes, preferred meal sizes, preference for hot or cold meals and when to serve in-between-meals. Lastly, the patients were asked to make fictitious orders for a full day choosing between 18 breakfast items, 43 lunch and dinner meals, and 18 in-between-meals.

**Results:** The survey included 130 patients (52% women), median age 72 years. The selection of dishes on the menu was considered appropriate by 86%. Most patients preferred traditional Danish dishes (84%) served in small portions sizes (71%) equivalent to 190 grams. The option of choosing several small dishes for each meal was desired. The majority (67%) chose their breakfast served cold with a median of 3 items (IQR:3-5), the most popular item being soft boiled egg (47%). Lunch served cold was preferred by 39% and they chose 4 dishes (median, IQR:2-3). Old fashioned apple pie was the most popular dish (26%). Dinner served warm was preferred by 60% and they chose 2.5 dishes (median, IQR:2-3), the most popular dish was baked salmon (29%). Almost all patients (94%) expressed that in-between-meals could be served with a main meal.

**Conclusion:** Patients admitted to Herlev-Gentofte Hospital prefer traditional Danish dishes served in small portion sizes with the opportunity to choose from several different dishes for each meal.

**Disclosure of Interest:** None declared.

### P055

#### NUTRITIONAL STATUS AND NUTRITION IMPACT SYMPTOMS (NIS) IN PATIENTS WITH COVID-19

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**Rationale:** Currently little is known about the nutritional status and target areas of the nutritional therapy to patients admitted to the hospitals with COVID-19. Therefore, the aim was to describe the nutritional status and nutrition impact symptoms (NIS) in patients with COVID-19 referred to nutritional therapy.

**Methods:** This was a retrospective observational study. Patients admitted with COVID-19 in 2020 and referred to clinical dietitians were enrolled. Data on nutritional status, NIS, inflammation and Length Of hospital Stay (LOS) were collected. Further, data on 30-days mortality and readmissions were collected. **Results:** We included 81 patients, 41 (51%) male, median age 75 (IQR: 63-83), and median BMI 25 (IQR: 21-28). Total LOS was median 10 days (IQR: 6-17). Patients were referred to the clinical dietitians at median day 4 (IQR: 3-8). Nutrition route was primarily oral 70 (89%). The 3 most common NIS were; decreased appetite 50 (88%), shortness of breath 26 (55%), and early satiety 20 (47%). Vitamin D status (s-25-OHD) was measured in 21 (26%), of these, 4 (19%) had s-25-OHD below 50 mmol/l.

At the 30 days follow-up 23 (28%) patients were dead, of these 16 (70%) before discharge. The surviving patients were younger (median 72 vs. 82 y, p=0.002), and fewer were admitted from a care facility (17 vs. 48%, p=0.005). Further, survivors had at baseline a lower p-CRP (50 vs. 97, p=0.004), higher p-albumin (28 vs. 24, p=0.009), more covered  $\geq 75\%$  of their energy requirement (43 vs. 25%, p=0.001), and protein requirement (34 vs. 23%, p=0.032). A total of 21 (26%) had been readmitted within 30 days.

**Conclusion:** Patients with COVID-19 had several NIS and the majority had a nutritional intake below need. Only a minority of patients had their vitamin D status measured. Of these, vitamin D deficiency was evident in 1/5. Therefore, nutritional therapy is relevant in this group of patients.

**Disclosure of Interest:** None declared.

## P056

**HAND GRIP STRENGTH AND SERUM ALBUMIN AS PREDICTORS OF PROTEIN ENERGY WASTING AMONG END STAGE RENAL DISEASE PATIENTS**

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**Rationale:** This study generally aimed to determine the association of handgrip strength and serum albumin as an important predictor for PEW and was assessed by Subjective Global Assessment (SGA)-PEW tool or SGA scoring system among ESRD patients undergoing hemodialysis in Davao Regional Medical Center (DRMC) Nephrology Unit.

**Methods:** Regression analysis was the statistical tool used to show the relationship between the variables, a standardized questionnaire was also used for data gathering and enumerated all the respondents that were eligible based on the inclusion and exclusion criteria.

**Results:** ESRD patients enrolled for maintenance dialysis for at least 6 months were included in the study (N=60, mean age 50.48 years). Most were females (51.7%) that had an abnormal body mass index (n=9). Among the participants, 58.3% were found to have weak handgrip strength, 41.7% had moderately decreased serum albumin level, and 56.7 % belonged to mild/moderate PEW level. On determining the relationship between handgrip strength and serum albumin with SGA scores from patients, an ESRD individual with a weak handgrip strength had 0.583 times more likely to develop a severe PEW (CI 0.343-0.991, 5% level of significance, p-value 0.026). In terms of serum albumin level, although an ESRD patient had 0.842 times more likely to develop severe PEW, there was no significant correlation found (OR=0.842, 5% level of significance, p-value 0.601).

**Conclusion:** Weak handgrip strength was an important factor for PEW among ESRD patients who underwent hemodialysis in DRMC. Nutritional assessment and management among ESRD patients were crucial for their survival.

**Disclosure of Interest:** None declared.

## P057

**ASSOCIATION BETWEEN BODY MASS INDEX AND DIET QUALITY INDEX-INTERNATIONAL AND MEDITERRANEAN DIET COMPLIANCE DURING COVID-19 PANDEMIC**

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**Rationale:** Diet Quality Index-International (DQI-I) which consists of diversity, adequacy, moderation, and general balance categories is a tool created to examine the diet quality of populations. Mediterranean diet (MD) is a nutritional model that reduces the risk of many chronic diseases (1). This study was carried out to evaluate the association between body mass index (BMI) and compliance with DQI-I and MD in healthy adults.

**Methods:** This cross-sectional descriptive study included 926 healthy individuals aged 19 to 64, between February and June 2020. The questionnaire, consisting of general demographic information, Mediterranean Diet Assessment Tool (PREDIMED), and a 24-hour dietary recall, was applied by phone due to COVID-19 pandemic restrictions. Body weight and height was self-claimed by participants. DQI-I was calculated according to 24-hour dietary recall by a trained dietitian.

**Results:** The average age of the participants was 35.1±13.40 years and 50.4% of the participants were female. The average BMI was 25.1±4.50, the average DQI-I score was 53.4±9.82 (out of 100 points), and the PREDIMED score was 5.9±2.21 (out of 12 points). There was a significant positive correlation between DQI-I scores and BMI (r=0.094, p=0.004) however there was no correlation between PREDIMED scores and BMI (r=0.022, p>0.05) (Table 1). Average scores for DQI-I subsections were 15±3.59 (78.5%) for diversity (out of 20 points); 26.2±6.11 (65.5%) for adequacy (out of 40 points); 9.9±5.61 (33%) for moderation (out of 30); and 1.7±2.18 (17%) for moderation (out of 10 points).

**Conclusion:** In this study, the average DQI-I score was found low and among sub-sections the minimum score was gathered from the general

**Table 1.**

Correlations between body mass index and diet quality index-international and Mediterranean diet compliance scores

	BMI (kg/m <sup>2</sup> )	
	r	p
DQI-I Scores	0.094	0.004
PREDIMED Scores	0.022	0.496

balance category, which implies an imbalance of fatty acids and macronutrients contributing to energy intake. This study was initially planned to be conducted face to face however it was carried out by phone interviews due to the pandemic. Therefore anthropometric measurements were taken based on personal statements. This may have caused a measurement bias. In order to prevent obesity and obesity-related diseases, more interventions should be carried out to increase diet quality especially during COVID-19 pandemic.

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**Disclosure of Interest:** None declared.

## P058

**COMPARISON OF ACTUAL HEIGHT AND ESTIMATED HEIGHT FROM ULNA LENGTH IN A SELECTED POPULATION OF SRI LANKAN ADULTS**

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**Rationale:** Height is an important parameter in assessment of nutritional status. Height is difficult to measure directly in critically ill patients requiring alternative methods for height estimation. One such method used in the Sri Lankan setting is the Malnutrition Universal Screening Tool (MUST) equation (1) for height estimation using ulna length. But data regarding the accuracy of estimating height from ulna length for the Sri Lankan population hasn't been studied well. The objective of the following study was to evaluate the accuracy of estimated height from ulna length in adults attending the Medical Nutrition clinic in Base Hospital Gampola as a pilot study in order to evaluate the equation for the Sri Lankan population in the future.

**Methods:** Data was recorded from 368 (111–males, 255–females) clinic based adult patients, aged 20 to 60 years were used in this study. Ulna length and standing height were measured using standard techniques and height was estimated from the MUST equation using ulna length and compared against the standing height of same individuals.

**Results:** The mean ages of the female and male populations in the study were 40.5 (SD 10.0) years and 39.7 (SD 10.1) years respectively. Mean height measured in females was 153.8 cm (SD±5.8) and males 165.6 cm (SD±6.2). A significant overestimation was seen between estimated height and actual height in both males and females measured. The Mean of difference between the estimated heights and actual heights were 10.0 cm (SD±5.1) in males and 11.5 cm (SD±4.5) in females. The p value was <0.0001 in both males and females, correlation co-efficiency is 0.6 in males and 0.65 in females.

**Conclusion:** Though there is a moderate positive correlation, estimated height from ulna length in this sub group is significantly different from the actual height. Therefore, MUST equation which estimates the height should be used cautiously till further countrywide assessment is done to develop population specific equation to predict height using ulna length.

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**Disclosure of Interest:** None declared.

## P059

## AGREEMENT BETWEEN MNA-SF, SCREEN II, AND SNAQ 65+ IN COMMUNITY DWELLING OLDER PEOPLE: PRELIMINARY RESULTS

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**Rationale:** To identify (risk for) malnutrition, use of validated screening instruments is very important. For screening in older people, multiple screening instruments are available. Since these instruments may differ substantially in items included, it remains unclear if these instruments identify the same persons as at risk for malnutrition. Therefore, in this study we explored agreement between the Mini Nutritional Assessment Short Form (MNA-SF), Seniors in the Community: Risk Evaluation for Eating and Nutrition Version II (SCREENII), and the Short Nutritional Assessment Questionnaire 65+ (SNAQ65+) in community dwelling older people.

**Methods:** In this exploratory study, the MNA-SF, SCREENII, and SNAQ65+ were used to screen for (risk for) malnutrition in community dwelling older people from the Northern Netherlands. An MNA-SF score <12, a SCREENII score <53, and SNAQ65+ score  $\geq 1$  indicated risk for malnutrition or malnourishment. Agreement was tested by weighted kappa ( $\kappa$ ). Cut-offs used for  $\kappa$  were <0 'none', 0–0.20 'slight', 0.21–0.40 'fair', 0.41–0.60 'moderate'.

**Results:** Included were 37 persons (75 $\pm$ 7.1 years; 79% female). According to MNA-SF, SCREENII and SNAQ65+, risk for malnutrition was 16% (n=6), 70% (n=26), and 16% (n=6), respectively. Agreement ( $\kappa$ ) between the instruments is reported in Table 1.

**Conclusion:** Our study in community dwelling older people from the Northern Netherlands suggests slight agreement between MNA-SF and

Table 1

Agreement between MNA SF, SCREENII, and SNAQ65+

SCREENII	$\kappa=0.15$	MNA-SF		
	Well nourished	Well nourished	Risk for malnutrition/ malnourished	Total
	Risk for malnutrition/ malnourished	11	0	11
	Total	20	6	26
SNAQ65+		MNA-SF		
	$\kappa=0.40$	Well nourished	Risk for malnutrition/ malnourished	Total
	Well nourished	28	3	31
	Risk for malnutrition/ malnourished	3	3	6
SNAQ65+		SCREENII		
	$\kappa=-0.02$	Well nourished	Risk for malnutrition/ malnourished	Total
	Well nourished	9	22	31
	Risk for malnutrition/ malnourished	2	4	6
	Total	11	26	37

SCREENII, fair agreement between MNA-SF and SNAQ65+, and no agreement between the SCREENII and SNAQ65+. The higher prevalence of (risk for) malnutrition identified with the SCREENII and the dissimilarity between SCREENII and the other instruments could be largely explained by its emphasis on nutrition impact symptoms. The Results indicate it is important to use a screening instrument that matches the goal of the screening, i.e., screening for risk factors or for presence of malnutrition.

**Disclosure of Interest:** None declared.

## P060

## PREVALENCE AND POTENTIAL DETERMINANTS OF MALNUTRITION-SARCOPENIA COEXISTENCE IN GERIATRIC REHABILITATION: A CROSS-SECTIONAL ANALYSIS USING THE GLOBAL LEADERSHIP INITIATIVE ON MALNUTRITION CRITERIA AND THE ASIAN WORKING GROUP FOR SARCOPENIA CRITERIA

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**Rationale:** Malnutrition and sarcopenia often coexist in geriatric rehabilitation patients and may hamper the effect of rehabilitation therapy. However, the prevalence of coexistence in an Asian population and its possible determinants has not been reported.

**Methods:** A cross-sectional study was conducted between November 2018 and October 2020, and consecutive patients aged  $\geq 65$  years in convalescent rehabilitation wards were included. Malnutrition and sarcopenia were determined by the Global Leadership Initiative on Malnutrition (GLIM) criteria and the Asian Working Group for Sarcopenia (AWGS) criteria, respectively. Skeletal muscle mass index (SMI) was estimated using bioimpedance analysis, while severe malnutrition was identified by ethnicity-specific cut-off values of SMI and body mass index. Patients who presented both with malnutrition and sarcopenia were classified as MS, while those who had severe malnutrition were classified as severe MS. Prevalence of malnutrition, sarcopenia, and MS as well as odds ratios (ORs) of possible determinants for each condition were computed. Adjusted ORs were calculated to minimise confounding effects.

**Results:** Overall, 601 patients were eligible for the analysis (median 80 years old, 355 female patients). Most of the patients (70%) had cerebrovascular disease. MS, severe MS, malnutrition, and sarcopenia were found in 23.5%, 17.0%, 29.0%, and 62.4% of the enrolled patients, respectively. Eighty-one percent of the patients with malnutrition were defined as having MS, whereas 37.6% of patients with sarcopenia had MS. After adjustment, longer onset-admission duration (OR=1.04; 95% confidence interval [CI]=1.02, 1.06), hospital-associated deconditioning (OR=4.62; 95% CI=1.1, 18.8), and lower Food Intake LEVEL Scale (OR=0.83, 95% CI=0.73, 0.93) were identified as independent determinants for MS.

**Conclusion:** Approximately 23% of the geriatric patients exhibited MS in Asian population. Longer duration of stay in acute care hospital, hospital-associated deconditioning, and poor swallowing function were probable

contributing factors for the coexistence of malnutrition and sarcopenia.

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## P061

## MUSCLE MASS DOES NOT AUTOMATICALLY EQUAL MUSCLE STRENGTH – RESULTS FROM A RETROSPECTIVE ANALYSIS OF A MULTIMODAL INTERVENTION FOR CANCER PATIENTS

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**Rationale:** Muscle mass and -strength are essential parameters to diagnose malnutrition. Tumour patients are particularly susceptible to malnourishment, due to their disease and therapy, respectively. Muscle mass and -strength may evolve independently. The objective was to analyse a positive correlation between the changes in muscle strength and muscle mass and, in addition, to investigate whether bioelectrical impedance analysis (BIA) can be used as measurement tool instead of the gold standard computed tomography (CT).

**Methods:** In an interventional nutritional and physical exercise study with tumour patients, handgrip strength and BIA were measured in weeks 0, 12 and 24. For  $n = 10$  patients the skeletal muscle index (SMI) was retrospectively calculated based on CT images that had been recorded independently from the study in the context of standard care. Using a segmentation program, the CT images were evaluated at the third lumbar vertebrae. The data were then analysed using a linear mixed model with repeated measures.

**Results:** The mean handgrip strength [kg] changed from week 0 to 12 to 24 in the intervention group ( $n = 5$ ) from  $28.2 \pm 4.8$  to  $33.2 \pm 4.9$  to  $29.8 \pm 6.4$ , and in the control group ( $n = 5$ ) from  $35.8 \pm 10.2$  to  $34.4 \pm 10.2$  to  $33.2 \pm 11.8$ . The mean SMI [ $\text{cm}^2/\text{m}^2$ ] changed from  $37.1 \pm 9.2$  to  $37.2 \pm 7.7$  to  $36.3 \pm 7.2$  in the intervention group, and from  $45.6 \pm 11.8$  to  $46.8 \pm 12.9$  to  $46.4 \pm 9.2$  in the control group. The linear mixed model showed no association of handgrip strength with the course of the SMI ( $p = 0.4461$ ). Gender, however, significantly correlated with the SMI ( $p < 0.0001$ ).

The linear mixed model revealed no significant difference between mean BIA and CT measurements at all three measurement points ( $p > 0.05$ ).

**Conclusion:** While the study intervention led to increased muscle strength, muscle mass did not increase in parallel in our trial. In the absence of suitable CT data, BIA measurements can serve as an alternative method to determine muscle mass in nutritional therapeutic assessments.

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## P062

### CORRELATION BETWEEN MID-UPPER ARM CIRCUMFERENCE (MUAC) AND BODY MASS INDEX (BMI) AS A TOOL FOR DETECTING ADULT MALNUTRITION

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**Rationale:** Body mass index (BMI) has been widely used as a tool for detecting adult malnutrition, however measuring height and weight can be difficult in bedridden patients. This study aimed to find whether the mid-upper arm circumference (MUAC) can be used as a tool for detecting adult malnutrition especially in bedridden patients.

**Methods:** This was a cross-sectional study with consecutive sampling, as a part of malnutrition research in integrated inpatient room of Cipto Mangunkusumo Hospital, Indonesia who met the inclusion and exclusion criteria. The inclusion criteria are new patients in the last 24 hour of hospitalization based on Electronic Health Record (HER), older or equal to 18 years old, willing to sign the informed consent form, and hemodynamically stable. The exclusion criteria are subjects who had been hospitalized in RSCM more than 3 days before entering building A, were not in their room when data collector visited the patients' room, and unsuitable for BIA examination (tremor, cramp, connected to electric medical instrument, pregnant). This study was conducted from October to December 2018. They were measured for their height using SECA 360, body weight using SECA 869, and MUAC using SECA 201. The data was analyzed using SPSS Version 26.

**Results:** There were 224 subjects, consist of 106 males and 118 females in this study. The mean BMI for male and female participants were  $22.56 \pm 4.99$  and  $22.91 \pm 5.66$  respectively and mean of MUAC were  $26.36 \pm 4.52$  and  $25.69 \pm 4.92$  respectively. Kolmogorov-Smirnov test resulted abnormal distribution data with  $p$  value  $< 0.05$ . Spearman correlation showed highly significant positive correlation both male ( $r = 0.881$   $p < 0.01$ ) and female ( $r = 0.896$   $p < 0.01$ ). Receiver operating curve (ROC) analysis was performed to define the cut-off point of the MUAC. The area under the receiver operating curve (AUC) of MUAC for male (0,953, 95% CI 0,912-0,995) and female (0,953, 95% CI 0,916-0,989) are high. The cut-off point for male was 23,25 cm (Youden's index 0,784) and female was 23,5 cm (Youden's index 0,799).

**Conclusion:** The correlation between MUAC and BMI was significantly positive, which can be used as a tool for detecting adult malnutrition. Based on our study, MUAC  $< 23,25$  cm for male and  $< 23,5$  cm for female may be considered as a cut-off to detect adult malnutrition.

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**Disclosure of Interest:** None declared.

## P063

### NUTRITIONAL STATUS AND NUTRITIONAL SUPPORT IN HOSPITALIZED PATIENTS WITH SARS-COV-2 INFECTION

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**Rationale:** The aim of this study was to identify nutritional risk and assess prevalence of malnutrition and nutritional therapy of SARS-CoV-2 patients at Hospital Lusíadas Lisboa.

**Methods:** Cross-sectional observational study, was applied in one day at February 2021. It was applied a questionnaire to characterize sample and to assess nutritional status was applied Nutritional Risk Screening 2002 and modified Global Leadership Initiative on Malnutrition.

**Results:** The sample had 22 patients with an average of 14 days hospitalized staying and with diagnosis of SARS-CoV-2 infection about 20 days. The average age measured was  $74 \pm 16$  years and body mass index was  $29 \text{ kg}/\text{m}^2$ . Most patients had comorbidities, with the most prevalent being hypertension (33%), diseases of the circulatory system (19%) and the respiratory system (17%). Nutritional risk and malnutrition were present in 68,2% and 13,6% of patients, respectively. Food intake was measured and it was found that 60% of oral ingestion was between 76-100% of the diet provided, 25% between 51-75%, 15% less than 50% of the prescribed diet and 30% of the sample reported decreased appetite. It is noteworthy that 40% of assessed patients were with a personalized diet by a dietitian, 75% needed adapted consistency, 50% were with prescribed oral nutritional supplements and, of these, 20% with a daily bi-frequency. The average intake of energy and protein/kg of body weight was 24 kcal and 1,2 g, respectively.

**Conclusion:** Most of the patients were at nutritional risk and on average their nutritional intake didn't supply their nutritional needs. The emerging literature highlights the importance of nutrition for the clinical outcomes of this patients with benefits not only in terms of nutritional status but also functional and clinical, ensuring faster recovery, better quality of life, reduced hospital stay and health costs.

**Disclosure of Interest:** None declared.

## P064

### WEIGHT-LOSS AND APPETITE IN OUTPATIENTS IN HEMODIALYSIS: A RETROSPECTIVE COHORT STUDY

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**Rationale:** Patients in hemodialysis (HD) are at risk of developing malnutrition. In the clinical practice the patient's nutritional status and appetite are established every 3-months. Patients with  $\geq 5\%$  weight-loss are to be referred to nutritional counselling by a specialized dietitian. The aim of this study was to assess appetite evaluation and weight-loss.



**Methods:** A retrospective cohort study of current outpatients in HD in year 2020, going back from 9 to 24 months depending on duration of time in HD. From the 3-months evaluations nutritional status, relevant biochemistry, and appetite evaluation were collected. Nutritional risk was determined by Geriatric Nutritional Risk Index (GNRI).

**Results:** A total of 76 patients (41% women) were included, mean age 69 y  $\pm$  12, dry weight 78 kg  $\pm$  20, BMI 26  $\pm$  6.3, n-PCR 0.8 g/kg/d  $\pm$  0.2. At baseline poor appetite was evident in 24 (32%). A larger proportion of patients with poor appetite were women (p=0.009). Patients with poor appetite had lower; dry weight (p=0.009), height (p<0.001), GNRI (p=0.040), p-albumin (p=0.003), p-phosphate (p=0.019), and p-urea (p=0.030). A weight-loss of  $\geq$ 5% over a 3-months period within the study-period was found in 24 (32%) patients. From baseline to the 2-years follow-up (n=52) the average weight change was -1.9 kg  $\pm$  5.7, p=0.021, weight-loss was found in 28 (54%). Men (n=31) had an average weight change of -3.0 kg  $\pm$  5.6, p=0.005 whereas women (n=21) had a weight change of -0.2 kg  $\pm$  5.6, p=0.877. We found a significant decrease in GNRI from baseline to 2-years follow-up (96  $\pm$  7.2 vs. 90  $\pm$  7.3, p<0.001), corresponding to an average change in risk-score from low to moderate.

**Conclusion:** We found an overall weight-loss over time, more so in men than in women, and an increase in nutritional risk over time. Poor appetite was associated with increased nutritional risk and variables related to a depleted nutritional status.

**Disclosure of Interest:** None declared.

## P065

### ARE MEDITERRANEAN DIET ADHERENCE AND ANTHROPOMETRIC MEASUREMENTS ASSOCIATED WITH HORMONAL PARAMETERS IN WOMEN WITH POLYCYSTIC OVARY SYNDROME? A PILOT STUDY

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**Rationale:** Polycystic ovary syndrome (PCOS) is characterized by irregular menstruation, polycystic ovaries and hyperandrogenism, insulin resistance, and obesity and has been seen in 5-20% of women depending on the diagnostic criteria used. Our study aimed to evaluate the relationship of Mediterranean diet adherence and anthropometric measurements with some hormonal parameters in women with PCOS.

**Methods:** This pilot study included 23 women with PCOS, aged 18-35, and admitted to the Gynecology and Obstetrics Outpatient Clinic of Erciyes University. The Mediterranean Diet Adherence Screener (MEDAS) questionnaire was used, and body weight, height, waist, hip, and neck circumference were measured. The total score of the MEDAS is between 0-14, and a score of <7 points was indicative of no adherence. Hormone profiles containing luteinizing hormone, follicle-stimulating hormone, prolactin, estradiol, testosterone, dehydroepiandrosterone, progesterone, and sex-hormone binding globulin (SHBG) were recorded.

**Results:** The mean age of participants was 23.73  $\pm$  4.19 years and their BMI was 26.38  $\pm$  6.01 kg/m<sup>2</sup>. Their waist, hip, and neck circumferences were 84.74  $\pm$  15.61 cm, 107.44  $\pm$  14.87 cm, and 36.78  $\pm$  3.45 cm, respectively. The mean score of MEDAS was 4.52  $\pm$  1.04 points, and 87% of women had no Mediterranean diet adherence. A significant negative correlation was found between the MEDAS score and progesterone level (r = -0.535, p = 0.010). Higher body weight (r = -0.562, p = 0.008), waist (r = -0.631, p = 0.002), hip (r = -0.506, p = 0.019), and neck (r = -0.557, p = 0.009) circumferences were associated with lower SHBG level. Other hormones were not related to adherence to the Mediterranean diet and anthropometric measurements (p > 0.05).

**Conclusion:** Some hormonal parameters have been associated with adherence to the Mediterranean diet and anthropometric measurements in women with PCOS. Further studies are needed to better understand these relationships.

**Disclosure of Interest:** None declared.

## P066

### GLIM CRITERIA FOR THE DIAGNOSIS OF MALNUTRITION IN BRAZILIAN INSTITUTIONALIZED ELDERLY

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**Rationale:** The GLIM (Global Leadership Initiative on Malnutrition) criteria, a framework for the diagnosis of malnutrition, determine the presence of at least one phenotypic and one etiologic criterion.

**Methods:** This is a retrospective study aiming to verify the agreement between the malnutrition diagnosis by GLIM and by a reference tool - the Subjective Global Assessment (SGA) in elderly living in four nursing homes in Minas Gerais/Brazil. Nutritional status was defined by eight different GLIM combinations as well as by SGA. Phenotypic criteria were low body mass index (BMI) (classified as recommended by the GLIM committee) and reduced muscle mass, estimated by arm muscular area (AMA) ( $\leq$ 15th percentile); calf circumference (CC) (men:  $\leq$ 34cm; women:  $\leq$ 33cm), handgrip strength (HGS) (men:  $\leq$ 27kg; women:  $\leq$ 16kg), and the etiologic criteria were the presence of chronic diseases (Charlson's comorbidity index  $\geq$ 1), and low food intake (LFI) (energy intake <50% of the estimated energy requirement). The agreement of malnutrition diagnosis was assessed by the kappa values.

**Results:** The study included 111 older adults [(90.9% women; median age: 81 (IQR: 76-87) years]. The prevalence of malnutrition was 49.5% by SGA and ranged between 1.8% and 42.3% by GLIM. When comparing GLIM and SGA, the GLIM models BMI+disease burden and CC+disease burden exhibited mild agreement (k: 0.21-0.40). All other combinations had a poor agreement (k<0.20). The combinations that included low food intake exhibited the lowest malnutrition prevalence and worst agreement with SGA (k<0.10).

**Conclusion:** Thus, when assessing institutionalized elderly, it was observed that the prevalence of malnutrition varied according to the GLIM combinations, and most models had a poor agreement with SGA. Out of eight models, only two had a mild agreement in comparison with the reference tool.

**Disclosure of Interest:** None declared.

## P067

### EVALUATION OF THE MENUS OF DIFFERENT FOOD SERVICE SYSTEMS DURING COVID-19 PANDEMIC IN TURKEY

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**Rationale:** The COVID-19 pandemic has affected the services of food service systems due to the restrictions. Within the scope of measures for preventing the transmission, take away-lunch box menus were served instead of table (self) service of normal menus in food service systems. This study aims to evaluate the different types of menus served by three different institutions during the COVID-19 pandemic in Turkey.

**Methods:** The different types of menus (Lunch box and normal menus) served by three different (Public, private and semi-private institutions) food service systems which served for working population in Turkey during and after the lockdown period of pandemic were examined. The energy and nutrient contents of the menus were calculated by using BeBis Program, and the daily average values compared with the daily requirements based on the reference values in the Turkish Nutrition Guideline. Statistical evaluation was carried out with the SPSS 23 program.

**Results:** Energy content of lunch box menus were 1146.4 $\pm$ 528.5 kcal/d, 926.8 $\pm$ 82.5 kcal/d and 1516.1 $\pm$ 284.1 kcal/d, while energy content of normal menus were 1087.1 $\pm$ 215.7 kcal/d, 1171.8 $\pm$ 193.9 kcal/d and 1486.4 $\pm$ 234.8 kcal/d in state, private and semi private institutions, respectively. Protein content of lunch box menus were 47.7 $\pm$ 17.9 g/d,

19.1±2.5 g/d and 52.4±13.4 g/d ( $p<0.05$ ), while protein content of normal menus were 38.9±7.9 g/d, 48.2±17.1 g/d and 47.9±9.3 g/d in state, private and semi private institutions, respectively ( $p>0.05$ ). The energy and fiber content of the lunch box and normal menus of semi-private institution were higher than the other institutions ( $p<0.05$ ). In general, the vitamin C content of the lunch box menus were lower than the normal menus in all food service systems ( $p<0.05$ ). Energy and nutrient contents of lunch box and normal menus in state and semi-private food service systems did not differ statistically ( $p>0.05$ ), and were at adequate levels, while the energy and nutrient content (Protein, carbohydrate, fat, fiber, vitamin A, B12 and C, calcium and iron) of the lunch box menus of the private food service

2.0±0.8/d, higher in urban areas (2.2±0.8,  $p>0.001$ ), among 60–69-year-olds (2.1±0.8,  $p=0.004$ ), educated (2.1±0.8,  $p>0.001$ ), active (2.1±0.7,  $p>0.001$ ), those with an income (2.0±0.8,  $p=0.014$ ), without pathology (2.4±0.7,  $p>0.001$ ), not taking classical medication (2.2±0.8,  $p>0.001$ ). Breakfast was consumed by 65.9%, more often in urban areas (76.1%,  $p<0.001$ ), among 60–69 yr. (72.1%,  $p<0.001$ ), married (75.5%,  $p<0.001$ ), educated (71.1%,  $p<0.001$ ), without pathology (82.2%,  $p<0.001$ ). Lunch was consumed by 55.1%, more often in urban areas (63.2%,  $p=0.005$ ), among married (67.1%,  $p<0.001$ ), educated (66.1%,  $p<0.001$ ) and those without pathology (70.3%,  $p<0.001$ ). Dinner was consumed by 78.3%, more often in urban areas (85.6%,  $p=0.002$ ), those with income (81.2%,  $p<0.001$ ) and

Energy and Nutrients	Lunch Box Menu				Normal Menu			
	State (S)	Private (P)	Semi Private (SP)	Sig.	State (S)	Private (P)	Semi Private (SP)	Sig.
Energy (kcal)	1146.4±528.5 <sup>ab</sup>	926.8±82.5 <sup>a</sup>	1516.1±284.1 <sup>b</sup>	**	1087.1±215.7 <sup>a</sup>	1171.8±193.9 <sup>a</sup>	1486.4±234.8 <sup>b</sup>	**
Protein (g)	47.7±17.9 <sup>a</sup>	19.1±2.5 <sup>b</sup>	52.4±13.4 <sup>a</sup>	**	38.9±7.9	48.2±17.1	47.9±9.3	ns
Carbohydrate (g)	145.4±67.8 <sup>a</sup>	105.9±10.8 <sup>b</sup>	190.1±49.2 <sup>a</sup>	**	128.9±26.5 <sup>a</sup>	136.9±36.3 <sup>a</sup>	183.2±31.3 <sup>b</sup>	**
Fat (g)	40.4±25.1	46.4±5.8	58.5±11.6	ns	45.4±12.8	46.8±8.7	61.2±13.9	ns
Fiber (g)	10.3±3.3 <sup>a</sup>	6.4±1.1 <sup>b</sup>	14.7±4.1 <sup>c</sup>	**	12.9±3.9 <sup>a</sup>	13.1±4.9 <sup>a</sup>	15.9±4.8 <sup>b</sup>	**
Vitamin A (µg)	2433.8±6536.8	491.1±50.5	888.25±691.32	ns	702.2±449.4	574.69±442.2	396.37±205.39	ns
Vitamin B12 (µg)	11.87±22.93 <sup>a</sup>	0.83±0.55 <sup>b</sup>	4.03±2.68 <sup>c</sup>	**	2.92±1.11	3.09±1.97	4.16±2.29	ns
Vitamin C (mg)	83.56±70.93 <sup>a</sup>	33.37±8.28 <sup>b</sup>	114.78±38.18 <sup>a</sup>	**	595±75.82 <sup>a</sup>	89.81±46.39 <sup>b</sup>	754.26±173.44 <sup>c</sup>	**
Calcium (mg)	291.16±90.1 <sup>a</sup>	259.64±66.31 <sup>a</sup>	443.57±97.99 <sup>b</sup>	**	299.86±135.23	374.15±98.14	392.48±182.78	ns
Iron (mg)	6±2.19 <sup>a</sup>	3.58±0.56 <sup>b</sup>	8.28±3.52 <sup>c</sup>	**	7.11±2.01	7.37±2.21	9.36±2.97	ns

S; State, P; Private, SP; Semi-private. p; ANOVA test. \*\* $p<0.01$ , ns: not significant,  $p>0.05$ . Means in the same column having the same letters (a–c) are not significantly different.

system were lower than the normal menus ( $p<0.05$ ), and below the daily requirements.

**Conclusion:** Nutrition is essential for maintaining and improving health. Therefore, even in the period of restrictions, the food service systems should serve menus that meet the daily energy and nutrient requirements of consumers.

**Disclosure of Interest:** None declared.

## P068

### 1ST NATIONAL CROSS-SECTIONAL STUDY ON MEAL/SNACKS AND ALCOHOL HABITS AMONG COMMUNITY-DWELLING ELDERLY IN CAMEROON

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**Rationale:** Dietary habits among elderly are known in certain African countries (1) but not in Cameroon. The aim of this study was to assess meal/snacks, alcohol frequencies consumption, socio-demographics, and health variations among community-dwelling elderly ( $\geq 60$  y.o.) in Cameroon.

**Methods:** Food frequency questionnaire was used for meals/snack frequency, and 24 hour-recall for alcohol consumption. The protocol was approved by the Ethics Committee of the University of Douala (Cameroon), data were collected after consent from the participants or their legal representatives. Statistics were performed at 5% threshold.

**Results:** 599 people were included, aged 68.9±7.2 y with a sex ratio M/F of 0.93, 33.5% of the population was urban and 66.5% rural. The sample was representative of the elderly population of the country (age 68.6y; sex ratio M/F: 0.9; 33.5% in urban vs. 66.5% in rural). The number of meals was

those not taking any classical medication (88.7%,  $p<0.001$ ). 29.7% took at least one snack during the day more often in urban (44.3%,  $p<0.001$ ), among  $\geq 80$  y old (49.1%,  $p=0.004$ ), educated (33.7%,  $p=0.003$ ), those without pathology (48.5%,  $p<0.001$ ) and those not taking classical medication (38.2%,  $p=0.002$ ). A morning snack was consumed by 17.7%, an afternoon one by 24.5% a night one by 12.4%. 7.3% consumed alcohol, more often among 60–69-year-olds (9.5%,  $p=0.021$ ), men (10.8%,  $p=0.002$ ), married/free union (11.2%,  $p=0.002$ ), head of household (9.6%,  $p=0.009$ ), active (10.3%,  $p<0.001$ ), with income (9.1%,  $p<0.001$ ), people without pathology (14.9%,  $p=0.003$ ), not taking any medication (12.4%,  $p=0.002$ ).

**Conclusion:** Weak meals frequency (2.0±0.8/d), as noted elsewhere (1), might lead to poor nutritional status. Food habits seem more favourable in urban areas, in educated persons and in absence of a pathology. Alcohol consumption is scarce.

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**Disclosure of Interest:** None declared.

## P069

### GLIM AS AN EFFECTIVE TOOL TO ASSESS NUTRITION STATUS IN PATIENTS SUBMITTED TO PANCREATIC SURGERY

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**Rationale:** The Global Leadership Initiative on Malnutrition (GLIM) released new universal criteria for diagnosing and grading malnutrition. The accuracy of scored-GLIM system has validated both in nutrition assessment and in survival prediction for patients with cancer. Despite advances in surgery,

radiotherapy and chemotherapy, pancreatic cancer has a poor prognosis. In the preoperative period, and even more in the postoperative period, nutritional support is important in order to ensure a good quality of life and recovery after surgery. The aim of this study was to evaluate the nutritional status of patients submitted to pancreatic surgery with GLIM criteria.

**Methods:** At the Maggiore hospital in Bologna, since 2006, there is a dedicated path to patients with pancreas cancer, that involves our UOC within a multidisciplinary team. The path includes, in addition to perioperative management, a follow-up of outpatient during which they are evaluated by anthropometric data, nutritional intake, nutritional indices and BIA evaluation.

**Results:** From 2013 to 2021 we perform the BIA in 225 patients (133 M and 92 F mean age 68 y) at the 1st control after surgery. According with GLIM criteria N. 27 patients aged < 70 y had a BMI < 20 and 53 patients age > 70 y had a BMI < 22 and (35%). BIA revealed low muscle mass quantity as FFMI in 25 males and in 15 females (17%) and as ASMMI in 63 M and in 35 F (43%).

**Conclusion:** These data suggest that Malnutrition according to GLIM criteria was highly prevalent in patients submitted to surgery for pancreatic cancer.

The predominant phenotypic criterion was a reduced muscle mass defined with appendicular skeletal muscle mass index (ASMI).

**Disclosure of Interest:** None declared.

## P070

### VALIDATION OF GLIM CRITERIA AS A METHOD FOR NUTRITIONAL DIAGNOSIS IN THE ROUTINE CLINICAL PRACTICE OF A THIRD-LEVEL HOSPITAL

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**Rationale:** Estimate the degrees of agreement in the nutritional diagnosis between the criteria proposed by the Global Leadership Initiative on Malnutrition (GLIM), the Subjective Global Assessment (SGA) and the 10<sup>th</sup> Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) based on the Nutritional Status Assessment (NSA), with the objective of validating its use as a method for nutritional diagnosis.

**Methods:** A prospective, cross-sectional, observational study in admitted adult patients from the *Hospital Universitario de La Paz*, assessed through a nutrition consultation between August 2019 and November 2020. The nutritional status was evaluated with GLIM, SGA and NSA criteria. The degrees of agreement between the diagnoses were calculated through the Cohen Kappa Coefficient (k).

**Results:** A total of 1037 patients were evaluated, with an average age of 64 years ± 17.2, 45.4% women. The malnutrition diagnosis, in any stage, by GLIM criteria was of 63.3%, SGA 64.8% y ICD-10 68.9%. A good consistency was observed in the malnutrition diagnosis in between SGA and the GLIM criteria (k= 0.81; p<0.05), with identical classification in 91% of patients (Malnutrition: 59.4%, Normonutrition: 31.4%). The GLIM data also presented a good consistency with the ICD-10 (k= 0.93; p<0.05), and identically classifying 97% of patients (Malnutrition: 50.9%, Normonutrition: 28.6%).

**Conclusion:** The degrees of agreement of GLIM criteria comparing them with the SGA and ICD-10 in the diagnosis of nutritional status in hospitalized patients are very good. Therefore, this diagnosis method could be used in the standard clinical practice of the Nutrition Clinic Units of third-level hospitals.

**Disclosure of Interest:** None declared.

## P072

### WHICH CT CUT-OFF FOR LOW MUSCLE MASS SHOULD WE CHOOSE? PREVALENCE OF LOW MUSCLE MASS ACCORDING TO DIFFERENT CT CUT-OFFS

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**Rationale:** Low muscle mass has a high impact on mortality and quality of life. Skeletal muscle area of a computed tomography (CT) scan at the L3 level highly correlates with whole-body muscle mass. Numerous CT L3 cut-offs for low muscle mass have been published. The goal was to determine the impact of the cut-off choice on the prevalence of low muscle mass.

**Methods:** 200 non-critically ill patients were prospectively recruited in the USVALID study. Adult patients, who had a CT scan at the level of the third lumbar vertebra (L3) for any clinical reason in the last 48 hours before the study examination, were included. Often cited and applied CT L3 cut-offs for low muscle mass were chosen to calculate the prevalence of low muscle mass in our study population. These published cut-off values were either based on skeletal muscle index (SMI, cm<sup>2</sup>/m<sup>2</sup>) or skeletal muscle area (SMA, cm<sup>2</sup>). The cut-off values were defined by sex, BMI or age (Table 1).

**Results:** 118 men and 82 women were included from surgical and medical services. Patients' mean BMI was 24,9 ± 4,8 kg.m<sup>-2</sup>. Patients' median (IQR) [range] age was 61,3 (51,0 – 70,1) [19,7 – 86,2] years. Prevalence of low muscle mass highly depended on the applied cut-off value. Prevalence of low muscle mass was either higher or equal in men compared to women (Table 1).

**Table 1.**

Prevalence of low muscle mass in 200 non-critically ill patients according to different published CT cut-offs at the L3 level

	male (n=118)	female (n=82)
SMI cut-off by sex of Mourtzakis 2008	86%	46%
SMI cut-off by sex of Prado 2008	74%	45%
SMA cut-off by sex of Weijs 2014	85%	55%
SMI cut-off by sex and BMI of Martin 2013	54%	54%
SMI cut-off by sex and age of Martin 2018	53%	40%
SMA cut-off by sex of Derstine 2018	44%	22%
SMI cut-off by sex of Derstine 2018	48%	20%
SMI cut-off by sex, age and BMI of van der Werf 2018	14%	5%

SMI=skeletal muscle index (cm<sup>2</sup>/m<sup>2</sup>), SMA=skeletal muscle area (cm<sup>2</sup>)

**Conclusion:** Prevalence of low muscle mass highly depends on the chosen cut-off value. For now, it is unclear which CT cut-off should be used. The definition of low muscle mass needs to be re-evaluated.

**Disclosure of Interest:** None declared.

## P073

### MUSCLE WASTING IN HOSPITALIZED PATIENTS WITH CHRONIC KIDNEY DISEASE IN A NON-DIALYSIS PHASE

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**Rationale:** Patients with chronic kidney disease (CKD) tend to malnourish and have decreased muscle mass. This can be associated with several factors, such as decreased food intake, treatment and the inflammatory process of the disease itself. The calf circumference is a measure that can predict muscle wasting, in addition to being easy to perform and applicable in clinical practice, inexpensive and painless for the patient. The main objective of this work was to verify if there is loss of muscle mass in patients with CKD.

**Methods:** Cross-sectional study with patients hospitalized from March 2018 to November 2019, with adults and the elderly. Inclusion criteria were patients diagnosed with chronic kidney disease. The variables of interest in the study were sex, age (years), calf circumference (cm). The classification of muscle mass depletion was performed through the cutoff point for calf circumference (CC <31 cm: depletion). All patients who were undergoing hemodialysis were excluded, or when it was not possible to measure calf circumference. To compare continuous variables between sexes, the T-

student test was used, with a significance level of  $p < 0.05$ . Descriptive statistics were performed, with mean values and standard deviation.

**Results:** Among the 142 patients initially included in the study, after the exclusion criteria, 84 patients were selected for the final sample, 51.6% of whom were male ( $n = 43$ ). The average age and calf circumference for males was  $75.17 \pm 12.6$  years and  $37.7 \pm 4.18$  cm, respectively, and for females,  $66.88 \pm 13.1$  years and  $31.5 \pm 3.56$  cm. It was found that there is a significant difference between sexes for age and for calf circumference ( $p < 0.05$ ). Muscle wasting was found in 51% of men and 63% of women.

**Conclusion:** It is concluded that for both males and females, there was a high prevalence of muscle wasting, which indicates a concern for health professionals, who must implement nutritional intervention measures early in order to avoid worse clinical outcomes due to decreased muscle mass.

**Disclosure of Interest:** None declared.

## P075

### DEVELOPMENT OF A DIGITAL MINDFUL-RESPONSIVE FEEDING PILOT PROGRAM THROUGH EARLY MUSICAL STIMULATION IN EARLY CHILDHOOD CAREGIVERS

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**Rationale:** This project proposes developing an easy-to-use virtual tool for parents and caregivers of early childhood, in which a digital program was created that includes a didactic manual, infographics, and online sessions.

**Methods:** A Pilot, descriptive, observational, cross-sectional non-probabilistic study was carried out in the early musical stimulation center, Claro de Luna, in Guayaquil, Ecuador. The inclusion criteria were parents and caregivers of children under five years of age who attend the stimulation center during 40 days of November–December 2020. The digital program of nutritional education on mindful-responsive eating was developed virtually. We used the school platform for the activities and mindful kids guide, zoom for the synchronic sessions, and WhatsApp as informative communication for the early childhood caregivers. An initial survey was designed to determine if the participants knew about conscious eating. It was made up of 10 closed questions. Additionally, a follow-up survey was designed with seven closed questions to identify the program's acceptance. Statistical analysis was performed using the R studio platform.

**Results:** As a result, we obtained 100% of the infants' caregivers/parents know about mindful-responsive eating, even though during the session we discovered the real knowledge of the participants. On the other hand, all responded that they do not reward behaviors with food, that the child participates in family mealtime and that eating times are established. 80% of the participants responded that changes were made after receiving the mindful-responsive feeding guide, positive changes were seen in terms of infant feeding, and a positive acceptance of the recommendations

indicated throughout the program. A total of 92% acceptability of the digital program implemented was obtained.

**Conclusion:** The program for parents and early childhood caregivers represents a useful tool to provide nutritional education, depending on the population's needs, in the presence of malnutrition problems that cause chronic non-communicable diseases long-term. Although the participants indicated that they knew conscious-perceptual eating, we realized that it was not correct when we developed the classes. It is needed for easy-to-use tools that are socialized and available to parents and caregivers since they have shown to be unaware of a correct infant feeding at this stage.

**Disclosure of Interest:** None declared.

## P076

### EVALUATION OF THE ADHERENCE TO THE MIND DIET OF DIFFERENT NURSING HOMES IN ANKARA

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**Rationale:** MIND diet, which was developed on the basis of the Mediterranean diet and DASH diet patterns, is among the diet types that are thought to prevent the occurrence of cognitive impairment in the elderly. This study was carried out to evaluate the compatibility and the adherence to the MIND diet of the menus applied in two different nursing homes in Ankara, Turkey.

**Methods:** The menus that were served in winter and summer seasons (August and January) in two different nursing homes (State and private nursing home) in Ankara were examined and evaluated for the adherence to the MIND diet based on the components of the MIND diet (Green leafy and other vegetables, berries, nuts, olive oil, butter, margarine, cheese, whole grains, legumes, fish, poultry, red meat, wine, pastry, desserts and fried fast food). Energy and nutrient (Protein, carbohydrate, fat, fiber, vitamin A, E, K, B1, B2, B5, B6, B12 and C, folate, niacin, sodium, potassium, calcium, magnesium and cholesterol) contents were calculated using BEBIS 8.2 program and were compared with the reference values in the Turkish Nutrition Guidelines. Statistical analyses were performed using SPSS 23.0.

**Results:** The MIND diet scores were 5 and 6 for winter menus, and 5 and 7 for summer menus for public and private nursing homes, respectively. The menus were found inadequate in terms of berries, nuts and olive oil, while red meat, margarine/butter, pastry and dessert meals were higher compared to the components of the MIND diet. Generally, green leafy vegetables and other vegetables, whole grains, poultry and fish meals were adequate amounts accordance with the MIND diet. Adherence to the MIND diet was higher in private nursing home for both season. Energy content of state and private nursing homes were  $2516.6 \pm 291.6$  kcal/d and  $2524.4 \pm 301.5$  kcal/d in winter, and  $3343.3 \pm 369.9$  kcal/d and  $2288.4 \pm 274.9$  kcal/d in summer, respectively. The menus of both institutions had higher energy, fat, sodium and cholesterol content than the daily requirements compared to the reference values. Energy and nutrient contents were stated at table.

Energy and Nutrients	S1 (Summer Menus)	S2 (Winter Menus)	P1 (Summer Menus)	P2 (Winter Menus)	Sig.
MIND Score	5	5	7	6	
Energy (kcal)	$3343.3 \pm 369.9^a$	$2516.6 \pm 291.6^b$	$2288.4 \pm 274.9^c$	$2524.4 \pm 301.5^b$	**
Protein (g)	$112.4 \pm 13.9^a$	$99.8 \pm 11.4^b$	$85.1 \pm 16.5^c$	$95.4 \pm 12.3^b$	**
Carbohydrate (g)	$362.2 \pm 63.5^a$	$254.7 \pm 40.5^b$	$245.4 \pm 49.4^b$	$267.4 \pm 51.2^c$	**
Fat (g)	$157.2 \pm 25.3^a$	$119.1 \pm 19.7^b$	$104.9 \pm 14.8^b$	$116.2 \pm 22.1^b$	**
Fiber (g)	$33.9 \pm 6.4^a$	$40.4 \pm 10.1^b$	$32.7 \pm 8.1^a$	$31.2 \pm 5.2^a$	**
Vitamin A ( $\mu$ g)	$3324.6 \pm 4514.5$	$2649.9 \pm 1036.8$	$1635.9 \pm 537.7$	$3871.9 \pm 5371.3$	ns
Vitamin E (mg)	$53.7 \pm 14.2^a$	$34.8 \pm 5.9^b$	$41.6 \pm 7.2^c$	$43.1 \pm 10.2^c$	**
Vitamin B12 ( $\mu$ g)	$10.68 \pm 13.59$	$9.18 \pm 1.25$	$5.07 \pm 2.38$	$11.42 \pm 18.8$	ns
Sodium (mg)	$5254.4 \pm 660.5^a$	$4876.5 \pm 490.3^b$	$4347.9 \pm 582.1^b$	$5021.8 \pm 654.6^a$	**
Potassium (mg)	$5263.5 \pm 746.7^a$	$4714.7 \pm 731.7^b$	$3879.5 \pm 525.2^c$	$4277.9 \pm 740.9^b$	**
Calcium (mg)	$1214.5 \pm 183.7^a$	$1332.2 \pm 262.3^a$	$801.8 \pm 242.7^b$	$1152.5 \pm 181.6^a$	**
Cholesterol (mg)	$495.7 \pm 178.3^a$	$372.2 \pm 139^b$	$298.1 \pm 139.2^c$	$389.9 \pm 157.6^b$	**

S; State(public) nursing home, P; Private nursing home. \* $p < 0.05$ , \*\* $p < 0.01$ , ns: not significant. Means in the same column having the same letters (a–c) are not significantly different.

**Conclusion:** Nutritional and health status of elderly people staying in nursing homes are affected by the quality of food service systems. Therefore, the menus of nursing homes should be adequate in terms of energy, macro and micronutrients; and food groups should be various.

**Disclosure of Interest:** None declared.

#### P077

### ROLE OF IMPAIRED NUTRITIONAL STATUS IN SARS-COV 2 PATIENTS: A TWO-WAVE FOLLOW-UP STUDY

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**Rationale:** SARS-Cov 2 pandemic has hit on our lives since early 2020. During the first COVID-19 contagions wave, our group showed that both malnutrition and overweight significantly correlated with mortality. Thus, we wanted to compare previous Results with nutritional assessment of patients admitted to our COVID 19 Unit during the second wave of contagions occurred on early 2021

**Methods:** we prospectively enrolled patients admitted to the Internal Medicine COVID-19 Unit of San Benedetto General hospital. All patients had biochemical, antropometric, HRCT chest scan and nutritional assessments at the time of admission and, at 15 days interval follow-up.

**Results:** we enrolled 54 consecutive patients (mean age  $55.7 \pm 2.5$  years, BMI  $23.0 \text{ Kg/m}^2$ ). Main comorbidities were: diabetes (type 5 %, type 2 30%), hypertension (55%), chronic ischemic heart disease (28 %), COPD (20%), anxiety (15%) and depression (10%). Moderate to severe overweight was present in 25% of patients; MNA test ( $4.3 \pm 0.95$ ), suggestive of malnutrition, was present in 12% of patients.

Both PCR (C reactive protein) and IL-6 values significantly correlated with worse radiologic and disease progression ( $r=0.64$  and  $r=0.66$ , respectively).

After 15 days upon admission, we recorded 8 deaths (mean age  $66.7 \pm 2.1$  years, BMI  $26.2 \text{ Kg/m}^2$ ). Increased PCR and IL-6 values significantly correlated with exitus occurrence ( $r=0.78$  and  $0.75$ , respectively). Moreover, only overweight significantly correlated with exitus occurrence ( $r=0.70$ ).

Comparing these data with those from previous wave, we observed that exitus occurred at younger age and overweight only correlated with its occurrence.

**Conclusion:** we confirmed that exitus occurrence was correlated with worse radiological COVID-19 progression and higher inflammatory markers but at younger age. Interestingly, only overweight significantly correlated with mortality vs. previous wave.

**Disclosure of Interest:** None declared.

#### P078

### EVALUATION OF PROTEIN INTAKE AND RISK OF PRESSURE INJURY DEVELOPMENT IN HOSPITALIZED PATIENTS

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**Rationale:** Pressure injury (PI) is a tissue damage that will compromise nutritional status and worsen clinical outcomes in hospitalized patients. The inadequate supply of nutrients, especially proteins, may contribute to this occurrence. The main objective of this work was to assess protein inadequacy and the risk of developing PI.

**Methods:** Cross-sectional study with hospitalized adult and elderly patients, from February 2017 to November 2019. The variables of interest were sex, age, diagnosis of pressure injury, adequacy of protein supply (adequate > 70%). The T-student test was performed to verify whether there is a difference in continuous variables between sexes, with a significance level of  $p < 0.05$ . The risk of developing PI was assessed in relation to protein inadequacy, considering odds ratio and 95% confidence interval,  $P < 0.005$ .

**Results:** 229 patients were selected for the final sample, 52.8% of whom were female ( $n = 121$ ). The mean age was  $63.13 \pm 18.72$ , and protein intake

was  $103.21 \pm 41.9$  grams. The t-student test showed that there was no significant difference between sexes for age ( $p=0.38$ ) protein intake ( $p=0.40$ ). It was found that 56% of patients had adequate protein intake, and 44%, inadequacy. The risk of developing LPP in relation to protein inadequacy was 1.06 [95% CI: 0.777-1.429]  $p < 0.005$ .

**Conclusion:** It is concluded that there is a risk of developing LPP for patients with inadequate protein intake, showing the importance of achieving adequate protein supply to hospitalized patients, avoiding the occurrence of complications, such as the development of pressure injury and longer hospital stay.

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**Disclosure of Interest:** None declared.

#### P079

### ASSOCIATION BETWEEN GLIM CRITERIA AND PRESENCE OF PRESSURE INJURY IN HOSPITALIZED PATIENTS

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**Rationale:** Recent studies show that hospitalized malnourished patients are at an increased risk of developing pressure injuries. The GLIM nutritional diagnosis tool proposed in 2019 uses etiological and phenotypic criteria to diagnose malnutrition. The aim of this study is to correlate nutritional status, using the GLIM criteria, with the presence and the stage of pressure injury in patients admitted to a large philanthropic hospital in São Paulo, Brazil.

**Methods:** This is a retrospective cross-sectional study, based on the analysis of data recorded in medical charts with patients hospitalized in inpatient care units during the year 2020. The nutritional diagnosis was classified using the GLIM and the presence of pressure injury was identified by a nurse.

**Results:** 151 patients were evaluated, predominantly male individuals (66.9%) and an average of 78.8 years of age. The analysis of the studied sample identified that 58.3% had some degree of malnutrition, 85.2% classified as having severe malnutrition and 14.8% as having moderate malnutrition. When assessing the number of injuries per patient, it was shown that malnourished patients had a higher prevalence of more than one pressure injury (21.6%). However, in 24.5% of the sample, GLIM was not applied due to the absence of nutritional risk. Nevertheless, out of those patients, 18.9% had more than one pressure injury, a higher number when compared to patients who were classified as not malnourished and who also had 2 injuries. Yet, when analyzed with another tool, such as the body mass index, 91.9% would not be classified as malnourished either.

**Conclusion:** The nutritional diagnosis by GLIM was shown to be compatible with that found in studies using other tools, such as the greater prevalence of pressure injuries in malnourished patients and a greater chance of developing multiple injuries.

**Disclosure of Interest:** None declared.

#### P080

### MALNUTRITION INDICATORS AND PREDICTION OF CLINICAL OUTCOMES IN ELDERLY PATIENTS

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**Rationale:** The prevalence of malnutrition in hospitalized elderly is high and several nutritional assessment indicators continue to be adopted in the clinical hospital practice, which is why this study evaluated the relationship between some nutritional indicators and their association with clinical outcomes.

**Methods:** Anthropometric indicators, laboratory tests and nutritional screening instruments were investigated to predict clinical outcomes in hospitalized elderly patients in a retrospective study. In the statistical analysis, univariate and multiple logistic regression analysis was used.

**Results:** A total of 322 patients was investigated. The presence of complications (*increased the chance two-fold approximately*) and the nutritional risk according to the NRS (*nutritional risk increased the chance by 2.08 times*), were associated with longer hospital stay. And the nutritional risk according to the NRS, was also relevant associated with the presence of complications.

**Conclusion:** This study pointed out that elderly patients with nutritional risk may develop unfavorable clinical outcome during hospitalization.

**Disclosure of Interest:** None declared.

## P081

### SHOULD HAND GRIP STRENGTH BE INCLUDED IN GLIM DIAGNOSTIC CRITERIA? FINDINGS OF A SUB-ANALYSIS OF NOURISH TRIAL

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**Rationale:** Handgrip strength (HGS), a measure of muscle strength, has been associated with clinical outcomes in community and hospital settings. GLIM identified HGS as supportive phenotypic criterion in the diagnosis of malnutrition. The current study investigated the use of HGS as phenotypic criterion (in lieu of muscle mass) to diagnose malnutrition (GLIM\_HGS) in elderly hospitalized patients with cardiopulmonary diseases and to track improvement by early nutrition intervention.

**Methods:** Using the EWGSOP2 cut points for low HGS (< 27 kg, men, <16 kg, women), diagnosing malnutrition by GLIM using HGS and nutritional status measured by Subjective Global Assessment (SGA), was examined. The response of GLIM\_HGS to early nutrition intervention with specialized ONS (HP-HMB) containing muscle building nutrients (high protein, vitamin D and HMB) was assessed.

**Results:** The study included 622 elderly patients hospitalized with cardiopulmonary diseases (25% CHF, 9% AMI, 31% PNA, 35% COPD). Average HGS in Males with low HGS was (Mean +/- SD) 20.2 ± 4.9 kg and 10.4 ± 3.5 kg in Females. Low HGS was identified in 58% of patients. At baseline, the HP-HMB and control groups had similar distribution of malnutrition by GLIM\_HGS (p=0.185). Improvement in HGS was associated with improvement in SGA by day 90 (p=0.003). The odds of mortality in participants with lowest baseline HGS (≤ 10th %-ile) was 2.4 times (95% CI: 1.03, 5.53) as high as the odds in those with higher HGS (> 10th %-ile) (p<0.001). GLIM\_HGS improved with nutrition intervention using HP-HMB versus placebo during the study (p=0.043).

**Conclusion:** Improvements in HGS tracks with improvement of malnutrition by SGA. The use of HGS in lieu of muscle mass as a phenotypic criterion for GLIM malnutrition diagnosis shows positive response to nutrition therapy in elderly hospitalized patients with cardiopulmonary conditions.

**Disclosure of Interest:** None declared.

## P082

### ASSESSING THE EATING HABITS OF ELDERLY PATIENTS

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**Rationale:** Food plays an extremely important role in people's lives. In the case of the elderly, the requirements of an adequate diet are more delicate and it is necessary to take into account the restrictions imposed by possible diseases as well as the physiological changes that occur with aging.

**Objectives:** Identify and evaluate the eating habits of elderly patients.

**Methods:** The study group included 178 people aged between 65 and 75 years, of which 76 males and 102 females and was conducted between January 2018 and May 2018. This was a descriptive, retrospective

epidemiological survey, based on an original questionnaire, which aimed to identify and assess the eating habits of elderly patients. The completed questionnaire is anonymous, but includes a series of objective data of the interviewees such as: age, sex, height (meters) and weight (kilograms).

**Results:** The study found that most of the elderly who answered the questions considered important and respected the 3 main meals of the day and snacks between them. Fruits are preferred in snacks, although sweets, pastries, and soft drinks are occasionally consumed. Due to the dental problems that most of them face, the elderly have given up the consumption of oilseeds and seeds.

Bread, fruits and vegetables are part of the daily diet of these people, and dairy products, poultry, eggs and margarine are often consumed several times a week. For the most part, respondents are non-smokers and occasionally consume alcohol, do not consume fast food products, live with someone, constantly take 5 or more medications a day, rarely eat fish meat. Due to low incomes, the elderly can only afford low-priced products and are not used to consulting the label.

**Conclusion:** Although most stated that they received information on adopting a healthy diet and adapted to their needs a very small percentage follow these recommendations. It is necessary to implement programs for the education of the elderly regarding healthy eating by family doctors.

**Disclosure of Interest:** None declared.

## P083

### DEPENDENCE OF PHYSICAL DEVELOPMENT AND INDIVIDUAL INDICATORS OF NUTRITIONAL STATUS IN CHILDREN WITH ALLERGIC ENTEROPATHY

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**Rationale:** In our study we assessed the physical development(PD) and nutritional status(NS) of children diagnosed with allergic enteropathy(ICD10-K90.4),confirmed in a multidisciplinary pediatric hospital,to identify the most frequent allergens causing exacerbations,to establish the relationship between the individual indicators of NS and PD in children

**Methods:** The study included 57 children(30 boys)from 6 months to 14y.o.(an average age of 5,2 years).Children were divided into age groups:infant age(Gr1)-2(3,5%),early childhood(Gr2)-21(36,8%),the first childhood(Gr3)-22(38,6%),the second childhood(Gr4)-9(15,8%),teenagers(Gr5)-3(5,3%).ПД оценивали с помощью программ WHOAnthro и WHOAnthroPLUS.In the NS, the somatic and visceral protein pool was assessed. Bioimpedansometry was performed for children over 3y.o.The provision of the organism with vitamin D(Vit.D)and iron was assessed by their levels in blood serum.All calculations were performed using the SPSS Statistica23.0 program

**Results:** In Gr1 Z-score(Z-s.)+0,67of BMI- 1(1,7%), Z-s.-1,35 to-2,0 of BMI-1(1,7%).In Gr2 Z-s.+0,67 of BMI- 6(10,5%),Z-s. -0,67 to -1,34 of BMI-7(12,3%),Z-s.<-2,0 of BMI-3(5,3%),Z-s.+0,67 to+1,34 of BMI- 3(5,3%).In Gr3 Z-s. from+ 0,67- 6(10,5%),Z-s. -0,67 to -1,34- 4(7%),Z-s. -1,35 to -2,0-5(8,8%),Z-s.<-2,0- 4(7%),Z-s.+0,67 to+1,34- 1(1,7%),Z-s.>+2,0- 1(1,7%).In Gr4 Z-s. -0,67 to -1,34- 4(7%),Z-s. -1,35 to -2,0- 3(5,3%),Z-s.<-2,0- 3(5,3%),Z-s. +0,67 to +1,34- 1(1,7%),Z-s.>+2,0- 1(1,7%).In Gr5 Z-s. -1,35 to -2,0-1(1,7%),Z-s.<-2,0- 2(3,5%)

Children of the age 3 or elder(28 children) underwent impedance measurements, which confirmed the deficit of lean mass in 89%(25)children, fat mass in 89%(25).Visceral protein:hypoalbuminemia in 12.3%, deficiency

of protein metabolism was confirmed (by urea excretion carbamide) in 42.1% of children, leukopenia was recorded in 17.5% of children and lymphopenia in 7%. In Table 1, we have reflected the distribution of age groups according to the level of their physical development. Children of the age 3 or elder (28 children) underwent impedance measurements, which confirmed the deficit of lean mass in 89% (25) children, fat mass in 89% (25). Visceral protein:hypoalbuminemia in 12.3%, deficiency of protein metabolism was confirmed (by urea excretion carbamide) in 42.1% of children, leukopenia was recorded in 17.5% of children and lymphopenia in 7%. Comprehensive examination revealed iron deficiency anemia: low haemoglobin levels in 12.3% of people, serum iron in 8.8% of them. Vit.D deficiency was diagnosed in 22.8% of children, with a critically low level in 7%; more often in overweight children (Spearman (Sp.)  $r = -0.329$ ;  $p < 0.01$ )

**Conclusion:** Stagnation PD was found in 64.9% (37) children, young children were more pronounced (Sp.  $r = -0.513$ ,  $p < 0.01$ ). Lymphopenia was detected in children with growth retardation more often (Sp.  $r = -0.260$ ,  $p < 0.05$ ). Body weight deficiency in 63.2% (36) young children were more pronounced (Sp.  $r = -0.660$ ;  $p < 0.01$ ). Malnutrition was in 47.4% of children, low values of the visceral protein pool in 12.3%. Impedance analysis confirmed the deficiency of both protein and fat metabolism in 89% of children, thus confirming it to be a more accurate method for assessing NS. Vit.D deficiency was diagnosed in 22.8% of children, more often in overweight children (Sp.  $r = -0.329$ ;  $p < 0.01$ ). The most allergenic proteins in children of Russia are cows milk protein in 40% of cases, gluten in 35%, chicken eggs in 25%, fish and seafood in 18%; fructose intolerance in 12% and lactose in 2%

**Disclosure of Interest:** None declared.

#### P084

##### IMPACT OF COVID-19 PANDEMIC ON EATING HABIT AND MENTAL BEHAVIOR IN NON-PROFESSIONAL RUNNER VS. HEALTHY VOLUNTEERS

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**Rationale:** SARS-COV 2 pandemic has hit our lives since early 2020. Several reports from literature showed an increase of anxiety and disordered eating habits (EA) among heterogeneous populations in study. Professional and non-professional athletes usually observe a regular EA regimen. Thus, we wanted to compare EA, mental behaviors of non-professional runners with healthy volunteers (HV), matched for sex and age, during COVID-19 pandemic.

**Methods:** we consecutively enrolled non-professional runners (NR) vs. HV via flyer advertisement. The subjects had to fulfill online EA and Scl-90 questionnaires, independently evaluated by our outpatient Nutrition Unit and Neurology Clinic specialists, respectively, of San Benedetto General Hospital.

**Results:** We consecutively enrolled 18 non-professional runners (12 females, mean age  $35.5 \pm 1.7$  years, BMI  $24.5 \pm 0.7$  Kg/m<sup>2</sup>), and 14 healthy controls (9 females, mean age  $35.4 \pm 1.4$  years, BMI  $23.4 \pm 0.8$  Kg/m<sup>2</sup>) on early 2021.

Over- and irregular (binge) eaters were significantly represented among NR vs. healthy volunteers ( $p < 0.05$ ).

NR had higher scores for obsessive-compulsive disorder, depression and sleep disturbances occurrence vs. HV (all,  $p < 0.05$ ). These findings were correlated with over- and irregular EA.

**Conclusion:** unexpectedly, NR athletes were significantly affected by SARS-COV 2 pandemic vs. HV in terms of EA and mental behavior impairment. These findings can be explained by the reduced physical activity of NR during pandemic.

**Disclosure of Interest:** None declared.

#### P085

##### TURKISH POPULATION'S ADHERENCE TO THE MEDITERRANEAN DIET AND FEAR OF COVID-19 DURING COVID-19 PANDEMIC LOCKDOWNS

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**Rationale:** The Mediterranean diet is a dietary pattern that rich in antioxidant foods, and associated with a lowered risk in obesity, chronic diseases, cancer and all-causes mortality, therefore can be recommended as a healthy diet to follow during COVID-19. Thus, this study was carried out to examine the adherence to the Mediterranean diet and its association with the fear of COVID-19 in Turkey during the pandemic.

**Methods:** A cross-sectional online survey was conducted using a questionnaire to collect the data about demographics (Age, gender, employment, presence of any disease), diet and physical activity habits and lifestyle behaviors during COVID-19 pandemic lockdowns periods. The fear of COVID-19 levels of the participants were determined by using the fear of COVID-19 scale (FCV-19S). The Mediterranean diet adherence scale was used for the evaluation of participants' adherence to the diet. All statistical evaluations were carried out with the SPSS 23 program.

**Results:** A total number of 746 individuals, 201 men and 545 women, participated to the study from 59 of 81 cities in Turkey. Additionally, 314 (42.1%) of the participants were found to live in a metropolis, 173 (23.2%) in a province, 234 (31.4%) in a county, and 25 (3.4%) in a town or village. The mean age of the participants was  $35.5 \pm 12.5$  years for men and  $29.8 \pm 8.9$  years for women. The mean BMI was found as  $26.8 \pm 3.8$  kg/m<sup>2</sup> for men and  $23.3 \pm 4.4$  kg/m<sup>2</sup> for women. FCV-19S were determined as  $15.2 \pm 5.3$  in men and  $17.5 \pm 5.6$  in women ( $p < 0.001$ ) and the Mediterranean diet adherence score was calculated as  $5.9 \pm 2.0$  in men and  $6.7 \pm 1.1$  in women ( $p < 0.001$ ). The Cronbach Alpha coefficient of the FCV-19S and Mediterranean diet adherence scale is respectively 0.852 and 0.420 which indicates that the scale is reliable. No statistically significant difference was found between individuals' FCV-19S and Mediterranean diet adherence score ( $p > 0.05$ ). Similarly no statistically significant difference was found between individuals' FCV-19S and Mediterranean diet adherence score according to the geographical segments or condition of having chronic disease. There is no significant difference mean of FCV-19S and Mediterranean diet adherence score according to the condition of having COVID-19 disease in men, but there is a significant difference individuals' BMI ( $p < 0.01$ ). For women, no statistically significant difference was found mean of FCV-19S, but there is a significant difference individuals' BMI and Mediterranean diet adherence score according to the condition of having COVID-19 disease ( $p < 0.05$ ).

**Conclusion:** Before COVID-19 pandemic, Pehlivanoglu et al. (2019) found the Mediterranean diet adherence score in Turkey as  $6.83 \pm 3.34$  while in this study, it was found as  $6.47 \pm 2.06$  during the COVID-19 lockdown. Bakioglu et al. (2020) found FCV-19S in Turkey as  $19.44 \pm 6.07$  when it was found as  $16.87 \pm 5.63$  in this study. However, as the COVID-19 pandemic is ongoing, our data need to be confirmed and investigated in future more extensive population studies.

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**Disclosure of Interest:** None declared.

#### P086

##### HOW DID THE PANDEMIA PROCESS AFFECT THE RATIOS OF NUTRITION TREATMENT?

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**Rationale:** The COVID-19 pandemic, influencing the whole world, affects the management of the nutritional status of patients and treatment methods due to both isolation and quarantine measures and economic difficulties experienced individually or socially. The aim of this study is to evaluate the effect of pandemic on nutrition therapy in a center designated as a pandemic hospital.

**Methods:** Patients consulted to the clinical nutrition unit in 2018–2019 and 2020 were included in the study. After the approval of the ethics committee, the data of the patients were evaluated retrospectively. SPSS-23 was used and  $p < 0.05$  was considered significant.

**Results:** 604, 619 and 429 patients followed in 2018, 2019 and 2020, respectively, were included in the study. The median age (IQR) of the patients was 63 [51–73], 45.2% ( $n = 746$ ) of them were women. When the usage rates of enteral (EN), parenteral (PN) or both were compared by years, there was no difference in surgical services and intensive care units, but a statistically significant difference was found in internal medicine services. Compared to 2018 and 2019, the rate of EN use in internal medicine services decreased while the rate of PN usage increased during the pandemic period (Table-1). Nasal, gastrostomy or jejunostomy selection rates for enteral route; peripheral or central route selection rates for parenteral route didn't change in pandemic.

**Table-1:**  
Nutritional therapy rates by years

Total n=1652			2018 (n=604) n (%)	2019 (n=619) n (%)	2020 (n=429) n (%)	P value	
Department	Internal medicine	EN	133 (47.3)	124 (48.6)	48 (24.1)	<b>&lt;0.001</b>	
		PN	137 (48.8)	120 (47.1)	147 (73.9)		
		EN+PN	11 (3.9)	11 (4.3)	4 (2)		
		TOTAL	281 (100)	255 (100)	199 (100)		
	Surgery	EN	22 (11.2)	27 (13.4)	12 (10.3)		0.588
		PN	170 (86.3)	165 (81.3)	99 (84.6)		
		EN+PN	5 (2.5)	10 (5)	6 (5.1)		
		TOTAL	197 (100)	202 (100)	117 (100)		
	Intensive care unit	EN	52 (41.3)	60 (37)	35 (31)		0.539
		PN	66 (52.4)	89 (54.9)	67 (59.3)		
		EN+PN	8 (6.3)	13 (8)	11 (9.7)		
		Total	126 (100)	162 (100)	113 (100)		
Access route	Enteral	Nasal	136 (58.9)	151 (61.6)	62 (53.4)	0.267	
		Gastrostomi	85 (36.8)	81 (33.1)	43 (37.1)		
		Jejunostomy	10 (4.3)	13 (5.3)	11 (9.5)		
		Total	231 (100)	245 (100)	116 (100)		
	Parenteral	Peripheral	243 (61.5)	228 (55.7)	211 (63.2)		0.088
		Central	152 (38.5)	181 (44.3)	123 (36.8)		
		Total	395 (100)	409 (100)	334 (100)		

EN:Enteral, PN:Parenteral

**Conclusion:** EN usage rate in internal medicine services decreased significantly during the pandemic period. The reason for this reduction may be due to the decrease in the nutritional assessment of patients and consultation with the nutritional team. Isolation and quarantine measures may have increased clinicians' tendency to parenteral nutrition. Multi-center, more comprehensive and prospective studies are needed on this subject.

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**Disclosure of Interest:** None declared.

#### P087

### NUTRITIONAL STATUS AND ASSOCIATED FACTORS AMONG COMMUNITY-DWELLING ELDERLY: 1ST NATIONAL CROSS-SECTIONAL STUDY IN CAMEROON

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**Rationale:** Although the ageing of the Cameroonian population is a public health issue in the coming years, the nutritional status of the elderly is

unknown. The aim of the study was to assess the nutritional status, health status and associated socio-demographic factors among elderly in Cameroon.

**Methods:** A cross-sectional study of 599 elderly (aged  $\geq 60$ ) was conducted in urban and rural areas. Several socio-demographic, sanitary, and anthropometric (weight, height, body mass index (BMI), Waist Circumference (WC), Mid-Upper Arm Circumference (MUAC)) data were collected. Nutritional status was defined according to WHO. Multinomial analysis was performed to identify factors associated with nutritional status. The threshold of statistical significance was 5%.

**Results:** The population, representative of the elderly, was aged  $68.9 \pm 7.2$  years, with sex ratio M/F=0.93, weight  $68.5 \pm 14.7$  kg, BMI  $24.7 \pm 5.3$ , WC  $90.1 \pm 12.8$  cm and MUAC  $28.2 \pm 5.0$  cm. According to BMI, undernutrition was 19.7%, normal status 37.9%, overweight 24.9%, obesity 17.5%. The

concordance for undernutrition between BMI and MUAC was weak ( $\kappa = 0.3$ ). In multinomial analysis, only no tablets consumption was negatively associated with undernutrition (OR=0.3). Obesity was positively associated with the urban environment (OR=4.8) and inactivity (OR=2.9) and negatively associated with male gender (OR=0.4), widowed (OR=0.2), head of household (OR=0.4), no income (OR=0.3), one pathology (OR=0.4), no tablet consumption (OR=0.2), having normal diastolic pressure (OR=0.2).

**Conclusion:** Undernutrition and obesity (more frequent in women, and in urban area) affect 37.2% of the elderly. These nutritional disorders are a public health problem that cannot be ignored.

**Disclosure of Interest:** None declared.

#### P088

### IODINE STATUS ASSESSMENT OF 3 TO 10 YEAR-OLD CHILDREN IN THE MUNICIPALITY OF SINTRA, PORTUGAL IN 2020

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**Rationale:** Recent studies on the iodine status in Portuguese population groups have reported deficiency in school aged children and pregnant women. This work aimed to assess the iodine status of 3 to 10 year-old children in the municipality of Sintra, Portugal, through urine iodine concentration (UIC).



**Methods:** A total of 177 participants attending two schools in the municipality of Sintra were included in this study. UIC median was used to assess iodine status, according to World Health Organization (WHO) recommendations. A first morning urine specimen was collected from all the participants and UIC measurement was performed by inductively coupled plasma-mass spectrometry (ICP-MS). Spearman's correlation coefficient was used to explore associations between continuous and discrete variables, while categorical variables bivariate analysis was performed using Pearson's chi-square test and  $p$  values  $\leq 0.05$  were considered to be significant.

**Results:** The obtained UIC median was 106  $\mu\text{g/L}$ , indicating an adequate iodine status of the sampled population (WHO, 2007). Although 50.3% of the children revealed an adequate iodine status, 42.4% had UIC  $< 100 \mu\text{g/L}$ , being classified as iodine deficient. The 5-6 year-old group presented the highest UIC median - 108  $\mu\text{g/L}$ , while the 9-10 year-old group had a UIC median of 82  $\mu\text{g/L}$ , consistent with iodine deficiency. No significant differences were found between boys and girls.

**Conclusion:** Based on UIC median values, most of the children revealed an adequate iodine status, although iodine deficiencies were also registered. These Results reinforce the need to define strategies to mitigate iodine deficiency in the studied population, such as the implementation of effective policies to improve iodine status in the studied population group.

**Disclosure of Interest:** None declared.

## P089

### CHARACTERIZATION OF KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) OF BREASTFEEDING IN AMAZONIAN KICHWA WOMEN OF ECUADOR

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**Rationale:** This study aimed to characterize the breastfeeding the knowledge, attitudes and practices (KAP) of the Amazonian Kichwa (AK) population of Ecuador for public health policy.

**Methods:** The study was descriptive, observational, cross-sectional, where the knowledge, attitudes, and practices around breastfeeding. Twenty-two women self-identified as AK from 2 rural areas (Nucanchi-Lacta and Pano) and one urban area (center of Tena) of Ecuador were recruited. A KAP survey and observational record of breastfeeding were applied to understand the cultural influence on this progeny's early nutrition pattern.

**Results:** Our study showed that 89% of mothers practice exclusive breastfeeding. They show promising signs of attachment and execute their breastfeeding technique. However, 81% of them were unaware of the "exclusive" breastfeeding-practice scope and its benefits. 89% of mothers did not give water and formula to their babies. Additionally, 5% of mothers indicated "not knowing" the first food that a newborn baby should receive, while the other mothers correctly indicated "only breast milk." Breastfeeding in them is more linked to their transmitted cultural beliefs and traditions.

**Conclusion:** Nursing mothers in the AK population have a high percentage of breastfeeding practice with positive attitudes towards breastfeeding, but a low percentage of breastfeeding knowledge. The breastfeeding practices are influenced by this population's beliefs and cultural traditions transmitted over the years to the different generations. This finding represents an opportunity to consolidate knowledge and unchangingly transmit this practice to later generations despite the increased exposure to urbanization and modernization in Amazonia Ecuador.

**Disclosure of Interest:** None declared.

## P090

### RELATIONSHIP BETWEEN NUTRITION STATUS, BODY COMPOSITION AND ATHLETIC PERFORMANCE IN SOCCER REFEREES

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**Rationale:** This study aimed to assess the nutritional status and examine the relationship between body composition and athletic performance in soccer referees.

**Methods:** The study participants were 120 male soccer referees. Nutritional status was assessed by anthropometric measurements, bioelectrical impedance analysis and 24-h recall method. Referees performed 5, 10 and 30 m sprint tests. Tests were practiced on the synthetic turf and performed twice. The photocells were settled the starting and finishing points of the distance 5, 10 and 30 m and test scores were measured via photocell. The best scores of the participants were recorded. Also, the cooper test was conducted at the 400 m synthetic athletics track. The referees ran the maximum distance they could cover in 12 minutes according to test protocol.

**Results:** Participants were divided into three groups as candidate, city and class referee. The highest average values anthropometric measurements (excluding fat mass (FM) %) were determined in class referees. Differences in body mass index (BMI) ( $p < 0.05$ ), muscle mass ( $p < 0.01$ ) and waist circumference ( $p < 0.05$ ) average values were statistically significant. Class referee's daily fat intake was higher than other groups ( $p < 0.05$ ). Daily energy and other nutrient intakes were similar ( $p > 0.05$ ). When all the participants were evaluated; it was found that negative, significant correlation between FM% and cooper test score ( $p < 0.01$ ;  $r = -0.37$ ), a positive significant correlation between FM% and 5, 10 and 30 m sprint test scores ( $p < 0.05$ ,  $r = 0.38$ ;  $p < 0.01$ ,  $r = 0.42$  and  $r = 0.48$ , respectively). Similarly, there was a negative significant correlation between waist circumference and cooper test score ( $p < 0.01$ ;  $r = -0.31$ ), a positive significant correlation between waist circumference and 5, 10 and 30 m sprint test scores ( $p < 0.01$ ,  $r = 0.38$ ,  $r = 0.46$  and  $r = 0.39$ , respectively).

**Conclusion:** Nutrition plays an important role in improving health and sports performance. Nutritional recommendations for referees should be made by nutritionists specific to the individual, taking into consideration gender, age, physical characteristics, training intensity and match frequency.

**Disclosure of Interest:** None declared.

## P091

### EXAMINATION OF THE RELATIONSHIP BETWEEN THE NUTRITIONAL STATUS AND EATING ATTITUDES OF LATE ADOLESCENTS

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**Rationale:** The objective of this study was to examine the relationship between nutritional status, anthropometric measurements and eating disorder risks of late adolescents.

**Methods:** This study was conducted on a total of 424 individuals, including 179 men and 245 women, between the ages of 18-21 (late adolescence) living in Ankara. A questionnaire consisting of demographic characteristics, eating habits and Eating Attitude Test (EAT-26) was applied face to face to the individuals, and anthropometric measurements (Body weight, height, waist and hip circumferences) were taken by the researchers. 24-hours dietary records were taken and analyzed with the BeBis program in order to evaluate the nutritional status of individuals. SPSS 25.0 program was used for the statistical evaluation of the data.

**Results:** The average daily energy intake of the individuals were  $2085 \pm 677$  kcal/day and  $1702.4 \pm 508.7$  kcal/day, protein intakes were  $85.4 \pm 33$  g/day and  $62.6 \pm 20.9$  g/day, fiber intakes were  $19 \pm 9$  g/day and  $17.2 \pm 7.8$  g/day in men and women, respectively. The average BMI and Waist/Hip ratio were  $23.1 \pm 3.2$  kg/m<sup>2</sup> and  $0.85 \pm 0.07$  in men, and  $21.8 \pm 3.6$  kg/m<sup>2</sup> and  $0.78 \pm 0.07$  in women, respectively. 14% ( $n = 25$ ) of men and 16.7% ( $n = 41$ ) of women had an eating disorder risk according to EAT-26 scores. Statistically significant differences were found between the the BMI classification and the daily glucose and fructose intake in men ( $p < 0.01$ ); and the daily protein intake and the percentage of energy from carbohydrate in women ( $p < 0.05$ ). The daily energy, carbohydrate, fiber and sucrose intakes of men ( $p < 0.05$ ), and daily energy and carbohydrate intakes of women ( $p < 0.05$ ) were statistically different according to waist/

hip ratio classification. According to the EAT-26 classification, the daily protein and fat intake of men without eating disorder risk was found statistically significantly higher than those with an eating disorder risk ( $p < 0.05$ ). The energy and carbohydrate intakes were also higher in that group, however no statistical significance was found ( $p > 0.05$ ). According to the EAT-26 classification, the daily energy, protein, carbohydrate and glucose intakes of women who do not have an eating disorder risk were lower and fat, fiber, fructose and sucrose intakes were higher than those with an eating disorder risk, however no statistically significant difference was found ( $p > 0.05$ ).

**Conclusion:** In this study, no relationship was found between the eating disorder risk and nutritional status of the participants. There may be other factors affecting the nutritional status of individuals other than eating attitudes. In addition, the low number of individuals at risk of eating disorders in the study is thought to be another reason for this result.

**Disclosure of Interest:** None declared.

## Nutritional epidemiology

P092

### USE OF PARENTERAL NUTRITION IN EUROPEAN HOSPITAL WARDS IS STABLE OVER TIME BUT DIFFERS ACROSS COUNTRIES: A NUTRITIONDAY ANALYSIS 2006-2019

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**Rationale:** Current guidelines aim to identify patient populations where Parenteral nutrition (PN) is recommended. We investigated the distribution of patients on PN per hospital wards specialty over the years at nutritionDay, in association to nutritional risk factors.

Current guidelines aim to identify patient populations where Parenteral nutrition (PN) is recommended. We investigated the distribution of patients on PN per hospital wards specialty over the years at nutritionDay, in association to nutritional risk factors.

**Methods:** We included 89709 hospital patients from 5266 European units participating to the nutritionDay audit in 2006-2015 and 2016-2019 in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. The proportion of patients on PN in the different specialty wards in the two datasets was compared using Wilcoxon test. Association between PN use in individual countries and nutritional risk factors was determined with fractional GLM (R 4.0.3).

**Results:** The proportion of hospitalized patients on PN spans from 1% to 13% across European countries. Top countries in the use of PN in hospital wards are Sweden, Italy, Denmark, Finland and France (5% to 13%). The distribution of patients on PN per ward specialty is very similar over the years ( $p > 0.01$ ) with the highest proportion of patients in general surgical wards (8%) and internal medicine wards in particular gastroenterology (5%) and oncology (7%) specialties. PN use in these wards is more than twice as high than in all other specialties. In 2006-2015 PN use in the individual countries is not associated to country's median severity of illness based on Pandora score ( $p = 0.21$ ), nor to recent weight loss ( $p = 0.83$ ) or to eating nothing of the meal served on nutritionDay ( $p = 0.41$ ). Only the latter instead plays a role in PN use during 2016-2019 ( $p < 0.0001$ ).

**Conclusion:** PN use in European hospital wards is quite stable from 2006 to 2019, although it differs among countries irrespective of the patients' risk profile. Similar patients' risk profiles may suggest country-related interpretation of guidelines.

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P093

### IODINE STATUS OF PREGNANT WOMEN RESIDING IN URBAN AND RURAL AREAS OF THE FREE STATE PROVINCE, SOUTH AFRICA

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**Rationale:** Adequate iodine nutrition during pregnancy is essential for optimal foetal development and neonatal outcomes. In South Africa (SA) the general population is considered iodine sufficient, but the iodine status of pregnant women, who have increased iodine requirements, is under-researched. Therefore, this cross-sectional study assessed the iodine status of 430 urban and 187 rural pregnant women of any gestational age, visiting antenatal clinics in urban and rural areas of the Free State Province.

**Methods:** Urinary iodine concentration (UIC) was determined using the modification of the Sandell-Kolthoff reaction with spectrophotometric detection, and serum thyroglobulin (sTg) levels were measured using the Q-Plex<sup>TM</sup> Human Micronutrient Array. Data on self-reported iodised salt use were collected using a questionnaire. Associations were determined by using the Chi-square or Fisher's exact test for categorical data, and the Kruskal-Wallis test for numerical data ( $p < 0.05$ ).

**Results:** Median (IQR) UIC were 150 (94-235)  $\mu\text{g/L}$  and 161 (106-256)  $\mu\text{g/L}$  in urban and rural participants, respectively. Half of participants (50%) in urban and 44% in rural Free State had UIC  $< 150 \mu\text{g/L}$ . Median (IQR) Tg was 11.9 (7.4-20.4)  $\mu\text{g/L}$  in urban and 10.8 (6.7-20.8)  $\mu\text{g/L}$  in rural participants. UIC was not associated with Tg ( $p = 0.33$ ; urban and  $p = 0.64$ ; rural). Reported iodised salt use was 81% in urban and 70% in rural participants.

**Conclusion:** Our findings show that despite the widespread use of iodised household salt, iodine status of pregnant women living in the urban Free State is only borderline adequate. There is need for further investigation into iodine status of pregnant women nationally. Moreover, the SA salt iodisation programme requires evaluation to ensure its effectiveness in the light of the current salt reduction policy implemented in the country.

**Disclosure of Interest:** None declared.

P094

### A NUTRITION SCREENING TOOL FOR PREDICTING BIRTH OUTCOMES AT AN ANTENATAL CLINIC AT A REGIONAL HOSPITAL IN URBAN SOUTH AFRICA

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**Rationale:** Nutrition screening may identify pregnant women at risk of poor birth outcomes. This study aimed to develop such a tool in pregnant women attending an antenatal clinic at a regional hospital in urban South Africa.

**Methods:** Phase one of this analytical cohort study collected data from 682 pregnant women. All participants who provided the birth information in the newborn's Road to Health Booklet were included in the second phase (331 mothers and 347 newborns). Overall poor birth outcome was defined as gestational age  $< 37$  weeks or birth length-for-age  $< -2\text{SD}$  or birth weight-for-length  $< -2\text{SD}$ . Logistic regression with backward selection ( $p < 0.05$ ) was used to select significant independent factors associated with overall birth outcome. All variables found to be significant in preceding theme-specific logistic regressions were considered for inclusion in the model.

**Results:** Overall poor birth outcome was present in 37.1% (114/307) of newborns. Lack of a stove, lower level of education, lack of employment, in danger of being killed by criminals, diagnosed with or treated for high blood pressure during the current pregnancy, expecting twins, and lower gestational body mass index (GBMI) were significantly associated with poor birth outcomes in the final logistic regression model. To simplify the tool, GBMI was replaced by current body mass index (BMI). The 10<sup>th</sup> percentile of

current BMI for each trimester group was used as cut-off. Weight loss of more than 3 kg during the current pregnancy was significant in theme-specific regression and included in the final model. If a score of two or more is considered indicative of overall poor birth outcome in the eight-item tool, a sensitivity of 68.8%, specificity of 70.5%, positive predictive value of 58.1% and negative predictive value of 79.1% were observed.

**Conclusion:** This tool may identify pregnant women who are at increased risk for poor birth outcome. Validation in a similar sample is recommended.

**Disclosure of Interest:** None declared.

**P095**

**HEALTHCARE COSTS OF POST-STROKE OROPHARYNGEAL DYSPHAGIA AND ITS MAIN COMPLICATIONS MALNUTRITION AND RESPIRATORY INFECTIONS**

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**Rationale:** Healthcare costs of post-stroke oropharyngeal dysphagia (PS-OD) and its complications malnutrition (MN) and respiratory infections (RI) are not fully understood. We aimed to assess the hospitalization, 3 and 12-months costs of PS-OD and its complications.

**Methods:** A cost of illness study was performed on patients admitted to Mataró Hospital with acute stroke. OD, MN and RI costs were assessed at hospitalization, at 3 and 12-months follow-up from a hospital and healthcare system perspective, respectively. A multivariate analysis assessed the independent effect of OD, MN and RI on hospitalization and follow-up costs.

**Results:** 395 consecutive patients were included, 45.0% had PS-OD and 34.5% were at nutritional risk. Patients with PS-OD and those at risk of MN or malnourished presented higher costs during hospitalization (OD:  $p < 0.0001$ ; MN:  $p = 0.004$ ), at 3-months (OD:  $p < 0.0001$ ; MN:  $p = 0.001$ ) and at 12-months follow-up (OD:  $p < 0.0001$ ; MN:  $p = 0.01$ ). Patients with  $\geq 1$  episode of RI at 12-months follow-up (16% patients) had higher costs ( $p < 0.0001$ ) (Table 1). PS-OD was associated with significant and independent higher costs during hospitalization (789.68€;  $p = 0.011$ ); and at 3-months follow-up (873.5€;  $p = 0.084$ ). Nutritional impairment or RI caused a significant and independent cost increase during both follow-up points (MN: 1,277.4€ 3-months,  $p = 0.004$ ; and 2,303.4€ 12-months,  $p = 0.001$ ; RI: 3,792.6€ 3-months,  $p < 0.001$ ; and 3,034.1€ 12-months,  $p < 0.011$ ). Those patients with PS-OD, risk of MN and with  $\geq 1$  episode of RI had higher costs than those without OD at 12-months (19,817.6±13,724.8 vs. 7,242.8±7,402.6€,  $p < 0.0004$ ).

**Table 1.**

Cost for oropharyngeal dysphagia, malnutrition and respiratory infection over the study period.

	PS-OD	no PS-OD	p-value	MN/at risk	no MN	p-value	RI	no RI	p-value
Hospitalization (euros)	5,357.7±3,391.6	3,976.3±1,992.6	<0.0001	5,370.0±3,052.0	4,445.0±2,759.0	0.004			
3 months (euros)	8,242.0±5,376.0	5,320.0±4,053.0	<0.0001	8,145.0±5,868.0	5,320.0±4,053.0	<0.0001			
12 months (euros)	11,617.6±12,033.6	7,242.8±7,402.6	<0.0001	10,678.0±10,466.9	6,230.78±4,326.9	0.01	13,806.0±11,834.0	8,154.0±9,190.0	<0.0001

PS-OD: post-stroke oropharyngeal dysphagia; MN: risk of malnutrition or malnourished; RI: respiratory infections.

**Conclusion:** PS-OD is independently associated with higher costs after acute stroke that strongly increase with the development of MN and RI at one year follow-up.

**Disclosure of Interest:** None declared.

**P096**

**LOCKDOWN IMPACT ON DIET, PHYSICAL ACTIVITY AND SERUM MARKERS**

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**Rationale:** COVID-19-related total lockdown (L) caused behavioural changes in a very short time. We investigated changes in dietary habits, physical activity (PA) and serum markers during L in Slovenia.

**Methods:** Lean healthy adults with an interest in nutrition, who completed a measurement comprised of Food Frequency Questionnaire (FFQ), 3-day Food Diary, International PA Questionnaire (IPAQ), anthropometrics and blood sample in January and February 2020 (baseline) for a study interrupted by L, were invited to complete online questionnaire comprised of FFQ and questions about lifestyle changes 4 weeks after the start of L, and then to attend another measurement post-L in the beginning of June 2020. Healthy eating index (HEI)<sup>1</sup> was calculated from nutrition data. Statistical analyses were performed using IBM SPSS Statistics 26.0 (IBM, Armonk, NY, USA).

**Results:** 38 participants (24 female, BMI:  $22.5 \pm 2.7 \text{ kg/m}^2$ , age: 20 – 60 years) completed all measurements. HEI dropped significantly during L ( $64.6 \pm 15.8$  to  $61.1 \pm 13.4$ ,  $p = 0.008$ ), so did energy intake ( $2300 \pm 870$  to  $1890 \pm 680 \text{ kcal}$ ,  $p = 0.004$ ). Both returned almost to baseline post-L. The number of meals per day did not change. PA induced energy expenditure significantly dropped during L ( $13.9 \pm 22.5$  to  $9.9 \pm 13.6 \text{ MET}$ ,  $p = 0.035$ ). Body mass remained stable. There were significant increases from baseline in post-L in serum glucose ( $4.9 \pm 0.4$  to  $5.2 \pm 0.7 \text{ mmol/L}$ ,  $p = 0.005$ ), total cholesterol ( $5.5 \pm 3.5$  to  $5.9 \pm 3.4 \text{ mmol/L}$ ,  $p = 0.003$ ) and LDL ( $3.9 \pm 3.6$  to  $4.1 \pm 3.6 \text{ mmol/L}$ ,  $p = 0.049$ ). Serum glucose increased more in participants who were restrained close to home compared to those who had activities in nature, and those who had several risky contacts compared to those with less contacts.

**Conclusion:** Despite stable body mass, serum biomarkers for chronic noncommunicable diseases in healthy lean adults deteriorated during 3 months of L.

**References:**

<sup>1</sup> <https://doi.org/10.1016/j.jand.2018.05.019>

**Disclosure of Interest:** None declared.

**P097**

**EFFECTS OF COVID-19 CONFINEMENT ON PORTUGUESE ADULTS' NUTRITION, PHYSICAL ACTIVITY AND SLEEP**

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**Rationale:** The global pandemic caused by the coronavirus-disease (COVID-19) has made profound changes in people's daily lives, especially during the confinement period. Therefore, the aim of this study was to characterize nutritional status, food habits, physical activity and sleep of Portuguese adults during the first COVID-19 confinement and to analyze its association with changes in the aforementioned factors.

**Methods:** An online survey during the first COVID-19 wave in Portugal was applied (through the Survey Legend) to 5479 Portuguese adults (48.4±14.2 years old; 25.9±5.1kg/m<sup>2</sup>). It collected data from several areas of the individual's life, but only a small part and more related to nutrition was used for this purpose, such as: sociodemographic, confinement characteristics, nutrition (using a semi-quantitative food frequency questionnaire), physical activity (intensity and frequency), sleep duration and sleep latency on weekdays and weekends, and sleep quality. Nutrition included daily meals and scores for the recommended intake frequencies were calculated (Paiva et al., 2021). Data were analysed using SPSS, version 25.0. The significance level was 5% ( $P<0.05$ ).

**Results:** Participants were on average 41.1±26.9 days in lockdown, consumed 3.6±0.7 daily meals and reported 1.7±1.7 of morbidities. The majority lived in a city (66.3%) and was physically inactive (73.9%). The physical activity practiced was mainly of light and moderate intensities (23% and 27%, respectively).

Significant differences were observed between pre- and during confinement caused by the pandemic ( $P<0.01$ ) as follows: a decrease of the number of meals, physical activity, sleep duration on weekdays and weekends and sleep quality and an increase of weight, body mass index, alcohol consumption, sleep latency and awakenings on weekdays and weekends. In addition, the intake of processed and pre-confectioned foods, deserts, chocolates, cakes and biscuits, gums and candies, and soft drinks was significantly higher than the recommendations; however, the consumption of healthy foods such as fruits, vegetables, milk and milk products, meat/fish/chicken, eggs and bread/potatoes/rice/pasta was significantly lower than the recommended.

**Conclusion:** The COVID-19 pandemic and consequently, the confinement negatively affected Portuguese adults with consequences upon to their nutritional status, physical activity, food habits and sleep. Therefore, it is important to promote the awareness about the importance of a healthy lifestyle through a good nutrition with adequate meals and food choices, practice physical exercise and sleep well.

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**Disclosure of Interest:** None declared.

#### P098

### ULTRA-PROCESSED FOOD CONSUMPTION IS ASSOCIATED WITH RENAL FUNCTION DECLINE IN OLDER ADULTS: A PROSPECTIVE COHORT STUDY

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**Rationale:** Ultra-processed food (UPF) consumption has been associated with increased risk of cardiovascular risk factors and mortality. However, little is known on the UPF effect on renal function. The aim of this study is to assess prospectively the association between consumption of UPF and renal function decline.

**Methods:** This is a prospective cohort study of 1312 community-dwelling individuals aged 60 and older recruited during 2008–2010 and followed up to December 2015. At baseline, a validated dietary history was obtained. UPF was identified according to NOVA classification. At baseline and at follow-up, serum creatinine (Scr) and estimated glomerular filtration rate (eGFR) levels were ascertained and changes were calculated. A combined end-point of renal decline was considered: Scr increase or eGFR decreased beyond that expected for age. Logistic regression with adjustment for potential confounders was performed.

**Results:** During follow-up, 183 cases of renal function decline occurred. The fully adjusted odds ratios (95% CI) of renal function decline across tertiles of percentage of total energy intake from UPF were 1.56 (1.02–2.38) for the second tertile, and 1.74 (1.14–2.66) for the highest tertile;  $p$ -trend was 0.026.

**Conclusion:** High UPF consumption is independently associated with an increase higher than 50% in the risk of renal function decline in Spanish older adults.

**Disclosure of Interest:** None declared.

#### P099

### GEOGRAPHIC EVOLUTION OF PEDIATRIC INTESTINAL FAILURE (PIF) MANAGEMENT IN THE UNITED STATES (US)

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**Rationale:** Intestinal failure (IF) in children is the inability to maintain growth and development without parenteral support (PS). In the US there is no clear picture of the extent of pIF nationally. This study utilizes a large database to outline distribution of pIF and its geographic evolution over time.

**Methods:** The Symphony Integrated DataVerse (IDV) is a de-identified national claims database with longitudinal coverage of >290 million unique patients from 2012–20. It contains inpatient and outpatient medical, surgical and pharmacy information. We included patients <18 years who received <sup>≥</sup> 2 PS prescriptions in 6 consecutive months and had relevant surgical diagnoses. Zipcode data (Zip3) was used to create prevalence “heatmaps”.

**Results:** 2155 children met inclusion criteria, with an initial geographic distribution mirroring the general population. Location of first PS prescription followed a similar geographic pattern with slight coalescence to larger population centers. Following subjects longitudinally the number of children requiring ongoing PN at 1 year was 777 (36% of original), dropping to 508 (24%), 383 (18%) and 277 (13%) at years 2–4 respectively. The geographic distribution simplified and generally located to centers with established pediatric intestinal rehabilitation programs over time.

**Conclusion:** We estimate almost 3000 new cases of pIF in the US over the 8-year period of the study, and 75% of children no longer require PS after 2 years, increasing to 87% after 4 years. Over this time the location of PS providers appears to coalesce around major centers specializing in the care of pIF suggesting patient care is being transferred, although perhaps not as early as it might be. Given the improvement in outcomes associated with care in specialized centers, this represents an area for potential improvement nationally.

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## P100

**CONCERN ABOUT HEALTHY EATING RELATED TO THE PRACTICE OF RESTRICTIVE DIET AND EATING QUALITY IN YOUNG BRAZILIANS**

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**Rationale:** Concern about healthy eating can influence people's behavior and perception related to eating in different ways. The aim of this study was to verify the relationship between preoccupation about healthy eating (evaluated by Healthy Orthorexia [HO] and Orthorexia Nervosa [ON]) according to the practice of restrictive diet and the self-rated eating quality of young Brazilians.

**Methods:** This was a cross-sectional study. Young adults completed the Teruel Orthorexia Scale (TOS) and a sociodemographic questionnaire using paper-and-pencil. The average scores of the TOS factors (OH and ON) were compared according to the variables "practice of restrictive diet (categories: never; sometimes; always)" and "self-rated eating quality (categories: poor; normal; good)" using Analysis of Variance and Tukey's post-test ( $\alpha=5\%$ ). The Levene's Test showed equality of error variances only for the OH ( $p>.05$ ); therefore, Welch's t-test with Games-Howell's post-test was used for ON. The normality of the data was found (psychometric sensitivity of the TOS items: skewness  $<3$ , kurtosis  $<7$ ).

**Results:** A total of 226 individuals (63.7% men) with an average age of 27.8 ( $SD=5.0$ ) years participated of the study. Most participants were classified, according to anthropometric nutritional status, with normal weight (58.8%), without a diagnosis (self-reported) of eating disorder (98.6%), self-rated the quality of their eating as good (47.3%), and reported dieting (67.1%). There were significant differences ( $p<.001$ ) in both OH and ON scores among non-dieting ( $M_{OH}=1.1$ ,  $SD_{OH}=.5$ ;  $M_{ON}=.3$ ,  $SD_{ON}=.3$ ) and dieting (sometimes:  $M_{OH}=1.3$ ,  $SD_{OH}=.6$ ;  $M_{ON}=.5$ ,  $SD_{ON}=.4$ ; always:  $M_{OH}=1.8$ ,  $SD_{OH}=.5$ ;  $M_{ON}=.9$ ,  $SD_{ON}=.6$ ) individuals. The greater the frequency of dieting, the greater the concern about healthy eating. The participants who self-rated eating quality as poor ( $M_{OH}=.8$ ,  $SD_{OH}=.5$ ;  $M_{ON}=.4$ ,  $SD_{ON}=.4$ ), normal ( $M_{OH}=1.3$ ,  $SD_{OH}=.5$ ;  $M_{ON}=.5$ ,  $SD_{ON}=.4$ ), and good ( $M_{OH}=1.7$ ,  $SD_{OH}=.6$ ;  $M_{ON}=.6$ ,  $SD_{ON}=.6$ ) exhibited a significant difference for both OH ( $p<.001$ ) and ON ( $p<.03$ ) scores. The better the self-rated eating quality, the higher the OH scores. For ON, the result was at the limit of significance.

**Conclusion:** This study showed that concern about healthy eating was associated with dieting and self-rated eating quality. The higher the frequency of dieting and the better the perception of the quality of the eating, the greater the participants' preoccupation with healthy eating. These findings can be useful to highlight the importance of evaluating people's relationship with food.

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**Disclosure of Interest:** None declared.

## P101

**INVERSE ASSOCIATION BETWEEN AN INDEX OF MEDITERRANEAN DIET AND THE PREVALENCE OF METABOLIC SYNDROME IN A POPULATION OF ADULTS AGED 38 TO 49 YEARS: BASELINE PROFILE MAUCO COHORT, CHILE**

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**Rationale:** The Metabolic Syndrome (MetS) is considered a pathophysiological state, characterized by generalized inflammation, products of a group of interrelated factors, including abdominal obesity, insulin resistance, hypertension, dyslipidemia, significantly affecting the adult population. (1) The evidence suggests that adherence to a Mediterranean diet patterns (MED) is a protective cardio-metabolic factor. (2)

**Methods:** Analytical cross sectional study. Baseline data on 38 to 49 year old subjects enrolled in the MAUCO cohort

were analyzed. Adherence to a MED pattern and prevalence of MetS were assessed with a validated questionnaire for Chilean people (3). Multivariate associations between MetS and different risk factors were analyzed and diet independence was further analyzed with a logistic regression model, adjusting for possible confounders.

**Results:** We studied 8943 participants, with an average age of  $53 \pm 9$  years, 54.9% of the participants were women. The MED profile was achieved by 1.52% of those studied, while 44.3% presented a poor pattern. Regarding metabolic profile, people with MetS were more obese according to BMI (+18%), TG level (+78%), high body fat (+24%), high blood glucose (+21%). People with MetS had lower levels of HDL (-19%) and LDL (-2%). Glucose-Triglycerides Index had an inverse association with the MED score ( $r = -0.08$ ;  $p < 0.001$ ) for both groups (MetS and No MetS). Multivariate logistic regression model adjusted for sex, age and educational level showed that the healthy diet pattern of MED maintains an inverse association with MetS with an OR of 0.61 (C.I. 0.42-0.87;  $p=0.007$ ).

**Conclusion:** This study shows the protection of a healthy diet, according to the Mediterranean score. The evidence proves the relevance of promoting this type of dietary pattern as cardioprotective factors in adult populations.

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**Disclosure of Interest:** None declared.

## P102

**COURSE OF COMMUNITY-ACQUIRED PNEUMONIA - A DESCRIPTIVE STUDY ON THE INFLUENCE OF NUTRITIONAL STATUS**

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**Rationale:** The objectives were to identify the effects of nutritional risk on length of stay (LOS) and on the immune response, in adults hospitalized with Community Acquired Pneumonia (CAP). Furthermore, to elucidate if patients in nutritional risk have increased risk of readmission, losing handgrip strength (HGS) or physical function during hospitalization.

**Methods:** In this prospective cohort, we analyzed data from 141 CAP patients admitted to North Zealand Hospital, Denmark between January 2019 and October 2019. CAP was defined by infiltrate on chest x-ray + at least one relevant symptom. Nutritional risk was assessed using Nutritional Risk Screening 2002 within 48 hours after admission. Patients with a score  $\geq 3$  was identified as being in nutritional risk. Level of physical function (Barthel Index-100) and HGS (hand dynamometer) was measured on day of admission and at discharge to identify change during hospital stay. The immune response (neutrophil-to-lymphocyte ratio (NLR)) was measured at admission. Statistical methods: Mann-Whitney's U test, Fisher's exact test, Spearman's Rank correlation, relative risk with Mantel Haenzel. General logistic regression analysis with Wald test was used to test for confounders. The following variables were tested: gender, age, CURB-65, presence of comorbidities.

**Results:** Nutritional risk significantly affected LOS in CAP patients since patients at nutritional risk had longer LOS than patients not at nutritional risk (5 vs. 4 days ( $p=0.043$ )). Nutritional risk did not affect NLR on day of admission ( $p=0.21$ ). No association was found between nutritional risk and readmission  $<30$  days ( $p=0.84$ ) or  $<6$  months ( $p=0.86$ ) or loss of physical function during hospital stay ( $p=0.19$ ). Nutritional risk at admission was associated with loss of HGS during hospitalization (RR=1.93 ( $p=0.03$ )). Patients losing HGS lost on average 2.15 kg during

admission equal to 0.280 kg a day (n=30). Test for confounders showed no confounding variables.

**Conclusion:** In patients hospitalized with CAP, nutritional risk was associated with longer hospital stay and increased risk of losing HGS during hospital stay, indicating that these patients could benefit from nutritional therapy. Analysis did not show increased risk of readmission nor losing physical function during hospital stay. Immune response on the day of admission were not affected by nutritional status.

**Disclosure of Interest:** None declared.

## P103

### ASSESSMENT OF THE NUTRITIONAL HABITS AND PHYSICAL ACTIVITY LEVELS OF UNIVERSITY STUDENTS AFTER COVID-19 PANDEMIC

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**Rationale:** As a result of the Covid-19 pandemic, university students continue their education from their homes. Food consumption and nutritional habits are important parameter that causes obesity and, thus, chronic diseases. This study was aimed to evaluate the nutritional habits and physical activity levels of university students after the Covid-19 pandemic.

**Methods:** University students (n=320) participated in this cross-sectional descriptive study between February-June 2021. A questionnaire included general health status and nutritional habits applied to all participants. Healthy Eating Index (HEI-2015) was used to measure diet quality. International Physical Activity Questionnaire (IPAQ)-Short form was used to assess the intensity of physical activity. Height and body weight information was obtained from individuals by their statements. The Non-interventional Clinical Researches Ethics Board of Hacettepe University approved the present study.

**Results:** Participants consisted of 320 university students (171 women, 149 men, mean age  $21.47 \pm 2.61$ ). During the lockdown because of the Covid-19, 51.3% (n = 164) of the participants stated that the portion sizes they consume at meals were increased and 46.6% (n = 146) stated that the frequency of consumption of fried foods also increased. Similarly, 88.4% of the participants' stated the consumption of vegetables and fruits were increased, 60.6% of the participants' fast-food consumption and 53.8% of the participants delivered food consumption increased with the Covid pandemic. 62.8% of the participants stated that they skipped meals during the time they stayed at home. When the diet quality evaluated according to HEI-2015 parameters, most women (61.40%) and the men (56.37%) diet quality score was between 50-80, and only 3.1% of the participants' diet quality score was over 80. The mean HEI score of women was  $51.7 \pm 10.2$  while mean HEI score for men was  $46.3 \pm 9.3$ . IPAQ results showed that 24 (14.03%) women and 13 (8.72%) men were inactive before Covid-19. The number of inactive individuals increased in women (43.27%) and men (42.28%) after Covid-19 (p = 0.000). Before Covid-19, the average body weight was  $58.08 \pm 10.30$  in women and  $71.30 \pm 12.22$  in men; after Covid-19 lockdown, the average body weight in women was  $58.85 \pm 10.65$  (p=0,044), and men were  $73.67 \pm 12.91$  (p<0,001). The mean BMI of women (Body Mass Index) before Covid-19 was  $22.93 \pm 3.45$ , and after Covid 19 lockdown, it was  $23.56 \pm 3.49$  (p<0,001). The mean BMI level of men before and after Covid-19 was  $24.07 \pm 3.76$  and  $24.97 \pm 3.82$  respectively (p<0,001).

**Conclusion:** The increase in body weight of university students who stayed at home during Covid-19 lockdown could be because of decreased physical activity and the change in eating habits. Although the consumption of vegetables and fruits has increased, it is also considered that individuals skip meals and increase their fast food consumption. These study findings predicted to guide policymakers and researchers on the effects of the Covid-19 process in university students.

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**References:**

**Disclosure of Interest:** None declared.

## P104

### MENOPAUSE AS DETERMINANT OF FATTY LIVER INDEX AT POPULATION LEVEL

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**Rationale:** In fertile women, the prevalence of Non-Alcoholic Fatty Liver Disease (NAFLD) is lower than in postmenopausal women (PMW). Several studies have shown that estrogen deficit in menopause have direct effects on NAFLD.<sup>1</sup> Aim of this study is to disentangle the effect of menopause from the normal aging process on NAFLD.

**Methods:** From a general Italian population, 917 women were randomly recruited. A 138-item food frequency questionnaire and a detailed questionnaire concerning lifestyle, medical history and physical activity were administered. All subjects underwent physical examination, including anthropometric (weight, height, waist and hip circumferences, and skinfolds) and BP measurements, and blood sampling (total cholesterol, LDL, HDL, LDL, triglycerides, glucose, insulin, apolipoprotein A1 and B, AST, ALT,  $\gamma$ GT). We calculated the Fatty liver Index (FLI) and values  $\geq 60$  predict the presence of NAFLD.<sup>2</sup> Stepwise multiple regression was used to identify the FLI determinants considering the covariates menopause, age, AST/ALT ratio, total daily caloric intake, daily intakes of ethanol, cholesterol, fruit, vegetables, legumes, oil and butter. To identify differences between fertile and PMW, we performed an ANOVA, first age-adjusted, then adjusted for BMI and finally for total daily caloric intake and for daily intakes of ethanol, cholesterol and fruit.

**Results:** In 917 women from a general Italian population, we identified the significant determinants of FLI (Table 1). To discriminate the role of age from the role of menopause on FLI, 250 fertile women were compared with 667 PMW. Once adjusted for age and all the above-mentioned covariates, only differences in total cholesterol, LDL, apolipoprotein B, ALT, AST/ALT ratio,  $\gamma$ GT and FLI persisted between the two groups of women (FLI>60: 27.1% vs 8%, p<0.001 vs. fertile).

Determinanti FLI	$\beta$ estimate $\pm$ SE	P Value
Menopausa (si)	8.95 $\pm$ 4.3	0.034
Età (anni)	0.59 $\pm$ 0.11	<0.0001
Rapporto AST/ALT	-21.90 $\pm$ 2.70	<0.0001
Introito di frutta (g/die)	0.019 $\pm$ 0.007	0.005
Cumulative R <sup>2</sup>	0.24	<0.0001

**Conclusion:** In PMW a higher FLI (index based on BMI, waist circumference, triglycerides and  $\gamma$ GT) compared to fertile women was observed, a difference that persisted after adjustment for age, total daily caloric intake, daily intakes of ethanol, cholesterol and fruit, showing that NAFLD could also dependent on menopause.

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**Disclosure of Interest:** None declared.

## P105

### THE ASSOCIATION BETWEEN MALNUTRITION AND BEHAVIORAL-COGNITIVE PROBLEMS IN RESIDENTS OF LONG-TERM CARE FACILITIES, A CROSS-SECTIONAL AND LONGITUDINAL STUDY

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**Rationale:** Older adults with behavioral-cognitive problems are highly care dependent before and during stay in a long-term care facility (LTCF).

We hypothesise that these older adults are at increased risk to be malnourished, already on admission, or to become malnourished during stay.

**Methods:** Data were obtained from the InterRAI LTCF instrument, a minimum data set to describe multiple care problems of residents of LTCFs<sup>1</sup>. Cross-sectional analyses were applied to study prevalence of malnutrition at admission to a LTCF (n=3722). Longitudinal analyses (n=1826 with first measurement on admission, ('newly-admitted') and n=3152 with first measurement on average >1 year after admission ('long-stay')) were performed to study incident malnutrition during stay (total follow-up time of 7104 years). Logistic and Cox regressions were done with InterRAI behavioral-cognitive scales for communication problems (CS), aggressive behaviour (ABS), social engagement (RISE), depressive symptoms (DRS) and cognitive performance (CPS) as independent variables and malnutrition, based on the ESPEN 2015 definition, as dependent variable. Results were stratified for gender and group ('newly-admitted' vs. 'long-stay'), and adjustments were made for living status before admission, age, multimorbidity and, when appropriate, cognitive performance.

**Results:** At admission, the prevalence of different behavioral-cognitive problems ranged between 22.4–27.8% and 9.5% of residents was malnourished. Significant associations with malnutrition were seen for low social engagement (male OR:1.84, female OR:1.34) and low cognitive performance (female OR:1.35). Longitudinal analyses showed an incidence of malnutrition during stay of 8.9%. No significant long-term associations with malnutrition were seen in 'newly-admitted' male residents but all InterRAI behavioral-cognitive scales were associated with malnutrition in 'long-stay' male residents (HR's 1.69–2.82). In 'newly-admitted' female residents, communication (HR:2.31) and cognitive performance (HR:1.74) were significantly associated with incident malnutrition. In 'long-stay' female residents, low social engagement (HR:1.34), communication (HR:1.54) and cognitive performance (HR:1.80) were significantly associated with incident malnutrition.

**Conclusion:** Residents in LTCFs with behavioral-cognitive problems are at an increased risk of being malnourished at admission, but even more of becoming malnourished during stay, and more specifically during long-term stay. Differences were observed for genders; male residents with behavioral-cognitive problems are in better nutritional condition at admission and seem to develop malnutrition in a later stage compared to female residents.

#### References:

<sup>1</sup><https://www.interrai.org/long-term-care-facilities.html>

**Disclosure of Interest:** None declared.

## P106

### RETIREMENT IS ASSOCIATED WITH A DECREASE IN DIETARY QUALITY IN SWITZERLAND. THE COLAUS/PSYCOLAUS STUDY

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**Rationale:** Retirement has been associated with changes in dietary intake. We evaluated dietary intake and compliance to dietary guidelines after retirement in a population-based survey

**Methods:** Data from a prospective study conducted in Lausanne, Switzerland. Dietary intake was assessed using a validated food frequency questionnaire in 2009–2012 (first survey) and 2014–2017 (second survey). Three approaches were used comparing changes in dietary intake: 1) before and after retiring; 2) in participants who retired with gender- and age-matched participants who did not retire, and 3) in participants who retired, who did not retire or who were retired at both surveys.

**Results:** Using the first approach, newly retired participants (n=215) increased their weight from 74.1±16.1 to 74.9±16.4 kg (p=0.007). Participants also increased their intake of total and animal protein; total, saturated and monounsaturated fat; alcohol; cholesterol; vitamin D and fish, and decreased their intake of vegetable protein; total carbohydrates and monosaccharides, and of the Mediterranean diet score. Those findings were confirmed for total and saturated fat; alcohol; total carbohydrates and monosaccharides; vitamin D; fish intake and the Mediterranean diet score in the other two approaches.

**Table -**

Dietary intake of the 215 participants who retired between 2009–2012 and 2014–2017, CoLaus study, Lausanne, Switzerland. TEI, total energy intake.

	Before	After	P-value
Total energy intake (kcalories/day)	1765 [1328–2239]	1848 [1356–2219]	0.880
Total protein (% TEI)	14.9 [13.3–17.1]	15.2 [13.7–17.5]	0.038
Vegetal protein (% TEI)	4.5 [3.9–5.3]	4.4 [3.8–5]	0.012
Animal protein (% TEI)	10.0 [8.5–12.6]	11.1 [9.1–13.0]	0.005
Total carbohydrates (% TEI)	45.8 [40.1–51.7]	43.6 [38.6–48.1]	<0.001
Monosaccharides (% TEI)	22.7 [17.3–29.3]	21.0 [16.8–25.4]	0.004
Total fat (% TEI)	34.6 [30.0–39.1]	35.8 [32.1–40.7]	0.008
Saturated (% TEI)	12.5 [10.5–14.9]	13.1 [11.1–15.9]	0.010
Monounsaturated (% TEI)	13.9 [11.3–16.3]	14.2 [12.4–16.8]	0.009
Alcohol (% TEI)	2.4 [0.6–5.8]	2.8 [1.1–6.9]	0.016
Cholesterol (mg/day)	283 [213–371]	297 [225–405]	0.001
Vitamin D	2.1 [1.3–3]	2.4 [1.5–3.6]	0.002
Fish, excluding fried (g/day)	23 [13–41]	30 [14–47]	<0.001
Fish, all (g/day)	33 [19–52]	36 [21–58]	0.005
Mediterranean diet score	4.3±1.5	3.9±1.6	0.001

**Conclusion:** Retirement was associated with an unhealthier dietary intake. Interventions defining retirement as a “window of opportunity” towards a healthier diet could be provided.

**Disclosure of Interest:** None declared.

## P107

### IMPLICATION OF SNACKING PATTERNS ON BODY MASS INDEX IN SCHOOL-AGE CHILDREN IN CROATIA

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**Rationale:** Snacking contributes to the total intake of energy and nutrients. However, snacking of nutritive-low and energy-dense foods may lead to poor dietary quality and consequently to inadequate nutritional status. The aim of this study was to observe snacking patterns regarding body mass index (BMI) of school-age children in Croatia.

**Methods:** Snacking patterns were assessed using dietary record for three non-consecutive days in children (n=156; 50% boys) aged 8.3 ± 0.5 years from Zagreb City. Snacks were defined as meals which contribute <15% to energy intake. Snacks were also analysed according to the proportion they contribute to total daily energy and intake of food groups. Foods and beverages from snacks were assigned to one of the 14 food groups: fruits and vegetables (FV), potato and grains (PG), dairy products (DP), sweet dairy products (SDP), meat and fish (MF), meat and fish products (MFP), legume, seeds and nuts (LSN), fats (F), salty snacks (SS), sweets and cakes (SC), juices (J), ready-to-eat cereals (RC), mixed dishes (MD) and other food (OF). Anthropometric measurements were performed according to standard protocols, while z-scores were obtained using AnthroPlus software. Physical activity level (PAL) was estimated using a Physical activity questionnaire for children. Children were divided in three clusters with K-Means cluster analysis toward BMI-age z-score, snacking frequency and total energy contribution from snacks.

**Results:** Children in cluster 1 on average had adequate BMI (z-score: -0.2 ± 0.1) and the highest frequency of snacking (3.6 ± 0.1 per day; 29.4 ± 0.1% kcal/day). Children in cluster 2 had adequate BMI (z-score: -0.3 ± 0.1), but have the lowest frequency of snacking (1.5 ± 0.1 per day; 11.5 ± 0.7% kcal/day). In cluster 3, children were overweight (z-score: 1.6 ± 0.1) and they had 2.1 ± 0.1 snacks per day (18.1 ± 0.9% kcal/day). There was no difference in children's PAL between clusters. Children in cluster 1 had significant higher total daily energy intake (1967 ± 61 kcal) compared with children in cluster 2 (1572 ± 37 kcal) and 3 (1672 ± 90 kcal). Snacking by children in cluster 1 made a significantly higher contribution to total intake of FV, PG, DP, MF and OF, but also of MFP, F, SC, RC and MD compared with children in cluster 2. Also, children in cluster 1 had a higher intake of PG and DP, as well as MFP, F, SC and MD through snacking compared with children in

cluster 3. There was no difference in overall contribution to the intake of food groups in through snacking between children in cluster 2 and 3.

**Conclusion:** Contrary to expectations, we did not find that high BMI was determined by snacking frequency and pattern. However, using an approach where snacks are defined only according to energy content, Results may implicate that meals might be as important for adequate nutritional status as snacking patterns, but further research is warranted.

**Disclosure of Interest:** None declared.

## P108

### PREVALENCE OF OROPHARYNGEAL DYSPHAGIA AND MALNUTRITION AMONG HOSPITALIZED PATIENTS WITH COVID-19 AT THE THREE WAVES OF THE PANDEMIC

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**Rationale:** The phenotype of patients affected by COVID-19 disease changed between the three waves of the pandemic mainly according to age and functional status. We aimed to assess the prevalence of oropharyngeal dysphagia (OD), malnutrition (MN), weight loss (WL) and mortality rate among the 3 consecutive waves of COVID-19 patients hospitalized at Mataró Hospital, Catalonia, Spain.

**Methods:** A prospective observational study (NCT04346212) was performed between April 2020 and May 2021. Clinical assessment for OD with the Volume-Viscosity Swallowing Test, nutritional assessment according to GLIM criteria and WL (pre-admission to discharge) were carried out. The intervention during the first wave was mainly observational and a systematic multimodal nutritional intervention (screen and treat) was implemented in the 2nd and 3rd wave consisting on: a) texturized hypercaloric-hyperproteic diet -fork mashable or pureed-; and b) oral nutritional supplements (600 kcal + 30g protein/day); and c) fluid thickening at 250mPa·s or 800mPa·s.

**Results:** We included 205 patients (69.3±17.5 yr; 30.2% from nursing home -NH-) in the 1st, 226 (66.4±17.5 yr; 9.0% NH) in the 2nd and 100 (71.0±17.0 yr; 14.0% NH) in the 3rd wave (age: p=0.031 between the 2nd and 3rd wave) (demographics in Table 1). Prevalence of OD on admission was 51.7%, 31% and 39%, and that of MN was 45.5%, 35.5% and 40%, respectively. WL was maximal in the 1st wave (6.6±5.8kg) and reduced during 2nd (3.3±4.2kg (p<0.0001 vs. 1st wave)) and 3rd waves (4.6±4.8kg) (ANOVA: p<0.0001). Mortality was 10.7%, 13.5% and 20.8% (p=0.056), with significant differences when comparing the 1st wave with the 3rd (p=0.023).

**Table 1.**  
Study demographics

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	p-value		
				1 <sup>st</sup> vs 2 <sup>nd</sup>	1 <sup>st</sup> vs 3 <sup>rd</sup>	2 <sup>nd</sup> vs 3 <sup>rd</sup>
Mean age (years±SD)	69.3±17.7	66.4±17.5	71.0±17.0	0.096	0.422	0.031
Sex (% female), n/N	52.5 (107/204)	45.5 (91/200)	60.0 (60/100)	0.134	0.325	0.02
Barthel index (mean±SD)*	90.4±18.7	87.4±26.6	83.0±27.5	0.191	0.006	0.182
Patient origin (%)						
Community, n/N	66.3 (136/205)	90.5 (181/200)	86.0 (86/100)	<0.0001		
Nursing home, n/N	30.2 (62/205)	9.0 (18/200)	14.0 (14/100)			
Sociosanitari center, n/N	3.4 (7/205)	0.5 (1/200)	0.0 (0/100)			
Days of admission (days±SD)	16.8±13.0	11.2±7.7	11.7±13.7	<0.0001	<0.0001	0.685

\*Barthel pre-admission

**Conclusion:** Prevalence of OD, MN and mortality were very high among hospitalized COVID-19 patients in the three waves of the pandemic. An early and proactive multimodal nutritional intervention greatly improved nutritional status and minimized the WL in hospitalized COVID-19 patients.

**Disclosure of Interest:** None declared.

## P109

### DIET QUALITY AND ASSOCIATIONS WITH CHOLINE INTAKE IN PREGNANT WOMEN IN BLOEMFONTEIN, SOUTH AFRICA

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**Rationale:** Choline is essential during pregnancy and is an important component of a high-quality diet that can promote better short- and long-term health of both the mother and infant. The aim of this study was to determine diet quality of a sample of pregnant women in South Africa, and to determine associations with choline intake.

**Methods:** Pregnant women attending the antenatal clinic at a regional hospital in Bloemfontein, South Africa, comprised the sample. Using a cross sectional study design, a quantified food frequency questionnaire (QFFQ) was used to obtain dietary intake information. The Diet Quality Adapted for Pregnant Women (IQDAG) was applied to determine diet quality.

**Results:** Most of the participants (84.7%) consumed choline in amounts below the adequate intake (AI) level (N = 681). The median final IQDAG score was 69 out of a maximum of 100 points (interquartile range of 63 – 74 points). Participants with lower final IQDAG scores had lower choline intakes compared to participants with higher IQDAG scores (p<0.0001). Median component scores for intakes of vegetables (p=0.0038), fibre (p<0.0001), omega-3 FA (p<0.0001), calcium (p<0.0001), iron (p<0.0001) and folate (p<0.0001) (micronutrient intakes without supplements considered), were significantly lower for participants who consumed choline below the AI level than for those that consumed adequate choline. For ultra-processed foods (UPF), participants who consumed choline below the AI level had significantly higher median scores (p<0.0001) than those that consumed adequate choline.

**Conclusion:** A lower overall IQDAG score was associated with inadequate choline intake, suggesting a relationship between diet quality and choline intake. Interventions that improve diet quality are likely to improve choline intake – both important factors required to promote optimal pregnancy outcomes.

**Disclosure of Interest:** None declared.

## P110

### THE RELATIONSHIP BETWEEN ADOLESCENTS' SOCIAL MEDIA ADDICTION AND EATING BEHAVIORS

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**Rationale:** The rapidly increasing usage of social media has potential effects on body perception and eating behavior. This study was carried out to examine the relationship between adolescents' social media usage, social media addiction, dietary and physical activity habits and eating behaviors.

**Methods:** A total of 379 adolescents living in Ankara, 110 men and 269 women, participated in the study and the study was conducted online.



Sociodemographic characteristics, dietary habits, anthropometric measurements, physical activity habits and social media usage of the participants were obtained through an online questionnaire. Social Media Addiction Scale for Adolescents was applied to determine the social media addiction levels. Dutch Eating Behavior Questionnaire (DEBQ) and Adolescent Eating Behavior Scale were used to examine the eating behaviors. The statistical analyses were performed by SPSS 23 program.

**Results:** The BMI of the participants were  $22.3 \pm 4$  kg/m<sup>2</sup> in men, and  $20.8 \pm 3.6$  kg/m<sup>2</sup> in women. Daily social media usage were  $2.9 \pm 2.2$  hours/day for men and  $3.2 \pm 2.3$  hours/day in women ( $p > 0.05$ ). Social media addiction scores were  $16.6 \pm 7.3$  and  $17.9 \pm 7.2$ , and the mean DEBQ were  $63.4 \pm 18.8$  and  $79.6 \pm 23.7$  in men and women, respectively ( $p < 0.01$ ). Eating behavior scores were  $92.5 \pm 8.8$  and  $83.5 \pm 5.1$  in men and women, respectively ( $p > 0.05$ ). No statistically significant difference was found between individuals' BMI values and daily social media usage, social media addiction, DEBQ and eating behavior scores ( $p > 0.05$ ). The DEBQ scores of men did not differ according to the daily social media use ( $p > 0.05$ ), while women with the highest daily social media usage had higher DEBQ scores compared to those with the lowest level ( $p < 0.01$ ). Moderate ( $r = 0.53$ ,  $p < 0.01$ ) positive correlation between social media addiction score and eating behavior score and a weak ( $r = 0.33$ ,  $p < 0.05$ ) positive correlation between social media addiction score and DEBQ score were found in men. Women's social media addiction score was positively correlated with eating behavior score ( $r = 0.37$ ,  $p < 0.01$ ) and DEBQ score ( $r = 0.48$ ,  $p < 0.01$ ).

**Conclusion:** As a result, it was determined that there may be a relation between social media usage, social media addiction and the eating behaviors of adolescents.

**Disclosure of Interest:** None declared.

#### P111

##### PHYSICAL ACTIVITY, DIETARY PATTERN AND COGNITIVE FUNCTION AMONG INDONESIAN POPULATION: A NATIONWIDE SURVEY

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**Rationale:** Cognitive impairment is common among population worldwide which become an increasingly important public health issue related with aging. Physical activity and dietary pattern are modifiable lifestyle factors. The study aimed to explore the association between physical activity, dietary pattern and the risk of cognitive impairment among Indonesian population.

**Methods:** This study utilized 12,077 participants aged  $\geq 40$  years old from nationwide survey Indonesia Family Life Survey-5 (IFLS-5). Physical activity was measured with an abbreviated version of the "International Physical Activity Questionnaire (IPAQ) short version, for the last 7 days (IPAQ-S7S)". A 11-item food frequency questionnaire was used to estimate dietary pattern. The clustering dietary pattern was derived using principal component analysis. Cognitive impairment was assessed using the questioner derived by telephone interview cognitive status (TICS).

**Results:** In the results, we have four majors of factor loading from a 11-item FFQ was measured with PCA, including vegetables and fruits; high protein; unhealthy food and high calorie. Furthermore, two cluster of dietary patterns were identified by factor analysis, named "healthy food", and "unhealthy food" dietary pattern. Most of respondent 96.2% were consumed health food. However, there was not significantly associated between dietary pattern and cognitive function. In the multinomial logistic regression, the results showed that low levels of physical activity were associated with significantly cognitive impairment (MCI) (OR 95% 1.23, 1.04-1.45) in male population. Also, the physical activity in female population significantly associated (OR 95% 1.27, 1.04-1.54) with severe of cognitive impairment.

**Conclusion:** The conclusion of this study is low physical activity could represent a potent risk factor for MCI in male and severe cognitive impairment in female among Indonesian. This study suggests that individual who conscious with regular physical activity and consume the healthy food.

**Disclosure of Interest:** None declared.

#### P112

##### RELATIONSHIP BETWEEN PERCEIVED STRESS, FOOD NEOPHOBIA AND MEDITERRANEAN DIET ADHERANCE OF DEFENSE INDUSTRY WORKERS

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**Rationale:** Stress has many negative effects on human health and it is also associated with nutritional behavior and dietary patterns. It is known that individuals' nutritional behaviors change under stress. This study was carried out to examine the relationship between the stress levels, food neophobia and Mediterranean diet adherence of defense industry workers.

**Methods:** A total of 93 individuals, 65 men and 28 women, working in the defense industry operations in Ankara were included in the study. An online questionnaire consisting of sociodemographic characteristics, anthropometric measurements, physical activity habits, perceived stress scale, food neophobia scale and Mediterranean diet adherence scale was used. Statistical analysis was performed with the SPSS 23 program, and  $p < 0.05$  was accepted for the statistical significance.

**Results:** The mean age of the participants was  $29.2 \pm 4.4$  years for men and  $28.8 \pm 4.7$  years for women. The weekly working hours was  $45.8 \pm 6.3$  hours in men, and  $47.1 \pm 5.1$  hours in women. The mean BMI was found as  $25.7 \pm 3.3$  kg/m<sup>2</sup> for men and  $22.2 \pm 3.7$  kg/m<sup>2</sup> for women. Perceived stress scores were determined as  $15.1 \pm 4.2$  in men and  $16.5 \pm 3.3$  in women. Food neophobia scores were  $36.2 \pm 10.7$  in men and  $33.3 \pm 13.1$  in women and the Mediterranean diet adherence score was calculated as  $5.4 \pm 1.9$  for men and  $6.2 \pm 1.8$  for women. It was observed that perceived stress levels, food neophobia scores and Mediterranean diet adherence scores did not differ statistically between men and women ( $p > 0.05$ ). There was a positive correlation between the weekly working hours and the perceived stress levels ( $r = 0.486$ ,  $p < 0.05$ ). The Mediterranean diet adherence and the weekly working hours was correlated negatively ( $r = -0.426$ ,  $p < 0.05$ ). There was no statistically significant correlation between the stress levels of the participants, food neophobia and the Mediterranean diet adherence ( $p > 0.05$ ).

**Conclusion:** As a result, no relationship was observed between the stress levels, food neophobia and the Mediterranean diet adherence of defense industry workers, and it was observed that the weekly working hours was associated with stress levels and the adherence to the Mediterranean diet. There is a need to further studies with larger sample size.

**Disclosure of Interest:** None declared.

#### P113

##### NUTRITIONAL INADEQUACY AND MALNUTRITION IN OLDER ADULTS

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**Rationale:** Nutritional inadequacy and its potential link with ageing-related malnutrition has not been sufficiently documented among older persons living independently or in residential institutions. The aim of this study was to analyse the association between inadequate nutritional intake and malnutrition in older adults.

**Methods:** National survey including a Portuguese representative sample of nursing home (NH) residents ( $n = 563$ ) and community-dwellers ( $n = 837$ ) aged  $\geq 65$ . Data on sociodemographic characteristics, nutritional status (Mini Nutritional Assessment®), and dietary intake (2\*24-hour recalls) were collected face-to-face through structured interviews. To assess the prevalence of inadequacy, the usual intake adjusted for intra-individual day-to-day variability was compared with the Dietary Reference Values using SPADE® (Statistical Program to Assess Dietary Exposure). These analyses were weighted for the sociodemographic characteristics of the

most disadvantaged group (NH residents) to allow for the comparison between settings.

**Results:** In the NH sample (70.0% women, 46.0%  $\geq$  85 years old), 37.3% were at risk of malnutrition or malnourished ('malnutrition risk' group), whereas in the community sample (48.9% women, 13.1%  $\geq$  85 years old) this proportion was 11.2%. The estimated prevalence of inadequate intake was generally higher (lower for sodium and saturated fat) among those at 'malnutrition risk'. Conversely, inadequate intake of carbohydrates (< 45% Total Energy Intake, TEI: 29.5% vs. 9.4%) was higher in the 'normal nutritional status' group living in the community. Overall, around two thirds of the studied population had a protein intake below 1.0 g/ kg of body weight, and in the community setting this percentage reached 87.6% among those at 'malnutrition risk'. Regarding micronutrients, inadequacy was especially high for folates, sodium (in men), and for calcium (in the community setting). The prevalence of nutritional inadequacy was similar in both settings, except for carbohydrates (< 45% TEI: 26.8% community vs. 4.2% NH), protein (< 0.8 g/ kg: 37.4% community vs. 33.9% NH), and vitamin A (women: 26.6% community vs. 9.7% NH; men: 35.7% community vs. 9.4% NH).

**Conclusion:** The prevalence of inadequate nutritional intake was generally higher for the 'at risk of malnutrition/ malnutrition' group, as expected. There were also slight differences between settings, favouring NHs. In residential institutions, older adults present a worse nutritional and general health status, but food offer is included in round-the clock care and dietary intake is more homogeneous. This study supports the need for dietary recommendations specific for older adults, stratified by nutritional status and living setting.

**Disclosure of Interest:** None declared.

#### P114

##### **BODY MASS INDEX IN SUBJECTS OF MAPUCHE ETHNICITY LIVING IN RURAL AND URBAN ENVIRONMENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS.**

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**Rationale:** Living in rural or urban environments has an impact on BMI(1). The aim of this study was to compare the BMI between subjects of Mapuche ethnicity residents in rural areas and those living in urban environments.

**Methods:** Study registered in Prospero (CRD42017069924). The search was executed in Pubmed/Medline, Scopus, Web of Science and Scielo until November 2018. Observational studies conducted on adult subjects of Mapuche ethnicity, with the mean and standard deviation of BMI, were included, then. The selection process was performed from title and abstract, first, and through full text of relevant manuscripts. The global mean difference (GMD) and the 95% confidence interval (CI) were calculated using the generic inverse variance method, applying random effects models. Stratified analyses were conducted to examine the influence of covariates on the findings. The Cochran test and the  $I^2$  statistic were used to study the heterogeneity between studies. Publication bias was evaluated using Egger's and Begg's tests. All analyzes were performed using STATA 15.0.

**Results:** 2622 manuscripts were identified, of which two were selected (2,3). A high heterogeneity was found in the overall result ( $I^2 = 82.9\%$ ,  $P = 0.001$ ). Stratified analysis, based on age differences (same age/different age), showed a lower BMI in Mapuche population living in rural (GMD = -2.23, 95% CI: -2.78, -1.67) compared to urban areas, when there were no significant age differences between rural and urban groups. Heterogeneity was undetectable in this subgroup analysis ( $I^2 = 0.0\%$ ,  $P = 0.447$ ). Furthermore, no evidence of publication bias was observed in the meta-analysis.

**Conclusion:** Our Results suggest a lower BMI in subjects of Mapuche ethnicity resident in rural environment compared to urban areas. Additional studies are required to confirm these findings.

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#### P115

##### **HOME ENTERAL NUTRITION IN ADULTS – RESULTS FROM THE NORTH ESTONIA MEDICAL CENTRE, 2019–2020**

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**Rationale:** Estonian Health Insurance Fund started reimbursement for home enteral nutrition (HEN) in 2019 and this is the first study of HEN patients in Estonia. The study describes adult HEN patients and HEN service in the North Estonia Medical Centre (NEMC) in 2019–2020. The aims were: 1) to create HEN electronic database; 2) to describe adult HEN patients' demographic, health- and service-related factors; 3) to analyze the associations between survival and age, sex, diagnose, body mass index (BMI), type of treatment; 4) to analyze direct costs of HEN service to the healthcare system.

**Methods:** The study was registered in Ethics Committee and conducted in NEMC, one of the two largest health care providers in Estonia. All adult HEN patients in 2019–2020 were included (n=254). Special HEN database was created in REDCap web application and data were collected and entered retrospectively into a database. Kaplan-Meier survival analyzes was used to estimate survival period. Cox proportional hazard model was used to evaluate relationship between survival and age, sex, diagnose, body mass index (BMI), type of treatment. HEN costs per patient were calculated using NEMC data on reimbursed period and mean enteral formula provision. Direct total costs of HEN service in Estonia were calculated using reimbursement data of Estonian Health Insurance Fund.

**Results:** 1) The created REDCap HEN database enables analysis and organization of HEN as well as further research. Database as a tool for service provision needs further testing and supplementation, after which it could be introduced to other service providers. 2) Patients' description: mean age was 64.5 years, 73.6% males, primary disease was head- and neck cancer 60.2%, average BMI 21.7 kg/m<sup>2</sup>. Treatment type was curative 50.8%, state of consciousness was assessed adequate 86.2%, HEN was initiated due to dysphagia in 89.4%, main enteral access was gastrostomy tube 87.8%, the most common method of feeding were boluses 94.9% and most used nutritional product was fiber-containing standard enteral formula (1.5 kcal/ml) 85.4%. HEN outcome: 41.7% of patients continued on HEN, 36% died, 19.3% returned to oral feeding and 2.8% terminated HEN for other reasons. 3) Median survival was 358 days. Cox proportional hazard model analyzes showed that age, palliative treatment type, head- and neck cancers, other gastrointestinal cancers were risk factors for mortality. 4) Mean duration of HEN was 208 days of which reimbursed period was 138 days. Mean enteral formula energy provision was 1,228 kcal/day. Direct costs of HEN per bolus feeding patient were 1,728 euros and per pump infusion 4,382 euros. Total direct costs of HEN in Estonia were 293,170 euros in 2019 and 692,237 euros in 2020.

**Conclusion:** HEN service is new in Estonia and has not been fully implemented yet, in 2019–2020 only two hospitals offered HEN service for adults in Estonia. The volume of HEN service is expected to increase in the coming years. NEMC adult HEN patients' profile is probably different from HEN patients in other Estonian hospitals (higher proportion of males and patients with head- and neck cancer diagnose) because of the only Head and Neck Surgery Centre in Estonia that is located in NEMC.

**Disclosure of Interest:** None declared.

## P116

**FOOD CONSUMPTION FREQUENCY QUESTIONNAIRES DEVELOPED FOR THE DIABETIC POPULATION: A SYSTEMATIC REVIEW**

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**Rationale:** This systematic review was conducted to identify food frequency questionnaires (FFQ) developed to measure the dietary intake of the diabetic population and to describe the methodology used for the validation.

**Methods:** A robust search strategy was carried out to identify studies through Medline, Scopus and Web of Science until August, 2020. Original studies with data on FFQs developed for diabetic patients and its validation process were included. The selection was carried out from the title and the abstract, first, and from the full text, then. A qualitative summary were done to present relevant data.

**Results:** The initial search generated 2117 records, among which six FFQs were identified (1–6). Two FFQs were developed for cohort studies (4,5), two for clinical trials (1,3) and two for cross-sectional studies (2,6). Relative validity was examined in all the FFQs found (1–6). However, only one FFQ assessed the reliability (4). Mostly, FFQs are validated against 24-hour recall (1,3,6) or food records (4,5) by using correlation statistics in all cases (1–6), among other test.

**Conclusion:** To date, only six FFQs have been developed specifically for the diabetic population. All FFQs reported on the validation process, but few studies assessed the reliability.

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**Disclosure of Interest:** None declared.

## P117

**A HEALTH RISK EVALUATION OF HABITUAL UNFILTERED COFFEE CONSUMPTION: A NATIONWIDE CROSS-SECTIONAL STUDY**

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**Rationale:** Despite the rapid increase in coffee consumption, previous epidemiological studies have provided limited and inconsistent conclusions regarding the association between unfiltered coffee consumption and human health. The primary aim of this study is to briefly investigate the impact of Turkish coffee (TC) consumption on health and to determine the relationship between TC intake and anthropometric measurements at different levels. The study also explores whether TC that differs in varying degrees of roasting will affect outcomes differently.

**Methods:** The study was conducted with 389 participants who were 18–65 years old, living in different districts of the Turkish Republic of Northern Cyprus. A survey was carried out (between 2017 and 2018) to gather information regarding their coffee intake, demographics, physical

activity level (PAL), and medical condition. Additionally, diet was assessed by a food frequency questionnaire, and anthropometric measures were collected. The amount of coffee consumption was categorized into three levels; < 1, 1–3, and ≥ 3 cups/day, and the roasting degree of coffees assigned to light, medium, and dark roast groups.

**Results:** Statistical analysis revealed that TC consumers were significantly older and had significantly higher body mass index (BMI), waist circumference (WC), and body fat percentage (BF %) compared to non-consumers ( $p < 0.05$ ). After adjusting for age, sex, BMI, PAL, smoking, alcohol use and nutritional intake, the frequency of hypertension was found significantly higher in TC consumers than in non-consumers ( $p < 0.001$ ). Those with habitual consumption of TC were significantly less likely to be in the 'healthy' BMI range and tend to have a higher risk of cut-off WC value ( $p = 0.033$  and  $0.045$ , respectively). The average daily intake of total caffeine for the highest coffee consumption ( $3 \geq$  cups) group and for the individuals consuming dark roasted TC is significantly higher compared to other groups ( $p < 0.001$  and  $0.029$ , respectively). However, there were no significant differences in the reported health status of individuals according to the amount of coffee consumed or the state of roasting degree.

**Conclusion:** The present observations indicated an unfavorable association between the habitual consumption of TC, BMI, WC, BF % and hypertension incidents compared to non-consumers. Future research is warranted to investigate the causality and effects of specific coffee amounts and roasting degrees.

**Disclosure of Interest:** None declared.

## P118

**EATING HABITS AND PHYSICAL ACTIVITY OF THE MEDICAL STUDENTS DURING THE COVID-19 PANDEMIC**

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**Rationale:** The number of people with deviant body mass index (BMI) has increased during the COVID-19 pandemic. Disturbed eating habits associated with decreased physical activity (PA) result from psycho-emotional deviations.

**Methods:** The signs of restrictive, emotional and external eating habits should be revealed; the level of students PA is to be estimated. 144 students at the age of 17 and 23 were questioned; there were 127 female and 17 male respondents showing the total gender correlation at the university. EAT-26, DEBQ, PA, IPAQ and a specialized questionnaire ODA23+ were used.

**Results:** EAT-26 is a widely used screening of eating habits disorders. A high score means high probability of anorexia, bulimia and reveals "risk groups". 15% of all respondents corresponded to the level of bulimia and binge eating. The Dutch questionnaire DEBQ revealed restrictive, emotional and external eating habits 2.6; 2.3; 3.2 respectively. All three indicators are increased. The level of restrictive eating habit varies from 1 to 5; emotional eating habits level varies from 1 to 5; and ineffective restrictive eating habit level is from 1.6 to 5. A questionnaire of PA revealed that it depends on the level of motivation. Thus 67% of respondents try or do intensive or moderate PA but not regularly; 19% are physically active; and 14% are physically inactive. IPAQ questionnaire helps reveal hypodynamia. We have estimated PA in a workplace, PA at home, PA in free time and sitting. 51% of respondents suffer from hypodynamia, 49% have no signs of hypodynamia. A specialized questionnaire ODA23+ has divided all the respondents into the groups according to their PA intensity. The respondents showed the following results: 0% - very low level of PA, 29.9% - low, 63.9% - moderate, 5.5% - high and 0.7% - very high. The results of BMI calculations show that 1% has deficient BMI, 18% insufficient BMI, 65% normal BMI, 13% overweight BMI, 2% obese BMI of the 1<sup>st</sup> class, and 1% obese BMI of the 2<sup>nd</sup> class.

**Conclusion:** Restrictive eating habits show little deviation of the coefficient from the referential meaning. It indicates that the cases of cognitive deviations are uncommon. Emotional and external eating habits have

marked deviation from the referential meaning. It shows abnormality in behavioral and emotional spheres.

**Disclosure of Interest:** None declared.

## P119

### THE RELATIONSHIP BETWEEN DENTAL CARIES, FOOD INTAKE AND BODY COMPOSITION IN SCHOOL-AGE CHILDREN

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**Rationale:** The aim of this study is to evaluate the relationship between dental caries, food intake and body composition in school-age children.

**Methods:** The study was conducted on 210 children, 105 boys and 105 girls, aged 6-12 years, without mental and / or physical disorders. Oral examinations of the children were performed by pediatric dentists. Teeth brushing and nutritional habits of children were questioned with the questionnaire and the 24-hour food records were taken to determine the food consumption of the children. Waist circumference and hip circumference measurements of children were taken by the researcher; body weight and body compositions of children were evaluated with Tanita BC-601F body analyzer.

**Results:** DMFT values were found to be lower in children who consumed milk, buttermilk and white cheese daily, but this differences were not statistically significant ( $p>0.05$ ). While the number of permanent decayed teeth in children who consume cheese daily was higher than children who do not consume cheese daily ( $p<0.05$ ). Body weight and waist circumference are found to be positively correlated with DMFT and negatively correlated with dmft. BMI was found to be positively correlated with DMFT; negatively correlated with dmft ( $p<0.05$ ).

**Conclusion:** There is a negative correlation was found between the daily total dairy consumption and DMFT index ( $p<0.05$ ). A positive correlation was found between DMFT and dmft indexes with daily total sugary food consumption ( $p<0.05$ ). In permanent dentition, a positive correlation was found between BMI and waist circumference with dental health indicators. In primary dentition, a negative correlation was found between BMI and waist circumference with dental health indicators ( $p<0.05$ ).

**Disclosure of Interest:** None declared.

## P120

### UNDERNUTRITION, OVERWEIGHT AND OBESITY AMONG ELDERLY LIVING IN COMMUNITIES IN AFRICA: A SYSTEMATIC REVIEW

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**Rationale:** Several studies have noted undernutrition, overweight and obesity among elderly people (1) but African data were scattered. The aim of this review was to review studies on nutritional status among elderly people living in communities in Africa, using Body Mass Index (BMI) and Mid-Upper Arm Circumference (MUAC) as tools.

**Methods:** Literature was extracted from Web of Science, Google Scholar, PubMed, Research4life, AJOL and Scopus database using MeSH-terms. Only studies addressing nutritional status among the elderly (regardless of age) in Africa, irrespective of geographical area and using BMI and MUAC were finally included. The NEWCASTLE-OTTAWA QUALITY ASSESSMENT SCALE was used to assess the quality of the articles. The 4-stage review included 43 studies. Search was performed up to 25th November 2020. Cross-sectional and prospective studies were identified, with a sample between 62 and 2091, aged  $\geq 55$  years. Average prevalence (undernutrition/overweight/obesity) and correlation with Human Development Index (HDI) were calculated. This systematic review was registered to PROSPERO under number CRD42021216268(2).

**Results:** All studies were of fairly good quality with scores (6 to 9/10). MUAC was used in two (4.7%) when BMI was used by 100% studies. Using BMI, overall undernutrition was 19.9% high in Central African Republic (33.4%) and low in South Africa (3.4%). Overweight (14.1%) was high in South Africa (27.6%) and low in Ethiopia (3.1%) when obesity (12.8%) was high in South Africa (50.4%) and low in Tanzania (0.7%). No correlation found between undernutrition and HDI ( $r=-0.326$ ,  $p=0.235$ ). Overweight and obesity were respectively and positively correlated with HDI ( $r=0.748$ ,  $p=0.003$ ;  $r=0.691$ ,  $p=0.004$ ).

**Conclusion:** Nearly one in five people in Africa is undernourished and about 30% are overweight or obese. This should be a challenge to African authorities, especially since excess weight could be a problem in the future due to the nutritional transition. Nevertheless, there is an urgent need of complementary studies more accurate and robust.

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**Disclosure of Interest:** None declared.

## P121

### CHARACTERIZATION OF FOOD INTAKE IN PATIENTS WITH PSORIASIS

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**Rationale:** Characterization of food/nutrient intake is highly relevant in designing preventive and therapeutic strategies for people with psoriasis, however the data remains scarce, claiming for nutrition epidemiology studies to overcome this gap. Our aim was to assess daily food/nutrient intake of participants with psoriasis and to compare it with reference intake values.

**Methods:** Observational descriptive study, evaluating food intake of participants from the Portuguese Association for Psoriasis. Food intake was evaluated by a validated food frequency questionnaire (Lopes, 2000; Lopes et al., 2007). Food frequencies were transformed into daily amount of food and nutrients using the Portuguese food composition table and the European food portion list as reference, by a method described in literature. Data was analysed using the SPSS program, and the consumption averages of each nutrient were compared with values recommended for the adult population (Recommended Dietary Allowances – RDA; Acceptable Macronutrient Distribution Range – AMDR), and the average consumptions of specific food sources of each nutrient were studied.

**Results:** 102 answers were obtained. Compared to the RDA values, mean intake values were low for Retinol, Folate, Pantothenic Acid, Vitamin D, E and K, Calcium, Potassium, Biotin, Chromium, Fluorine, Iodine and Molybdenum. As for the macronutrients, Total Fat intake was slightly elevated compared to AMDR values.

**Conclusion:** We observed low intake of several micronutrients with important roles in psoriasis pathophysiology. We highlight the reduced intake of vitamin E, folate, retinol and vitamin D, and the increased fat intake. Our findings suggest that nutrition should be included as part of the multidisciplinary follow-up of people with psoriasis to avoid nutritional deficiencies.

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**Disclosure of Interest:** None declared.

## P122

**SARCOPENIC OBESITY AND NOT HYPONUTRITION PREDOMINATES AMONG HOSPITALISED SENIORS**

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**Rationale:** Loss of muscle mass and decline in muscle strength with the advancing age are observed. Coexistence of sarcopenia and obesity creates a new category of obesity - sarcopenic obesity (SO), which may cause numerous negative consequences.

The aim of the present investigation was to determine the prevalence of sarcopenic obesity and other phenotype form of malnutrition in hospitalised patients in geriatric and internal clinic for all kinds of admission diagnoses on admission to hospital.

**Methods:** We studied prospectively 1385 hospitalised patient admitted to geriatric and internal clinic during years 2019 and 2020. Mean age was 78.5 years, 68% females. Height, body weight and hand grip strength were measured. Sarcopenic obesity (SO) was defined by the combination of obesity and sarcopenia. Body mass index (BMI) was calculated and muscle power using accepted tests (handgrip or "stand-up and walk test").

**Results:** Using accepted criteria for hyponutrition, normal nutrition, overweight/obesity and SO led to following results. Percentage of patients with hyponutrition phenotype with BMI<20 was only 10,5%, BMI > 30% was present 67%, BMI> 35% was present in 35% of hospitalised elderly patients. When combining the results for sarcopenia presence, we identified all 62% of overweight patients as individuals with coexisting obesity and sarcopenia (SO). Therefore, clinicians attention should be drawn to this issue.

**Conclusion:** Prevalence of sarcopenic obesity is very high in elderly patients in modern society, while prevalence of typical hyponutrition frail phenotype declines. This shows influence of new modern epidemic - epidemic of obesity even in the population of seniors.

**Disclosure of Interest:** None declared.

## P123

**CONSUMER BEHAVIOUR AND KNOWLEDGE ABOUT ORGANIC FOOD: A SURVEY OF UNIVERSITY STUDENTS IN NORTHEASTERN GERMANY**

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**Rationale:** Environmental and climate protection is becoming an increasingly important aspect, especially among younger people. The awareness to buy organic food (OF) has grown and the sales, as well as the supply of organic food, are steadily increasing in Germany.

**Methods:** The objectives of the study were to assess the purchasing behaviour and knowledge about OF of students at the University of Applied Sciences Neubrandenburg (UASN, Germany) and to compare purchasing and non-purchasing students. Anonymised online survey (LimeSurvey, 18 closed and 5 open questions) in the period from 07.10.2020 to 28.10.2020. The survey link was sent out via the central student email distribution list of UASN, which covers all students (approx. 2000). In the survey 450 (22.5%) students participated, but only fully completed questionnaires were included in the analysis (n=350, 17.5%).

**Results:** In total, 89% (n=310) of the students bought OF at least occasionally, 61% (n=212) at least once a week. The supermarket is the most popular shopping place with 92% (n=285), followed by drugstores (39%, n=120), organic food shops (32%, n=100), and weekly markets (15%, n=46). The main reason for buying OF was animal welfare (33%, n=103), followed by nature conservation (26%, n=79), reduced pollutant content (20%, n=63) and health benefits (11%, n=35). The main reason for not buying OF (n=40) was higher costs (38%, n=15), followed by lack of trust (25%, n=10) and lack of interest (18%, n=7).

The question of when a food can be called "organic" or "ecological" was answered correctly by 61% (n=213). Only 22% (n=78) knew that in a OF product 95% of the ingredients must come from organic farming. 73% (n=254) recognized the EU organic label as the mandatory organic label in

Germany. The knowledge about OF of students who bought organic food and those who did not buy organic food was comparable (all  $p \geq 0.40$ ).

**Conclusion:** Almost all of the interviewed students bought organic food, but the knowledge about OF is still limited. The topics "organic food" and "organic labels" should get a higher presence in our everyday life.

**Disclosure of Interest:** None declared.

**Carbohydrate and lipid metabolism**

## P124

**ASSOCIATION OF DIABETES AND STAGE OF LIVER STEATOSIS AND FIBROSIS IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE**

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**Rationale:** Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease which can be associated with various metabolic abnormalities including metabolic syndrome, insulin resistance, and dyslipidemia. The main objective of this study is evaluating the association between history of diabetes and stage of liver steatosis and fibrosis.

**Methods:** This cross-sectional study was carried out among 513 patients with NAFLD older than 13 years old. The levels of fasting blood sugar (FBS), glycated hemoglobin A1C (HbA1C), and liver enzymes (AST, ALT, and GGT) were also assessed. Hepatic steatosis and fibrosis were determined using an echo scene 502 fibro scan.

**Results:** The study consisted of 240 male and 273 females, and of whom 68 participants (13.3%) had diabetes. The frequency of steatosis stages was as follows: S0 = 113 (25.9%); S>1 = 400 (74.1%). Moreover, the study population comprised of 221 participants (43.1%) with degrees of liver fibrosis and 292 (56.9%) without fibrosis. Compared with participants without diabetes, patients with diabetes had a significant higher odds ratio (OR) of fibrosis stage 2 or greater [stage 2, OR = 7.00 (95% confidence interval (CI): 3.34, 14.69); stage 3, OR = 9.71 (95% CI: 3.83, 24.61); and stage 4, OR = 18.13 (95% CI 3.79, 86.66)]. We also found that patients with diabetes had higher odds ratio of steatosis [stage 2, OR = 9.78 (95% CI: 2.15, 44.44); stage 3, OR = 20.02 (95% CI: 4.77, 83.96)]. However, similar significant results were not observed for fibrosis stage 1 [OR = 1.88 (95% CI: 0.95, 3.71)] and steatosis stage 1 [OR = 4.67 (95% CI: 0.88, 24.73)].

**Conclusion:** Diabetes is positively associated with higher odds of liver steatosis and fibrosis then each patient with history of diabetic have to exam for fatty liver or fibrosis.

**Disclosure of Interest:** None declared.

## P125

**REACTIVE DEGRADATION PRODUCTS OF GLUCOSE METABOLISM AND THEIR ROLE IN HEALTHY AGEING**

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**Rationale:** Dicarbonyl stress describes the abnormal formation of 1,2-dicarbonyl compounds and is associated with various age-related pathologies such as diabetes, obesity, cancer and cognitive decline [1]. The role of dicarbonyl stress in healthy ageing is poorly understood.

**Methods:** Fasting and postprandial serum concentrations of 3-deoxyglucosone (3-DG), glyoxal (GO) and methylglyoxal (MGO) were quantified in healthy, BMI-matched older and younger participants. Fasting serum 3-DG, GO and MGO were quantified via UPLC-MS/MS., serum glucose and insulin concentrations were also measured to evaluate insulin resistance. In a subgroup, postprandial glucose, insulin and dicarbonyl concentrations were measured 15, 30, 60, 120 and 240 min after an oral dextrose challenge

(50 g). Incremental area under the curve (iAUC) was used to evaluate postprandial response.

**Results:** 19 older (OW; 72.4±6.14 years), 19 younger women (YW; 27.0±4.42 years), 15 older (OM; 74.3±5.20 years) and 15 younger men (YM; 27.0±3.34) were included in the study. Despite BMI matching, older adults exhibited higher insulin resistance than younger adults. Fasting MGO was significantly higher in OM compared to YM (286±150 vs. 179±83 nM, p=0.006). There were no age nor sex differences in fasting 3-DG and GO concentrations. Postprandial dicarbonyl response was not significantly different between age groups (Table 1).

**Table 1:**

Postprandial dicarbonyl response (iAUC) to oral dextrose challenge in older and younger men and women.

	OW n = 14	YW n = 10	p-value	OM n = 5	YM n = 5	p-value
3-DG [min·µM]	51.1±30.4	57.3±57.1	0.796	63.8±45.5	39.5±20.4	0.841
GO [min·µM]	21.4±21.8	20.8±32.7	0.886	30.3±45.8	9.61±12.1	0.548
MGO [min·µM]	6.16±9.30	6.18±9.03	0.796	13.0±12.1	6.89±6.88	0.421

**Conclusion:** Our Results suggest that fasting MGO concentrations can be affected by age and sex. Whether this is attributed to an altered glucose metabolism remains to be elucidated. Overall, dicarbonyl stress does not appear to play a prominent role in healthy ageing.

**References:**

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**Disclosure of Interest:** None declared.

**P126**

**CARBOHYDRATE INTAKE CORRELATION WITH BODY FAT PERCENTAGE OF PHYSICALLY ACTIVE INDIVIDUALS**

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**Rationale:** Physically active people often use diets with low carbohydrate content in order to reduce adiposity and body weight. The aim of this study was analyze the correlation between carbohydrate consumption and body fat percentage in physically active individuals assisted by an outpatient nutrition clinic at Universidade Federal do Maranhão (UFMA), Brazil.

**Methods:** This cross-sectional study interviewed 69 physically active individuals of both genders, aged 18 to 48 years old. Body Mass Index (BMI) and body fat percentage (%BF; by Petroski's or Weltman's equation, if the subjects were obese) were assessed, as well a 24-hour food recall (R24H) to evaluate food intake. Carbohydrate consumption was calculated by software DietBox® and measured in g/Kg body weight/day, Kcal/day and percentage of caloric intake. Quantitative data was analyzed through t-test for independent samples with p<0.05, using IBM® SPSS® software, version 27. Pearson's correlation coefficient was evaluated between carbohydrate intake (g/Kg/day) and %BF.

**Results:** Sample consisted of 32 men (53.3%) and 28 women (46.7%), with an average age of 23.9 ± 6.3 years old, obtaining a low carbohydrate intake in 90.0% of participants and a high fat percentage for both women (29.4 ± 10.0%) and men (17.1 ± 6.7%), considering The American College of Sports

**Table:**

Comparison between Carbohydrate intake and Anthropometric Parameters by gender, 2018–2019, Brazil.

	Women n=28	Men n=32	Total n=60	*p
BMI (kg/m <sup>2</sup> )	25.5 ± 4.3	24.6 ± 4.8	25.0 ± 4.6	0.56
Underweight	6 (21.4%)	14 (43.8%)	20 (33.3%)	
Normal weight	1 (3.6%)	3 (9.4%)	4 (6.7%)	
Overweight	13 (46.4%)	11 (34.4%)	24 (40.0%)	
Obesity	8 (28.6%)	4 (12.5%)	12 (20.0%)	
Body fat (%)	29.4 ± 10.0	17.1 ± 6.7	22.9 ± 10.4	<0.01
Carbohydrate grams (g)	221.1 ± 93.3	253.1 ± 93.9	238.2 ± 94.2	0.169
g/kg/day	3.4 ± 1.4	3.6 ± 2.0	3.5 ± 1.7	0.507
%	46.0 ± 11.8	48.5 ± 10.3	47.3 ± 11.0	0.430

\* T-student test for independent samples, p-value<0.05.

Medicine nutritional recommendations. Correlation between carbohydrate consumption and percentage of body fat was inversely proportional, both men (r = -0.4715506) and women (r = -0.1166596), not differing between groups (r=-0.2518007). Another important fact was that 11.7% of the sample used sports supplements, where protein and fat burners were the most cited.

**Conclusion:** Most of the participants had low carbohydrate intake, inconsistent with an adequate exercise performance. Low carbohydrate intake showed an inversely proportional correlation with body fat percentage.

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**Disclosure of Interest:** None declared.

**P127**

**RISK FACTOR OF HYPERGLYCEMIA WITH ENTERAL NUTRITION IN NON DIABETIC PATIENTS IN CLINIC UNIVERSITARY HOSPITAL**

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**Rationale: Hyperglycemia** is a frequent complication in hospitalized patients receiving artificial nutrition. This effect can increase the risks of hospital-related complications and mortality.

The primary outcome was determined risk factor by suffered hyperglycemia associated with enteral nutrition.

**Methods:** A retrospective longitudinal study was conducted in non diabetic patients with enteral nutritional support by nasogastric tube, treated from January 2016 to December 2020. Exclusion criteria were pregnancy, breast feeding, age <18 years, and critically ill patients.

In our hospital, hyperglycaemia was considered if blood glucose before enteral was greater than 126 mg/dL or than 140 mg/dL during enteral nutrition and our protocol include a sliding scale with insulin Lispro and if a patients present two or more capillary glycaemia above 140 mg/dL started basal insulin (detemir)

**Results:** 131 non-critically ill patients (60men, 71 women; aged was 81 (71 ± 87 years). The length of stay of the patients was 12 (8-17) days. The score of comorbidity index of Charlson was 4 (3-5). 81.7% patients were

admitted with a diagnostic of stroke. On admission, protein catabolic rate (PCR) was 31,75 (11,68–66,33) mg/dl and albumin was 3,61 ± 0,48 g/dl. Mean glucose levels before enteral support were 115.50 (98–135.25mg/dl) and with enteral support were 133 (119–147) mg/dl. In this study, 29 (22.1 %) patients died and 33 (32.35 %) recovered oral feeding.

93 patients developed hyperglycaemia associated with enteral nutrition (40 men; aged was 83 (73 ± 88 years) The score of comorbidity index of Charlson was 4 (3–5). On admission protein catabolic rate (PCR) was 39.5 (19.70–74.33) mg/dl and albumin was 3,56 ± 0,52 g/dl.

24 patients received subcutaneous detemir-insulin, mean daily insulin doses were 16 [12–27] UI and 2 participants experienced hypoglycemia.

Risk factor of hyperglycaemia with enteral nutrition was age, Charlson Index, Albumin, PCR, length of enteral nutrition (Table X). A multivariate analysis was performed and independent relationship was observed between hyperglycaemia and age with an odds ratio of 1.186 (1.051–1.341) and Hyerglycaemia and length of enteral nutrition an odds ratio of 1.320 (1.086–1.605).

	B	Odds Ratio	IC 95%		p value
			Inf.	Sup.	
Age	-1,71	1,186	1,051	1,341	0,006
Sex ( male)	0,278	1,321	0,346	5,043	0,684
Index of Charlson	-0,751	0,472	0,190	1,172	0,106
Albumin	-0,038	0,963	0,207	4,476	0,962
PCR	0,014	1,015	0,998	1,031	0,077
Kcal/kilo	0,092	1,096	0,954	1,259	0,195
Length of enteral nutrition days)	0,278	1,320	1,086	1,605	0,005

**Conclusion:** No diabetics patients could develop hyperglycemia with enteral therapy. In our study the main factors were age of patients and the length enteral support.

**Disclosure of Interest:** None declared.

## P128

### ANALYSIS OF MITOCHONDRIAL AND GENOMIC DNA DAMAGE INDUCED BY LIPID PEROXIDATION IN PARENTERAL NUTRITION

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**Rationale:** Patients on long-term PN (parenteral nutrition) are constantly exposed to the intravenous supply of lipid emulsions, which are prone to lipid peroxidation – a chain reactions process promoted by ROS (reactive oxygen species) such as free radicals. Once initiated, lipid peroxidation causes disruption of organelle and cell membranes, deterioration of their functions and viability, and leads to inflammation. The study aimed to investigate the rate of oxygen consumption (OCR) in platelet mitochondria in patients on long-term PN and its role in the metabolism of cellular energy.

**Methods:** In the study blood samples were taken from 87 patients undergoing HPN (home parenteral nutrition) for at least 2 years (study group) and 42 healthy volunteers (control group) and mitochondria were isolated from their platelets. Measurements were performed using the Oxygen Consumption Assay according to the protocol described by the manufacturer (Agilent, USA). Additionally, genomic DNA was isolated from whole blood and digested with the Fpg protein following the manufacturer's instructions (New England Biolabs) to confirm that the analyzed samples contain DNA lesions such as 8-oxoguanine (8-oxoG), ethenoadenine (eA), ethenocytosine (eC), ethenoguanine (eG) which are formed during lipid peroxidation.

**Results:** The level of molecular oxygen in both control and test subjects was similar. In both cases the effect of tissue oxygenation (hyperoxia) was observed, no hypoxia was found. In the case of genomic DNA analysis, a

significant difference was observed between samples isolated from controls and test subjects after digestion with Fpg protein. Protein digestion in the analyzed samples occurred, but at the level of about 3 % of the entire analyzed genome. Fpg protein recognizes substrates resulting from dietary ingredients used in parenteral nutrition, but their amount is present at the level of self-induced damage throughout the body's physiological process and is consistent with the amount of damage analyzed in the Oxygen Consumption Assay. The method used showed that even the smallest changes in oxygen metabolism in the mitochondria and the analyzed genomic DNA are consistent with each other and captured by the Mito Xpress Xtra and Intra fluorescent probes.

**Conclusion:** In platelets of mitochondria we observed sites very susceptible to structural perturbations in energy formation. These sites are sensitive to oxygen species and are very easily modified by compounds induced by oxidative stress. This process may be related to the type of specific drugs used in parenteral admixture and may induce lipid peroxidation.

**Disclosure of Interest:** None declared.

## P129

### DIETARY PISTACHIO (PISTACIA VERA L.) IMPROVES FATTY ACID PROFILE OF VISCERAL ADIPOSE TISSUE AND BALANCES INTESTINAL MICROBIOTA IN DIABETIC RATS

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**Rationale:** The study investigates whether a dietary intervention with pistachio nuts (*Pistacia vera* L.), a rich source of phytochemicals and mono-unsaturated fatty acids (MUFA), could beneficially alter plasma biochemical parameters, visceral adipose tissue (VAT) fatty acid (FA) profile and gut microbiota composition in streptozotocin (STZ)-induced diabetic rats.

**Methods:** Twenty-four male Wistar rats (18 weeks old, 350g bw) were randomly assigned into 4 groups which followed isoenergetic diets containing 10% fat for 4 weeks, i.e. healthy animals with control diet (CD) or pistachio diet (PD), diabetic animals with control diet (DCD) or pistachio diet (DPD). At the end of the intervention plasma biochemical parameters and VAT FA were determined. Microbiological analysis for the evaluation of adherent intestinal microbiota populations in jejunum, ileum, caecum and colon was performed.

**Results:** Diabetic animals of both groups exerted higher plasma glucose and lower insulin concentrations compared to healthy ones ( $p < 0.05$ ). Animals of PD and DPD groups exerted significantly higher amounts of oleic acid (18:1  $\omega$ -9) and MUFA ( $p < 0.05$  compared to CD and DCD) in VAT while animals of CD and DCD groups higher amounts of linoleic acid (18:2  $\omega$ -6) and polyunsaturated fatty acids (PUFA) ( $p < 0.05$  compared to PD and DPD). Pistachio supplementation significantly increased lactobacilli and bifidobacteria populations in jejunum, ileum and caecum of both healthy and diabetic animals ( $p < 0.05$  compared to CD and DCD, respectively) and normalized microbial flora in all examined intestinal regions of diabetic animals.

**Conclusion:** Dietary supplementation with pistachio nuts resulted in increased levels of oleic acid and MUFA in VAT, restored microbial flora and enhanced the presence of beneficial microbes in the rat animal model of STZ-induced diabetes.

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**Disclosure of Interest:** None declared.

## P130

### FATTY ACIDS - FRIEND OR ENEMY IN OXIDATIVE STRESS?

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**Rationale:** The study aimed to evaluate the correlation between the type of fat emulsion in intravenous admixture, the formation of oxidative stress in the process of lipid peroxidation, and liver and inflammatory indices in patients with long-term PN and to explain their role in cellular energy metabolism and changes in the digestive system.

**Methods:** In the study blood samples were taken from 87 patients undergoing HPN (home parenteral nutrition) for at least 2 years (study group) and 42 healthy volunteers (control group). All of the HPN patients received individually prescribed parenteral admixtures, with four types of lipid emulsions (containing omega-3, omega-6, omega-9, and other fatty acids). Blood levels of liver transaminases (AST, ALT) and CRP (C Reactive Protein) were analyzed and mitochondria were isolated from platelets. Measurements of blood parameters were carried out using the traditional sampling method while the degree of mitochondrial damage was analyzed using the Oxygen Consumption Assay according to the protocol described by the manufacturer (Agilent, USA). In addition, genomic DNA was isolated from whole blood and digested with the Fpg protein following the manufacturer's instructions (New England Biolabs) to confirm that the ethane and propane adduct DNA bases were formed during the lipid peroxidation process.

**Results:** The levels of all analyzed indicators isolated from blood were closely related to the type of emulsion given, containing certain omega 3 fatty acids in relation to omega 6 and omega 9. The obtained values of the liver indicators and indices induced by the Mito Xpress Xtra and Intra fluorescent probes used in the molecular oxygen consumption method, indicated the particular type of emulsion administered to the patients.

**Conclusion:** In the analyzed indexes of the liver and platelet mitochondria, we observed places where they are very susceptible to structural disturbances in energy production induced by the use of a certain type of emulsion rich in omega 3, 6 or 9 fatty acids. These sites are sensitive to oxygen species and are very easily modified by compounds induced by oxidative stress, including ethene and propane derivatives of DNA bases produced by a process called lipid peroxidation. It is likely that this process involves the use of certain types of fatty nutrients that purport to improve parenteral nutrition.

**Disclosure of Interest:** None declared.

## P131

### ANALYSIS OF SERUM FATTY ACIDS PROFILE IN KIDNEY TRANSPLANT RECIPIENTS

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**Rationale:** Patients with end-stage kidney disease, treated with renal transplantation, are at increased risk of cardio-vascular disease (CVD) and cardio-vascular mortality. They are also characterized by an atherogenic dyslipidemia. Alterations of the fatty acids (FA) profile contribute to increased cardio-vascular risk in the general population. The aim of this study was to analyze the FA abnormalities in renal transplant recipients population.

**Methods:** Serum from 198 chronic kidney disease (CKD) patients and 48 subjects without CKD was analyzed in the research. Serum from CKD patients were collected before transplantation and at specific intervals after transplantation - after one month, one year and more than one year. Gas chromatography-mass spectrometry was used to analyze total fatty acids (FA) content. Data analysis was performed by using ANOVA analysis. All values are presented as mean ± SEM. PCA and HCA were used to perform the chemometric analysis.

**Results:** The most profound differences between renal transplant patients and controls were related to the content of branched chain FA (BCFA), monounsaturated FA (MUFA), and n-6 polyunsaturated FA (PUFA), respectively. The abnormalities of FA profile showed a tendency for normalization in long-term kidney recipients, as compared to patients with recent transplants. The n-3 PUFA content demonstrated a strong inverse association with the presence of inflammation. Most profound alterations of the FA profile were observed in patients with impaired graft function.

**Conclusion:** The study demonstrated significant disorders of the FA profile in kidney transplant recipients, which might contribute to cardio-vascular risk in this vulnerable patient population.

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## P132

### MODERATE ALCOHOL CONSUMPTION AND LIPOPROTEIN SUBFRACTIONS: A SYSTEMATIC REVIEW OF INTERVENTION AND OBSERVATIONAL STUDIES

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**Rationale:** Moderate alcohol consumption is associated with decreased risk of cardiovascular disease and improvement in cardiovascular risk markers, including lipoproteins.<sup>1,2</sup> This study aimed to systematically review the relationship between moderate alcohol intake, lipoprotein subfractions, and related mechanisms. Secondly, to investigate whether Results differed by study design and disease status.

**Methods:** Studies with alcohol intake at doses up to 60 g/d were included using nine scientific databases. Lipoprotein subfractions and related mechanisms were examined. Human studies in all types of study designs and populations were eligible, independent of publication year. Risk of bias was assessed.

**Results:** We included 37 interventions and 77 observational studies, totaling 20,510 and 104,773 participants. The studied alcohol intake was positively related to all HDL subfractions measured, independent of study design. The evidence was limited for the effects of alcohol on LDL and VLDL subfractions. However, some studies of different designs found lower levels of smaller LDL particles, increased LDL particle size, and non-linear relationships with apoB-containing particles. Cholesterol efflux capacity and paraoxonase activity were increased. Most studies included healthy subjects or populations of mixed health. Heterogeneous laboratory methods restricted comparability between studies.

**Conclusion:** Moderate alcohol intake can cause changes in lipoprotein subfractions, such as increased HDL subfractions and decreased smaller



LDL particles, which may relate to cardiovascular health. Future studies should investigate effects on apoB-containing lipoproteins and novel biomarkers such as HDL subfractions defined by apolipoproteins like apoC-III. This review is registered at <http://www.crd.york.ac.uk/prospero/>, number: 98955.

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## Protein and amino acid metabolism

### P133

#### ASSESSMENT OF SERUM AMINO ACIDS PROFILE IN ADULT PATIENTS WITH CROHN'S DISEASE

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**Rationale:** Amino acids (AAs) act as the key regulatory factor in controlling metabolic pathways and have important effects on keeping the intestinal health. Different studies described altered serum AAs levels in patients with Crohn's disease (CD), a chronic inflammatory disorder of the gastrointestinal tract, highlighting a potential link between the concentration of AAs and CD. The aim of this study was to assess serum AAs profile in patients with CD and its correlation with disease severity.

**Methods:** Consecutive adult patients aged between 18–65 years and with diagnosis of CD were recruited. Anthropometry (body weight, height, and body mass index) was measured, and fasting blood samples were taken. Serum amino acids profiles were assessed by high-performance liquid chromatography. Disease severity was clinically defined by Crohn's Disease Activity Index (CDAI) in active (>150) and quiescent (<150) phase.

**Results:** One hundred and three CD patients (age=39.9 ±13.9 years and BMI=23.4±3.5 kg/m<sup>2</sup>) were included, whose 48 patients were clinically active and 55 were in quiescent phase. Among AAs levels, valine (Val), leucine (Leu), lysine (Lys) and glutamine (Gln) were significantly lower in active patients compared to those clinically quiescent (Val=233±63Mμ vs 255±54Mμ, p=0.05; Lys=170±35Mμ vs 183±41Mμ, p=0.05; Gln=634±120Mμ vs 706±119 Mμ, p=0.003); whereas glutamate (Glu), aspartic acid (Asp) and glycine (Gly) were significantly higher. About disease activity, CDAI was positively correlated with Glu (r=0.198; p=0.04) and Asp (r=0.217; p=0.03), but inversely associated with Gln (r=-0.324; p=0.001), Histidine (r=-0.176; p=0.05) and Lys (r=-0.189; p=0.05).

**Conclusion:** Serum AAs seems to show a different profile according to disease activity in CD patients. However, the link between severity and concentration of some AAs, especially those involved in the inflammatory response, should be further investigated in order to plan the nutritional support.

**Disclosure of Interest:** None declared.

### P134

#### PLASMA ALBUMIN REDOX STATE AFFECTED BY POSTOPERATIVE AMINO ACID AND EXOGENOUS ALBUMIN INFUSION, REFLECTING THE ALTERATION OF ALBUMIN SYNTHESIS IN SURGICALLY STRESSED RATS

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**Rationale:** Previously, we reported that the postoperative parenteral nutrition containing amino acids enhanced albumin synthesis while the simultaneous infusion of exogenous albumin (exo-Alb) suppressed this enhancement in surgically stressed rats [1]. The effect of these infusions on the redox state of albumin remained unclear although physiological function of plasma albumin may be influenced by the redox state. In this study, we investigated the albumin redox state and its correlation with albumin synthesis after postoperative amino acid and/or exo-Alb infusion in surgically stressed rats.

**Methods:** After an intestinal rubbing, the rats were divided into four study groups (GE, AGE, GE+Alb, and AGE+Alb). The GE and GE+Alb groups received an electrolyte solution containing 10 % of glucose, while the AGE and AGE+Alb groups received an electrolyte solution containing 3 % of amino acid and 7.5 % of glucose. In addition, the GE+Alb and AGE+Alb groups received rat serum albumin (0.91 g/kg/day) dissolved in each solution. Energy provision was the same in all the groups (98.0 kcal/kg/day). The control group was fed *ad libitum* and administered normal saline without surgical procedure. After a 48-hour infusion, we measured plasma albumin levels, albumin fractional synthesis rate (Alb-FSR), and the MA ratio (mercapto-albumin/total albumin (%)). Data were presented as the mean ± SD and analysed using Tukey's multiple comparison test. The correlations were analysed with Spearman's rank correlation test.

**Results:** Plasma albumin levels were significantly higher in the groups that received exo-Alb than in those that received the same solution without exo-Alb. The Alb-FSR and MA ratio were significantly higher in the AGE group than in the GE, GE+Alb, and AGE+Alb groups. We observed no significant differences in either the Alb-FSR or the MA ratio between the control and the AGE group. The MA ratio correlated with albumin synthesis (r = 0.69, p = 0.00).

Group	N	Plasma albumin level (g/dL)	Alb-FSR (%/day)	MA ratio (%)
Control	7	3.0 ± 0.1 <sup>a,c</sup>	242 ± 27.2 <sup>a,b</sup>	71.0 ± 2.2 <sup>a</sup>
GE	7	2.6 ± 0.2 <sup>b</sup>	151.9 ± 43.6 <sup>a,c</sup>	57.9 ± 2.8 <sup>b</sup>
AGE	6	2.8 ± 0.2 <sup>a,b</sup>	295.2 ± 118.2 <sup>b</sup>	71.1 ± 3.9 <sup>a</sup>
GE + Alb	6	3.0 ± 0.2 <sup>a,c</sup>	139.2 ± 16.7 <sup>c</sup>	54.9 ± 3.6 <sup>b</sup>
AGE + Alb	5	3.2 ± 0.2 <sup>c</sup>	184.8 ± 37.8 <sup>a,c</sup>	65.7 ± 1.7 <sup>c</sup>

The different letters indicate significant differences between the groups (p < 0.05).

**Conclusion:** The postoperative amino acid infusion maintained a physiological albumin redox state in the surgically stressed rats. However, the simultaneous infusion of exo-Alb disturbed this state. Moreover, the albumin redox state may have reflected the alteration of albumin synthesis.

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**Disclosure of Interest:** M. Nakamura Other: employed by Otsuka Pharmaceutical Factory, Inc., A. Wada Other: employed by Otsuka Pharmaceutical Factory, Inc., K. Kobayashi Other: employed by Otsuka Pharmaceutical Factory, Inc., A. Kuroda Other: employed by Otsuka Pharmaceutical Factory, Inc., D. Harada Other: employed by Otsuka Pharmaceutical Factory, Inc., S. Kido Other: employed by Otsuka Pharmaceutical Factory, Inc., M. Kuwahata Consultant for: Otsuka Pharmaceutical Factory, Inc.

## Hormones, mediators and immunity

### P135

#### DOES LATE POTENTIATION OF INSULIN SECRETION PROMOTE REACTIVE HYPOGLYCAEMIA?

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**Rationale:** Mathematical modeling of test meals quantifies both phases of insulin secretion as well as a parameter called potentiation which indicates that the insulin secretory response is enhanced when the glucose stimulus persists. We investigated whether this potentiation is associated with the occurrence of reactive hypoglycaemia.

**Methods:** Database of 620 standardized breakfast-tests performed for characterization of glucoregulation abnormalities (age 9–85 years, BMI 14 to 64), with mathematical analysis of insulin secretion (Van Cauter and Polonski model) and its components (Mari and Cobelli models) as well as insulin sensitivity (SI) with the oral minimal model.

**Results:** Both in the general sample and in the 279 subjects without fasting or postprandial hyperglycemia, the upper quartile of potentiation corresponds to lower fasting and postprandial blood glucose levels ( $p < 0.001$ ) with blood glucose levels 2 times more often  $< 4 \text{ mmol}$  ( $p < 0.001$ ). Potentiation is correlated with age ( $r = 0.291$   $p < 0.001$ ) and blood glucose at 60 min ( $r = 0.40$   $p < 0.001$ ) both being independent determinants after multivariate analysis. By correcting potentiation by glycemia at 60 min, a Gaussian distribution parameter  $P / G60$  is obtained. The upper quartile of  $P / G60$  has higher SI ( $p = 0.02$ ) lower fasting and postprandial glucose ( $p < 0.001$ ) and is accompanied in 43% of cases by postprandial glycemic nadirs  $< 4 \text{ mmol}$  versus 27% in the other quartiles ( $p < 0.001$ ).

**Conclusion:** High potentiation is accompanied by a lower basal insulin secretion and a lower first-phase insulin peak. Potentiation is therefore a kind of late catching up of insulin-secretory response when blood glucose at t60 remains high. We propose to express it corrected for first hour blood glucose which modulates its amplitude. It is associated with moderate reactive hypoglycaemias so that it is logical to assume that it contributes to their mechanism, whether or not associated with their main determinant which is elevated SI.

**Disclosure of Interest:** None declared.

### P136

#### INTESTINAL PERMEABILITY AND APPETITE REGULATING PEPTIDES-REACTIVE IMMUNOGLOBULINS IN SEVERELY MALNOURISHED WOMEN WITH ANOREXIA NERVOSA

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**Rationale:** The role of microbiota-gut-brain axis has emerged in the regulation of eating behavior and in the pathophysiology of anorexia nervosa (AN). Particularly, a gut-derived dysregulation of immune response has been proposed leading to immunoglobulins (Ig) directed against appetite-regulating peptides but intestinal permeability has been poorly documented. We thus aimed to evaluate intestinal permeability, appetite-regulating peptides and their reactive Ig in severely malnourished women with AN.

**Methods:** Seventeen AN patients (28 [21–35] y; 14.9 [14.1–15.2]  $\text{kg/m}^2$ ) and 34 age-matched healthy controls (HC; 26 [23–35] y; 22.3 [20.6–23.6]  $\text{kg/m}^2$ ) have been enrolled. After an overnight fasting and blood sampling, AN and HC received an oral solution containing lactulose, mannitol and sucralose to evaluate intestinal permeability. Plasma acyl- and desacyl-ghrelin, leptin, aMSH and their specific reactive Ig G and M levels were quantified by ELISA. IgG affinity was also assessed by surface plasmon resonance.

**Results:** AN patients exhibited an increased urinary lactulose/mannitol ratio, both in 0–5 h (0.033 [0.013 – 0.116]) and 5–24 h samples (0.115 [0.029–0.582]), compared to HC (0.02 [0.008–0.045],  $p = 0.0074$  and 0.083 [0.019–0.290],  $p = 0.0174$ , respectively). Urinary excretion of sucralose remained unchanged, as well as plasma zonulin. The levels of plasma total ghrelin and desacyl-ghrelin were increased in AN patients compared to HC whereas plasma leptin concentration was decreased. Plasma aMSH remained unchanged. Finally, we did not observe modification of the levels of aMSH, leptin or ghrelin-reactive Ig G and M, as well as for Ig affinity properties, except a weak decrease of  $k_a$  for acyl-ghrelin-reactive IgG ( $p = 0.0411$ ).

**Conclusion:** In conclusion, severely malnourished AN patients show an increase of intestinal permeability without modification in appetite regulating peptides-reactive immunoglobulins.

**Disclosure of Interest:** None declared.

### P137

#### MEDIATING EFFECT OF MATERNAL LIPID ON THE ASSOCIATION OF MATERNAL THYROID FUNCTION AND FETAL GROWTH

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**Rationale:** To examine whether the association of free thyroxin (FT4) in the first trimester with fetal growth mediated through maternal circulating lipid concentrations during pregnancy.

**Methods:** In this prospective cohort, 43771 eligible pregnant women were enrolled in a tertiary maternity hospital in Shanghai, from January 2016 to December 2018. Information on demographic characteristics were collected using questionnaires, and anthropometrics and laboratory tests were performed during routine hospital visits. Logistic regression and multivariable linear regression, adjusted for age, fetal sex, education, pre-pregnancy BMI, gestational diabetes, gestational hypertension, gestational age at delivery, and parity, were used to assess the mediation path between FT4, maternal serum lipids in early pregnancy, and fetal birth weight.

**Results:** A total of 36475 participants with completed records were included in the final analyses. Among the maternal circulating lipid biomarkers, triglyceride (TG), total cholesterol (TC), low-density lipoprotein (LDL), Apolipoprotein B (ApoB) were significantly associated with both maternal FT4 concentrations and fetal growth, adjusting for potential confounders. Mediation analyses demonstrated that the direct effect of maternal FT4 concentrations on standardized fetal birth weight was  $-0.01141$  (95% CI,  $-0.01593$ ,  $-0.00688$ ;  $P < .0001$ ), the estimated proportion of mediated effect of TG, TC, LDL and ApoB was 11.28%, 6.18%, 6.49% and 8.74%, respectively.

**Conclusion:** Maternal circulating lipid biomarkers mediate the association of FT4 levels in the first trimester with fetal growth.

**Disclosure of Interest:** None declared.

### P138

#### HORMONAL CHANGES SEEN IN SUBFERTILE WOMEN-CROSS SECTIONAL STUDY IN TERTIARY CARE CENTER

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**Rationale:** Subfertility is a common problem encountered in married couples. The causes of infertility are complex and multifactorial. Hormonal dysfunction plays a major etiological factor in infertility. The aim of this study to identify major hormonal changes seen in infertile women referred to infertility clinic at national hospital, Kandy.

**Methods:** A descriptive cross-sectional study was done in sub fertile women referred to the infertility clinic, national hospital, Kandy during 2020. Socio-demographic data, anthropometric data and hormonal profile data were collected by subfertility clinic record at the subfertility clinic. South Asian BMI cut offs were used to categorize the overweight and obesity (1). Statistical analysis was done by using SPSS 22.

**Results:** Ninety-nine subfertile women fulfilled inclusion criteria. Their mean age is 32.5 years [Standard deviation (SD) 4.4]. Mean married duration is 5.6 years (SD 3.9). The majority (67.67%) of this sample was overweight (24.24%) or obese (43.43%), according to the World health organization south Asian body mass index cutoffs (1). Luteinizing hormone, follicular stimulation hormone and thyroid stimulating hormone were in the normal range, compared to nonpregnant females. Only serum prolactin level was significantly high {(mean 36.9 ng/ml) (SD 10.3)}, compared to nonpregnant menstruation females.

**Conclusion:** Sub fertile women in this study were having significant overweight, obesity and significantly high prolactin level than the normal population. High prolactin level could be secondary to high prolactin

production from excess adipose tissue in these overweight and obese sub fertile patients. Hence, high prolactin level in subfertile women should be interpreted with considering their body composition.

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**Disclosure of Interest:** None declared.

#### P139

### SUSTAINED ACYLATED GHRELIN TREATMENT LOWERS VISCERAL ADIPOSE TISSUE INSULIN SIGNALLING IN ASSOCIATION WITH HIGHER OGT EXPRESSION IN UREMIC RATS

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**Rationale:** Recent evidence shows that in chronic kidney disease (CKD), as in starvation, visceral adipose tissue (VAT) insulin sensitivity is reduced, in association with lower lipogenesis and increased lipolysis, contributing to promote energy availability. O-linked N-acetylglucosamine transferase (OGT) is a novel negative modulator of VAT insulin sensitivity which also promotes lipolysis and fat mass loss. Acylated ghrelin (AG) is a gastric orexigenic hormone and a relevant tissue-specific modulator of intermediate metabolism. It increases insulin signalling in skeletal muscle, while in it limits fat accumulation and reduces insulin signalling in the liver. The potential role of AG and OGT in VAT metabolism as well as their interaction in CKD is unknown.

**Methods:** In a rodent 5/6 nephrectomy CKD model (N; n=8), we investigated the impact of four days AG s.c. at non orexigenic dose injection (NA; 200µg twice-daily; n=8) compared to sham (S; n=8) on retroperitoneal VAT oxidized/total glutathione, mitochondrial enzyme activities (citrate synthase and cytochrome c oxidase), insulin sensitivity (pAKT, pGSK) and OGT by western blot.

**Results:** Compared to S, N had increased redox state, lower VAT mitochondrial enzyme activity and activating phosphorylation of insulin signalling at AKT and GSK levels (p<0.05), with unchanged OGT expression levels. In NA, insulin sensitivity was further decreased, while OGT levels were increased compared to both S and N (p<0.05). AG treatment did not modify redox state and mitochondrial function in CKD VAT.

**Conclusion:** In wasting conditions, sustained AG administration may contribute to increase energy availability for higher priority organs by lowering adipose storage through lower VAT insulin sensitivity. These Results also suggest a specific mediation role for OGT in AG effects on VAT in CKD.

**Disclosure of Interest:** None declared.

#### P140

### INFLUENCE OF A FERMENTED MILK ON GUT IMMUNITY AND INTESTINAL FLORA IN A MURINE GUT ISCHEMIA REPERFUSION MODEL

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**Rationale:** In our previous study, a fermented milk did not alter gut associated lymphoid tissue (GALT) lymphocyte numbers and phenotypes in mice. However, the fermented milk might exert any beneficial effects on gut immunity and bacterial flora in severe injury.

**Methods:** Six weeks old male Institute of Cancer Research (ICR) mice were assigned to FM (n = 9) or UFM (n = 6) group. The FM mice were fed a diet with a fermented milk by *Lactobacillus bulgaricus* and *Streptococcus thermophilus* for 7 days. The UFM mice were fed a diet with unfermented milk.

Then, all mice underwent gut ischemia reperfusion (gut I/R, ischemia; 30 min.). At 24 hrs after reperfusion, mice were killed for GALT lymphocyte isolation from whole small intestine, IgA level measurement in gut and respiratory tract, and analysis of cecum bacterial flora. GALT lymphocytes numbers were counted, and their phenotypes (B cells, CD4+ T cells, CD8+ T cells, αβTCR+ T cells, γδTCR+ T cells) in Peyer patches (PP), Intraepithelial spaces (IE) and Lamina propria (LP) were evaluated with flowcytometry. IgA levels of nasal, bronchoalveolar, and intestinal washings were measured by ELISA. The relative abundances of microbiota constituents in the cecum detected by terminal restriction fragment length polymorphism (T-RFLP) analysis were evaluated.

**Results:** The summary of results are shown in table 1. No significant differences in GALT cell numbers, mucosal IgA levels, or cecum bacterial flora were observed between the two groups. In FM group, percentages of γδTCR+ cells in PP and IE were decreased (p < 0.05 vs. UFM).

	FM vs. UFM (Mean ± S.E., * p < 0.05 vs. UFM)
<b>GALT cell numbers (x10<sup>7</sup>)</b>	<b>PP:</b> 1.07±0.16 vs. 1.06±0.2. <b>IE:</b> 0.84±0.18 vs. 1.01±0.22. <b>LP:</b> 2.23±0.57 vs. 2.59±0.7.
<b>GALT phenotypes (%)</b> (B cells, CD4+ T cells, CD8+ T cells, αβTCR+ T cells, γδTCR+ T cells)	<b>PP:</b> 55.0±7.3 vs. 55.3±8.5, 28.8±2.0 vs. 32.9±2.7, 6.6±0.7 vs. 8.2±0.9, 31.7±1.8 vs. 32.4±2.2, 1.1±0.1* vs. 1.6±0.1. <b>IE:</b> 10.5±2.4 vs. 11.4±3.0, 8.8±1.0 vs. 9.1±1.3, 59.9±7.0 vs. 51.1±8.9, 47.7±2.8 vs. 43.1±3.2, 35.5±2.3* vs. 43.7±2.7. <b>LP:</b> 19.2±2.3 vs. 12.0±2.8, 25.5±2.5 vs. 24.8±3.1, 17.9±5.2 vs. 14.4±6.4, 32.6±2.9 vs. 31.5±3.5, 4.4±1.1 vs. 7.4±1.4.
<b>IgA levels (ng/mL)</b> (Nasal, Bronchoalveolar, Intestine)	4.3±4.5 vs. 10.0±5.6, 49.7±23.5 vs. 42.0±28.7, 3,466±688 vs. 3,074±843.
<b>Relative abundances of microbiota constituents in the Cecum (%)</b> (Order <i>Lactobacillales</i> , <i>Bacteroides</i> , <i>Prevotella</i> , <i>Clostridium</i> subcluster XIVa, <i>Clostridium</i> cluster XI, XVIII)	26.1±6.3 vs. 23.5±6.3, 10.6±2.8 vs. 10.2±2.8, 8.1±8.8 vs. 9.7±8.8, 5.2±2.6 vs. 2.6±2.6, 0.1±0.2 vs. 0.3±0.2, 5.8±2.9 vs. 5.9±2.9

**Conclusion:** Though fermented milks reportedly have beneficial effects on gut immunity and bacterial flora, the fermented milk used here did not modulate them in even severe injury.

**Disclosure of Interest:** None declared.

#### P141

### PREVALENCE OF VITAMIN D DEFICIENCY AND ITS ASSOCIATION WITH DISEASE ACTIVITY IN ADULT PATIENTS WITH CROHN'S DISEASE

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**Rationale:** Vitamin D has emerged as a key regulator of immune response and its deficiency has been frequently observed in patients with Crohn's disease (CD). The aim of this study was to evaluate serum vitamin D level in patients with CD and its correlation with disease severity and nutritional status.

**Methods:** Consecutive adult patients aged between 18–65 years and with diagnosis of CD were recruited. Anthropometry and handgrip strength (HGS) were measured. Fasting blood samples were taken for assessing serum circulating 25 hydroxyvitamin D [25(OH)D] levels and other clinical biomarkers. Vitamin D deficiency is defined as a 25(OH)D below 20 ng/ml and vitamin D insufficiency as a 25(OH)D within 21–29 ng/ml.

**Results:** A total of 43 CD patients, 26 men and 17 women, with a mean age of 40.2±14.8 years and a BMI of 23.1±4.5 kg/m<sup>2</sup> were included in the analysis. Based on Crohn's Disease Activity Index (CDAI), most patients were clinically quiescent (< 150), while only 14% were in mild-active disease (< 220). Data showed that 31 patients (70%) had low circulating levels, resulting deficient in 19 patients (43%) and insufficient in 12

patients (27%). Overall, vitamin D was inversely associated with CDAI ( $r=-0.321$ ;  $p=0.04$ ) and serum alpha2 globulin protein fraction ( $r=-0.364$ ;  $p=0.02$ ); while it was positively correlated with albumin levels ( $r=0.393$ ;  $p=0.009$ ). Moreover, in the subset of patient with vitamin deficiency, vitamin D was negatively associated with C-reactive protein (CRP) ( $r=-0.339$ ;  $p=0.05$ ) and positively correlated with HGS ( $r=0.335$ ;  $p=0.05$ ).

**Conclusion:** A high prevalence of vitamin D deficiency was detected, although the majority of patients were clinically quiescent. Additionally, those with lower vitamin D showed higher disease activity and lower albumin and HGS values than other patients. Further investigation is required for monitoring vitamin D status in patients with CD and its relationship with disease activity and nutritional status.

**Disclosure of Interest:** None declared.

## P142

### EARLY ORAL NUTRITIONAL SUPPLEMENTATION WITH A TGF- $\beta$ 2 ENRICHED FORMULA FOR COVID-19 PATIENTS: A NEW POSSIBLE STRATEGY TO MODULATE INFLAMMATION?

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**Rationale:** During COVID-19 infection substrate depletion and catabolism occur; SARS-COV 2, acting on intestinal permeability and microbiota balance, leads to pro-inflammatory cytokines production up to cytokine storm. Deregulated immune response and gastrointestinal clinical symptoms resemble IBD in their manifestation. In the evidence for a gut-lung axis, where gut barrier integrity plays a major role in adapting and regulating the immune response, aim of this on-going multicentric study is to investigate efficacy and safety of a specific nutritional formula enriched in TGF- $\beta$ 2, in fighting malnutrition and reducing systemic inflammation.

**Methods:** A multicentric study was conducted and COVID-19 inpatients were enrolled. The protocol consists in supplying 150 gr of TGF- $\beta$ 2 enriched formula powder (750 kcal/day) next to standard nutrition and standard cares. Values of serum prealbumin, transferrin, C-reactive protein and Lymphocyte count were collected at baseline and every week. Data were compared to an untreated sample of inpatients.

**Results:** Data analysis is in progress. From our preliminary results, the TGF- $\beta$ 2 enriched formula modulates inflammatory response besides improving nutritional status, with a strong correlation between higher level of prealbumin and lower level of CRP. We found a correlation between formula use and a mild course of the disease, without worsening gastrointestinal symptoms.

**Conclusion:** Ameliorating nutritional status is mandatory during critical illness. This specific formula with immune-regulatory properties improves outcomes of COVID19 inpatients and could represent a promising possibility to face all acute inflammatory diseases with a high nutritional impact.

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**Disclosure of Interest:** None declared.

## Vitamins, antioxidants and minerals

### P143

#### THE IMPACT OF VITAMIN D LEVELS IN PREDICTING CHILDHOOD ASTHMA AMONG EGYPTIAN INFANTS

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**Rationale:** Ecologically, many of the patterns of vitamin D deficiency appear to be parallel to the patterns of the asthma epidemics. There are several Potential mechanisms for how vitamin D might decrease the disease severity of asthma and allergies. In this study, we tried to study the effect of serum vitamin D on the risk of development of childhood asthma by calculating Asthma predictive index (API) in relation to serum vitamin D levels.

**Methods:** In this cross-sectional study fifty wheezy infants and thirty healthy controls of matched age and sex were included. Feeding history and exposure to environmental factors and were assessed through parents' questionnaire. The clinical characteristics of the children were assessed as well as the asthma predictive index. The serum levels of vitamin D, Calcium and Phosphorus were measured in all patients. Correlation analysis was used to evaluate the relationship between homogeneously distributed variables.

**Results:** Thirty-three of the fifty wheezy child (66%) were recurrent wheezers (had more than three wheezing attacks/year). The Asthma Predictive Index index was found to be positive in thirty two patients (64%). Serum Vitamin D was significantly lower in wheezy infants compared to control group as well as API (+ve) patients compared to API (-ve) patients ( $p=0.013$ ,  $p<0.01$  respectively). Serum Vitamin D level showed significant (-ve) correlation with number of previous wheezing episodes ( $p<0.01$ ).

No significant difference was found between the API (+ve) group and API (-ve) group in terms of other laboratory markers (Calcium, Phosphorus and Eosinophil count).

**Conclusion:** Vitamin D deficiency was found to be more prevalent in wheezy infants than controls, suggesting it might play an underestimated role in pathogenesis of wheezes in infants. We also suggest that serum vitamin D levels might be used as a biomarker for prediction of (+ve) API state, raising the possibility of having childhood asthma.

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**Disclosure of Interest:** None declared.

## P144

### THE EFFECT OF OLIVE LEAF EXTRACT CONTAINING NATURAL ANTIOXIDANT ON THE FORMATION OF HETEROCYCLIC AROMATIC AMINES IN OIL FREE PAN-COOKED SALMON

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**Rationale:** Heterocyclic aromatic amines (HCA) are mutagenic and carcinogenic compounds that are formed at low levels (ng / g) by cooking protein-rich foods such as meat and fish. These compounds play an important role in the etiology of human cancer, so researchers suggest that the formation of HCAs should be minimized. It has been reported that antioxidants can reduce HCA formation by retaining the free radicals formed in HCA formation mechanism and Maillard reaction. The aim of this study was to investigate the preventive effects of the olive leaf extract on the formation of HCAs.

**Methods:** This study was conducted in different levels (0%, 0.5%, 1% and 2%) olive leaf extract was added to the salmon fish and the reducing effect of HCA formation was investigated by applying cooking method in 180° C and in oil free pan. In all salmon samples were analyzed 2-amino-3-methylimidazo [4,5-f]quinoxaline (IQx), 2-amino-3-methylimidazo[4,5-f] quinoline (IQ), 2-amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx), 2-amino-3,4-dimethylimidazo[4,5-f]quinoline (MeIQ), 2-amino-3,4,8-trimethylimidazo[4,5-f] quinoxaline (4,8-DiMeIQx), 2-amino-3,7,8-trimethylimidazo[4,5-f]quinoxaline (7,8-DiMeIQx), 2-amino-1-metil-6-phenylimidazo[4,5-b]pyridine (PhIP), 2-amino-9H-pyrido[2,3-b]indole (A $\alpha$ C), 2-amino-3-methyl-9H-pyrido[2,3-b]indole (MeA $\alpha$ C) and 3-amino-1-methyl-5H-pyrido [4,3-b] -indole (Trp-P-2). HCAs were analyzed by HPLC (High Performance Liquid

Chromatography). The Results were analysed using SPSS 23.0 statistics package program.

**Results:** IQx, IQ, MeIQx, MeIQ, 7,8-DiMeIQx, 4,8-DiMeIQx, Trp-P-2 were determined respectively up to 0.02 ng/g, 0.18 ng/g, 0.54 ng/g, 1.72 ng/g, 0.29 ng/g, 0.14 ng/g, 2.40 ng/g. PhIP, A $\alpha$ C and MeA $\alpha$ C did not be detected in the samples. The total amount of HCA in the salmon samples was found to be between 0.81 and 3.63 ng / g. The reducing effect of olive leaf extract on total HCA formation was determined as 32.78–77.69% in salmon samples. The maximum inhibition (77.69%) of HCA formation was observed when 2% of the olive leaf extract was added before cooking at 180 °C.

**Conclusion:** Nowadays, the addition of antioxidant compounds prior to cooking could be considered an effective way for decreasing the levels of carcinogenic HCAs. Olive leaves contain a wide variety of phenolic derivatives, and their reducing effect on HCA formation has been thoroughly demonstrated in this study.

**Disclosure of Interest:** None declared.

#### P145

### THE RELATIONSHIP BETWEEN URIC ACID AND MALNUTRITION IN OLDER ADULTS

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**Rationale:** Malnutrition, one of the most common problems in older adults; is closely related to infection, delayed wound healing, and deterioration of protective mechanisms against oxidative stress. Antioxidants reduce the risk of atherosclerotic disease, progression of dementia, and the incidence of cancer. We aim to evaluate the relationship between malnutrition and uric acid which is an antioxidant.

**Methods:** This cross-sectional study was performed retrospectively on 1269 patients with a mean age of 73.87 $\pm$ 7.70 years. Patients were divided into two groups according to malnutrition status. Malnutrition was assessed by the MNA-SF (Mini Nutritional Assessment- Short Form) scale and defined as having 11 and less points. Differences between categorical variables were assessed with the Pearson's chi-square test and continuous variables with normal distribution were analyzed using the Independent sample t-test. Binary logistic regression analysis was performed for the factors that were likely to affect malnutrition.

**Results:** The mean age of the patients with malnutrition was 76.30  $\pm$  7.99 years and 67.6% were women. The frequency of dementia, DM (diabetes mellitus), and depression was higher in patients with malnutrition than those without malnutrition (p <0.001, p = 0.013, and p <0.001, respectively). In patients with malnutrition had lower uric acid levels and eGFR (p = 0.020 and p = 0.003 respectively), and higher CRP(C-Reactive Protein) and ESR (Erythrocyte Sedimentation Rate)(p = 0.042 and p = 0.027, respectively) than those without malnutrition. In adjusted models according to all confounding factors, the lower uric acid level was found to be related to malnutrition (p<0.05).

**Table 1-**

Characteristics of the patients according to malnutrition status

	Malnutrition (-) n=976	Malnutrition (+) n=293	pvalues
Gender (female) (%)	65.30%	67.60%	0.480
Age*	73.1 $\pm$ 7.46	76.30 $\pm$ 7.99	<0.001
Number of drugs*	4.89 $\pm$ 3.12	5.91 $\pm$ 3.45	<0.001
CCI*	0.92 $\pm$ 1.07	1.23 $\pm$ 1.13	<0.001
HT (%)	66.10	64.70	0.660
Dementia (%)	16.60	32.00	<0.001
DM(%)	28.30	20.90	0.013
Depression (%)	32.60	50.70	<0.001
Glucose (mg/dL)	109.39 $\pm$ 39.00	108.91 $\pm$ 45.19	0.479
eGFR (mL/min/1.73 m <sup>2</sup> )	75.83 $\pm$ 17.97	72.01 $\pm$ 20.43	0.003
ESR mm/h	19.10 $\pm$ 14.99	22.38 $\pm$ 17,20	0.027
25-OH Vitamin D (ng/mL)	22.59 $\pm$ 12,48	22.34 $\pm$ 15.69	0.806
CRP	5.53 $\pm$ 11,05	7.98 $\pm$ 15.35	0.042
Uric acid (mg/dL)	5.56 $\pm$ 1,57	5.37 $\pm$ 1.82	0.020

CCI: Charlson Comorbidity Index; CRP: C-Reactive Protein; DM: Diabetes Mellitus; ESR: Erythrocyte Sedimentation Rate; eGFR: Estimated Glomerular Filtration Rate HT: Hypertension. \* mean $\pm$ SD.

**Conclusion:** A decrease in uric acid level, which is an antioxidant, may trigger inflammatory processes and lead to malnutrition. On the other hand, lower uric acid levels may be related to a poor purine diet in malnourished older adults. Considering malnutrition-related negative health outcomes in older adults, lower levels of uric acid, which has antioxidative effects, may have a contributory role in the pathogenesis of malnutrition or a result of it.

**Disclosure of Interest:** None declared.

#### P146

### FOLATE INTAKE, MARKERS OF FOLATE STATUS AND ORAL CLEFTS: AN UPDATED SET OF SYSTEMATIC REVIEWS AND META-ANALYSES

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**Rationale:** There has been a longstanding debate about the role of folate in the etiology of orofacial clefts (OFCs). The aim of the present work is to update the knowledge synthesis published over a decade ago and to bring together different types of evidence.

**Methods:** Evidence for associations between OFC and dietary folate, supplement use, folic acid fortification, biomarkers of folate status, and variants of MTHFR (C677T and A1298C) were included. Potentially eligible articles were systematically identified from PubMed, Medline, Embase, and Web of Science (2007–2020) and combined using random-effects meta-analysis when appropriate. Quality assessments were conducted using the Newcastle–Ottawa scale and Cochrane's risk of bias tool.

**Results:** Sixty-four studies published since the previous knowledge synthesis were identified, with eight of these identified through a supplementary search from October, 2018 to August, 2020. There was an inverse association between folic acid-containing supplement use before or during pregnancy and cleft lip with or without cleft palate (CL/P) (OR 0.60, 95% CI 0.51–0.69), with considerable between-study heterogeneity. The prevalence of CL/P showed a small decline post-folic acid fortification in seven studies (OR 0.94, 95% CI 0.86–1.02). No association was found between OFC and genetic markers of folate status. The coronavirus-19 pandemic has threatened food availability globally and therefore there is a need to maintain and even enhance surveillance concerning maternal intake of folate and related vitamins.

**Conclusion:** The risk of non-syndromic OFC was reduced among pregnant women with folic acid-containing supplements during the etiologically relevant period. However, high heterogeneity between included studies, incomplete reporting of population characteristics and variation in timing of exposure and supplement types mean that conclusions should be drawn with caution.

**Disclosure of Interest:** None declared.

#### P148

### CLINICAL AUDIT ON MINERAL AND VITAMIN SUPPLEMENTATION IN PATIENTS WITH CHRONIC WOUNDS IN SURGICAL WARDS IN NATIONAL HOSPITAL OF SRI LANKA (NHSL)

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**Rationale:** There is a close link between nutrition and wound healing. Mineral and vitamin (MVT) supplementation is recommended if deficiencies are confirmed or suspected in the patients with chronic wounds. Objectives were to find the practice of prescription of MVT to the patients with chronic wounds and to find adequacy of energy and protein intake.

**Methods:** Retrospective study was done to find out the MVT supplementation from convenience sample of 50 patients receiving treatment for chronic wounds in surgical wards in NHSL. Level of optimum performance is taken as 90% due to limitation of resources.

**Results:** 40 patients (90%) were not prescribed MVT while 5 patients (10%) were supplemented with it. From the patients who were prescribed MVT, majority were taking it. Even though they were prescribed MVT, patients were not taking supplements due to unavailability of them in the hospital.

Majority of study sample were not prescribed MVT due to lack of knowledge. Major proportion was not receiving adequate energy and proteins for their requirement.

**Conclusion:** From the study sample majority were not prescribed MVT. Majority of the sample were not receiving adequate energy and proteins. The reasons for not prescribing the supplements were due to lack of knowledge of the medical professional, unavailability of the supplements in the hospital and over work in the wards.

Steps should be taken to educate the surgical team about the importance of prescription of MVT. Making available the above supplements will also leads to more prescription of the vitamins and minerals.

**Disclosure of Interest:** None declared.

## P149

### NUTRITIONAL RISK OF FISH DIET - OXIDATIVE STRESS INDUCED BY DIETARY MERCURY EXPOSURE

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**Rationale:** Chronic exposure to methylmercury deserves special attention considering the global increased fish and shellfish consumption. Mercury's high affinity to glutathione causes oxidative stress augmentation generating systemic toxicity even in low doses.

**Methods:** We performed a prospective observational study which included 67 patients in order to evaluate oxidative stress levels produced by methylmercury exposure after fish consumption. They were all screened for mercury blood level. Moreover, vitamin D, selenium, glutathione (GSH), malondialdehyde, superoxide dismutase (SOD) and glutathione peroxidase (GPx) levels were measured to evaluate oxidative stress profile. Statistical analysis was performed using parametric and non-parametric tests with statistical significance set at  $p < 0.05$ .

**Results:** In the study group mean age was 47.4 years and the male to female ratio was 1.2:1. 44 patients had high mercury levels (above 10 ug/L), out of which 38 had an identifiable exposure, namely high fish intake (more than 4 meals per week) or dental amalgam (n=6). Spearman correlation revealed that SOD, GPx and malondialdehyde levels were proportional to mercury serum values ( $p < 0.001$ ). Moreover, GSH and vitamin D were inversely correlated to mercury levels ( $p < 0.001$ ). No significantly statistical data was obtained on selenium measurements.

**Conclusion:** Despite the lack of significant clinical manifestation, chronic exposure to low doses of mercury is responsible for increased oxidative stress, leading to toxicity on high fat tissues such as the nervous system. Promoting fish dietary intake should be tailored on patients' individual characteristics, taking into consideration prior mercury accumulation.

**Disclosure of Interest:** None declared.

## P150

### A CRITICAL UPDATE ON THE ROLE OF MILD AND SERIOUS VITAMIN D DEFICIENCY PREVALENCE AND THE COVID-19 EPIDEMIC IN EUROPE

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**Rationale:** COVID-19 has emerged as a pandemic, affecting nearly 120 million people worldwide as of March 14th, 2021. In previous studies, the association between the mean Vitamin D (Vit D) concentration of each country and COVID-19 infection and mortality rate in European countries was examined. The aim of this study was to critically evaluate the relationship between Vit D mild and severe deficiency prevalence in each country and COVID-19 infection, recovery, and mortality using updated data and a different methodological approach.

**Methods:** Information on Vit D concentration/deficiency for each country was retrieved through literature search. As of March 14th, 2021, COVID-19 infections and mortalities per one million population as well as total

recoveries were extracted from the Worldometer website. The association between Vit D deficiency and COVID-19 infection, recovery, and mortality were explored using correlation coefficients and scatterplots.

**Results:** Non-significant correlations were observed between the number of COVID-19 infections ( $r=0.331$ ;  $p=0.166$ ) and recoveries ( $r=0.422$ ,  $p=0.072$ ) with the prevalence of mild Vit D deficiency ( $<50$  nmol/L). Similarly, non-significant correlations were observed between COVID-19 infections ( $r=0.194$ ,  $p=0.045$ ), mortalities ( $r=0.447$ ,  $p=0.063$ ) and recoveries ( $r=0.402$ ,  $p=0.098$ ) with the prevalence of severe Vit deficiency ( $<30$  nmol/L). Significant correlation ( $r=0.539$ ,  $p=0.017$ ) was found between COVID-19 mortality and prevalence of mild Vit D deficiency.

**Conclusion:** Prevalence of both mild and severe Vit D deficiency was not significantly associated with the number of infections of COVID-19 among European countries. Thus, it is an important parameter to be considered when implementing preventive measures to face COVID-19.

**Disclosure of Interest:** None declared.

## P151

### THE ASSOCIATION BETWEEN VITAMIN D AND SEVERITY IN COVID-19 PATIENT: SYSTEMATIC REVIEW

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**Rationale:** Currently, COVID-19 is declared as a pandemic around the world. Therefore, there is a need for therapy to reduce the symptoms and severity from COVID-19. One of the new hypotheses is through vitamin D serum, for which patients with deficient vitamin D claimed to have increased severity in COVID-19 infected patients. Since vitamin D may play an important role to suppress cytokines storm in COVID-19, such as interleukin-1 (IL-1) and interleukin-6 (IL-6). Though the relationship between Vitamin-D and COVID-19 is still not well understood. Therefore the purpose of this systematic review is to find association between vitamin D and severity in COVID-19 patient.

**Methods:** This research was conducted on 16 – 24 April 2021. Two Independent researchers will systematically extract data from several databases, such as *PubMed Central* (PMC), PUBMED, Science direct and Google Scholar using mesh term such as Vitamin D Deficiency"[Mesh] AND "Severity of Illness Index"[Mesh] AND "COVID-19"[Mesh] AND "SARS-CoV-2"[Mesh]. Studies that are extracted will be analyzed and selected according to our inclusion criteria such as cohort and cross-sectional studies in the last 10 years. We excluded systematic reviews, meta-analysis, case series, case reports, and studies on animals. Then, the quality of the journal is rated with Newcastle-Ottawa (NOS).

**Results:** Through several inclusion criteria selection, six journals are suitable for data extraction, with 5 out of 6 journals found a positive association of decreased vitamin D and increased severity of COVID-19 patients, and mean vitamin D in patients with severe severity was below ideal standards. However 1 of 6 journals shows negative association. The severe and moderate COVID-19 patient has a different sample portion, which may explain the research shows negative association.

**Conclusion:** In conclusion, Vitamin D is an essential factor in the severity and outcome of COVID-19 patients. Patients with vitamin D deficiency have a poor disease course and severe degree of severity. Clinical symptoms differentiate drastically between mild and severe symptoms. Further RCT studies need to be done to confirm the Results.

**Disclosure of Interest:** None declared.

## P152

### EFFECT OF ORAL VITAMINS AND TRACE ELEMENTS SUPPLEMENTATION IN PATIENTS WITH CERVICAL CANCER OVER THE LOCAL CANCER CONTROL AFTER CONCOMITANT CHEMO AND RADIOTHERAPY TREATMENT

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**Rationale:** The aim of our study was to evaluate the effect of the daily oral vitamins and trace elements supplementation in patients with cervical cancer after six months of the concomitant chemo and radiotherapy treatment over the local cancer control.

**Methods:** A controlled, single-blinded clinical trial was conducted in patients with cervical cancer during *concomitant* chemotherapy and radiation *therapy*. Patients were randomized into two groups. The control group received a placebo and the experimental group received an oral daily multivitamin and trace elements supplementation during the oncological therapy (200 mg a-tocopherol, 200 mg vitamin C, 15 mg Zinc, 0.05 mg Selenium, and 4.8 mg b-carotene). The evaluation of the local control of the disease was carried out by the group of oncologists through the evaluation of tomography, colposcopy. Chi-square test was performed to compare groups.

**Results:** A total of 74 patients were included, 33 (44.6%) in the control group, and 41 (55.4%) in the experimental group. 54.8% (n = 18) of the patients in the control group presented local tumor activity six months after radio treatment and concomitant chemotherapy, versus 56.1% (n = 23) in the experimental group; no statistically significant differences were found between groups (p = 0.540). It was reported that 9.5% (n = 7) had metastases to the vagina and lymph nodes, 5.4% (n = 4) to the lung, 2.7% (n=2) to the liver, and 1.4% (n=1) to colon.

**Conclusion:** The effect of the consumption of multivitamins and trace elements does not modify the local control of the disease in patients with cervical cancer six months after concomitant chemo and radiotherapy treatment

**Disclosure of Interest:** None declared.

## P153

### PRACTICE OF ROUTINE ORAL ZINC SUPPLEMENTATION DURING DIARRHEAL ILLNESSES IN CHILDREN

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**Rationale:** Routine supplementation of Zinc is recommended by the World Health Organization (WHO) in the management of acute diarrhea among children<sup>1</sup>, as Zinc is an essential micronutrient for cellular proliferation and differentiation, protein synthesis, as well as for the overall growth and development of children<sup>2</sup>. Although the specifications of Zinc supplementation and its importance are well-known, recognizable gaps are present in adherence to this strategy.

Objectives of this study were to identify lapses in the practice of Zinc supplementation in children with diarrheal illnesses, in view of routine prescription, accuracy in dosage and duration and to intervene accordingly.

**Methods:** A clinical audit was conducted using the secondary data from hospital records of patients with acute diarrheal illnesses, who were treated at a General Pediatric ward of the Lady Ridgeway Hospital for Children, from April to September 2019. The standards of the audit were according to the WHO recommendations on Zinc supplementation for children with acute diarrheal illnesses.

Descriptive statistics were used in analysis of data.

Ethical clearance was obtained from the Ethics Review Committee of Lady Ridgeway Hospital for Children, Colombo, Sri Lanka.

**Results:** Majority (93.8%) of the study population consisted of children over the age of 6 months, while 6.2% were below the age of 6 months. Out of the 129 study participants, 92.2% had acute gastroenteritis, while the remainder had dysentery.

Routine Zinc supplementation was received by 76.7%, out of which only 62.6% were given the age-appropriate dose, while the correct duration of prescription was documented only in 2%.

**Conclusion:** Adherence to WHO recommendation on Zinc supplementation was suboptimal in this tertiary care hospital setting.

Therefore, there is a need of updating the knowledge on this global recommendation, regularly among medical professionals in Pediatrics, by means of clinical lecture discussions. Furthermore, re-audits should be essentially carried out to ensure the consistency of this practice.

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**Disclosure of Interest:** None declared.

## P154

### VITAMIN K IN PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA

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**Rationale:** In patients with familial hypercholesterolemia (FH), different methods of health improvement are discussed – including non-pharmacological factors such as diet. Vitamin K could impact cardiovascular disease progress. Therefore, the aim of the study was to determine whether there is a deficiency of vitamin K in the serum in patients with familial hypercholesterolemia and to assess the vitamin K intake.

**Methods:** The study included 44 adult patients, both men and women, with familial hypercholesterolemia, who were patients of The National Centre for FH at University Clinical Hospital, Medical University of Gdańsk. The control group consisted of 44 sex-, BMI-, and age-matched healthy volunteers. Vitamin K levels in serum were determined using enzyme-linked immunosorbent assay (ELISA) of PIVKA-II (Protein Induced by Vitamin K Absence). To assess differences in dietary intake of the most common food groups between FH patients and the control group, a Food Frequency Questionnaire with 6 answers (FFQ-6) was used. Statistical analysis of the Results was made with the R Statistical Software.

**Results:** There were no statistically significant differences in PIVKA-II serum levels – median (Q1-Q3) in FH=5.25 (4.29-5.83); control=5.31 (4.43-6.30) ng/ml. However, differences in intakes of some food sources of vitamin K – meat, cheese, cruciferous vegetables, and eggs – were statistically significant (p<0.05) between both groups.

**Conclusion:** Results from each group indicate subclinical deficiency of vitamin K – on similar level in both groups. Development of knowledge and research on vitamin status of patients with familial hypercholesterolemia, as well as proper pharmacological treatment and lifestyle choices (including diet), could be beneficial for their health.

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**Disclosure of Interest:** None declared.

## P155

### VITAMIN D IN PATIENTS WITH ORTHOPEDIC FRACTURES

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**Rationale:** The serum albumin concentration in conjunction with vitamin D deficiency may be related to post-fracture and postoperative complications, such as pseudoarthrosis and infections in orthopedic patients<sup>1,2,3</sup>. Thus, this study investigated the vitamin D and the factors associated with complications in patients with fractures due to foot and ankle fragility.

**Methods:** Prospective study with 108 adult patients diagnosed with ankle and foot bone fractures. Anthropometric indicators, serum levels of vitamin D and albumin, presence of comorbidities, complications, pseudoarthrosis, surgical dehiscence, type of treatment, fractured bone and fracture mechanism were evaluated. To identify the risk factors associated with complications, multiple logistic regression analysis was used.

**Results:** The average age of the population studied was  $50.5 \pm 15.9$  years. Each unit less of vitamin D increased 15% the chance of patients developing pseudoarthrosis and the presence of diabetes increased 30-fold the chance of dehiscence. According to the multiple logistic regression analysis, each additional year of age increased the chances of complications by 5.8%; and each unit less of vitamin D, increased 9.1% the chances of complications.

**Conclusion:** This investigation has shown that the likelihood of complications increases as age increases and serum vitamin D levels decrease.

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**Disclosure of Interest:** None declared.

## Critical care

P156

### ISCHEMIC COLITIS AS A COMPLICATION OF SARS-COV-2 PNEUMONIA

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**Rationale:** Gastrointestinal dysfunction (GID) is common in the ICU setting. Up to 60% of patients present some manifestation of DGI during their stay in the ICU. However, an increase in ischemic colitis (IC) has been observed in critically ill patients admitted to the ICU due to ARDS-CoV2 pneumonia.

The aim of the study is to present the characteristics of IC in a series of critical patients due to ARDS-CoV-2 pneumonia.

**Methods:** Retrospective analysis of a series of patients admitted to the ICU of a tertiary hospital with SARS-CoV2, that developed IC and required surgery

**Results:** Between March/2020 and January/2021, 287 SARS-CoV2 patients requiring mechanical ventilation were admitted to the ICU of a tertiary hospital. 8 (2.78%) presented gangrenous IC (Brand & Boley) requiring urgent surgery. 87.5% were men, the median age was 60.5 (IR 48.5–71) and the mean BMI was 32.5 (IR: 27–34). 5 patients showed at least one risk factor for IC. The median number of days from intubation to surgery was 13d (IR: 9.5–20.5). Fever (75%) and abdominal distension (62.5%) were the initial symptoms. The location of the ischemia was the right colon in all cases. 6 patients required extended right hemicolectomy and 2, subtotal colectomies. In the histological study, 7 patients had transmural ischemia, and one patient was limited to the mucosa; predominantly right location was observed. There was no thrombosis or vasculitis in the specimens. Mortality was 37.5% (3/8), due to septic shock and refractory multi-organ failure

**Conclusion:** The incidence of severe IC in critically ill patients due to COVID19 seems higher than that of the overall critically ill patients, without a clear relationship with thromboembolic phenomena in our series. The predominantly right location in all patients could represent an entity of its own secondary to virus infection. Fever and abdominal distension in these patients should lead to suspicion of this entity.

**Disclosure of Interest:** None declared.

P157

### ADEQUACY OF NUTRITIONAL THERAPY OF COVID-19 PATIENTS DURING THEIR ICU AND WARD STAY: BETTER IS WORSE

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**Rationale:** NRS2002 and nutric scores are correlated with poor outcome of COVID-19 critically ill patients. The medical profile with long ICU and ward stay and the altered practical circumstances seen in a pandemic, complicate and challenge nutritional therapy. Although the medical community reacted quickly and nutritional protocols and guidance was foreseen (1), quality of care might be compromised by this healthcare disruption. We aimed to evaluate the adequacy of caloric and protein therapy of COVID-19 patients in the ICU and the following ward stay.

**Methods:** COVID-19 patients with a length of stay of 7 days or more were prospectively followed up until hospital discharge, 8 weeks hospital stay or death. Caloric and protein intake, both intentional and non-intentional was collected and analyzed on a daily basis starting at ICU day 7. Intake was compared to needs, defined by the 2019 ESPEN guideline for clinical nutrition in the ICU: calories guided by indirect calorimetry and protein target defined by 1.3g/kgBW/day in ICU. In the ward the best suited ESPEN guideline (geriatrics, internal medicine) was used. Nutritional therapy adequacy was defined by the ratio intake/needs and expressed in %.

**Results:** Eleven severely ill COVID-19 patients were included, 5 patients died in ICU and one in the ward (in accordance with their calculated mortality risk). Their hospital stay was a mean of 21 days (range 11–32). This represents 171 evaluation days. The mean measured Resting Energy Expenditure was 2079 kcal/day (28 kcal/kg/day) in ICU and 2115 kcal /day in the ward (26 kcal/kg/day). An overall daily intake of 1385 kcal and 70 g of protein was observed. The adequacy of the nutritional therapy was 70% of caloric target and 71% of protein target in the setting of ICU. The same patients, discharged from ICU, had a nutritional adequacy of 50% for calories and 44% for protein in the ward.

**Conclusion:** Caloric targets guided by indirect calorimetry alter with time in a COVID-19 population. Providing adequate amounts of calories and proteins to ICU patients is challenging. The nutritional intake post ICU reveals to be even lower with less than half of recommended proteins being provided in a period of rehabilitation. This iatrogenic malnutrition of COVID-19 ICU survivors needs further investigation and improvement plans.

**References:**

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P158

### BEHAVIOR AND COMPLICATIONS OF HYPERGLYCEMIA IN CRITICAL CARE PATIENTS

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**Rationale:** Hyperglycemia is a common phenomenon in the critically ill patient, which has been directly related to morbidity and mortality of these patients.

The aim of this study is to evaluate the behavior of glycemia in patients who require artificial nutritional support.

**Methods:** All the data related to glycemic behavior in patients that were included in the ENPIC study were analyzed ([NCT: 03634943] multicenter registry on the nutritional practices of critically ill patients in 37 Spanish ICUs, from April 23 to June 15, 2019)

**Results:** A total of 629 patients were included: 67.6% were men, with a mean age of 61.8 ( $\pm$  15) years and a mean BMI of 27.7 ( $\pm$  5.2). The average APACHE II was 20 and the average time until nutritional therapy was started was 28 hours. 63.4% of patients received enteral nutrition, 18.2% parenteral and 18.4% mixed. 14.8% of patients maintained blood glucose < 120mg / dL (Group A), 27.5% between 120 and 139mg / dL (Group B), 35.8% between 140 and 179mg / dL (Group C) and 21.9% > 180mg / dL (Group D). Mortality was higher in the groups with the worst glycemic control (A = 15.1%, B = 19.7%, C = 27.1% and D = 37.7%) ( $p < 0.05$ ). Older patients had worse glycemic control (A = 51.8 years, B = 59.4, C = 64 and D = 67.7) ( $p < 0.05$ ). Likewise, patients with a history of hypertension (43.9%), or DM (25.9%), presented worse glycemic control ( $p < 0.05$ ). The mean BMI was higher in the worst glycemic control groups (D = 28.9, C = 28, B = 27.2, A = 26.1) ( $p < 0.05$ ).

**Conclusion:** Although the current guidelines recommend controlling the critical patient's blood glucose below 150 mg/dL, more than a third of patients had higher blood glucose levels. In our series, hyperglycemia was associated with higher mortality. Older patients, with higher BMI and the presence of comorbidities such as hypertension or DM, had worse glycemic control.

**Disclosure of Interest:** None declared.

## P159

### ASSOCIATIONS OF VITAMIN D STATUS WITH SEVERITY OF ILLNESS AND MORTALITY IN COVID-19 PATIENTS ADMITTED AT ST. LUKE'S MEDICAL CENTER QUEZON CITY, APRIL TO SEPTEMBER 2020

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**Rationale:** This study aims to determine whether baseline vitamin D status in newly admitted COVID-19 patients is associated with a severe disease course and mortality.

**Methods:** This retrospective study included newly admitted RT-PCR confirmed COVID-19 adult patients with baseline serum vitamin D (VitD) levels from April to September 2020. Suboptimal VitD was defined by 25-hydroxy vitamin D levels based on current guidelines as: VitD insufficiency is equal to or more than 20ng/ml to 30ng/ml and VitD deficiency is less than 20ng/ml with a severely deficient subgroup defined as less than 12ng/ml. Classification of COVID-19 infection was based on CDC criteria and severe disease course were those that belong to the severe and critical categories of COVID-19 classification or those who had any need for respiratory support and/or critical care treatment at any point from admission to discharge. Mortality is based on designated disposition of death from any cause upon discharge. Severe disease course and disposition of death upon discharge were defined in each VitD status group. Data analysis was applied to measure associations of baseline VitD status in COVID-19 patients with outcomes – severe disease course and death.

**Results:** A total of 192 newly admitted COVID-19 patients (mean [SD] age, 61.33 [16.22] years; 101 [52.6%] men, 91 [47.4%] women; and 106 [55.2%] 65 years and above had baseline VitD level measured upon admission. VitD status of the patients was categorized as sufficient - 39 patients (20.31%), insufficient - 81 patients (42.19%) and deficient - 72 patients (37.5%) with a severely deficient subgroup - 11 patients (5.73%).

Overall, majority of patients – 79.69% had suboptimal VitD levels of less than 30ng/ml. When each VitD status group was considered, the VitD deficient group had the greatest number of patients that had a severe disease course at 69.44% and even a higher rate of 81.82% in the severely deficient subgroup.

Similarly, most of the patients (80%) with death as outcome did not have VitD levels within the normal range, where 40% of those who died were VitD insufficient and 40% were VitD deficient. When each VitD status was considered, highest rate of death was seen in the VitD deficient group at 22.22% with a higher rate of 36.36% noted in the severely deficient subgroup. When both outcomes were considered, the highest rate of mortality among those that had a severe disease course was in the severely deficient subgroup at 44%.

Overall calculations regarding the associations of being not sufficient in baseline vitamin D levels with a severe disease course ( $P=0.830$ ) and mortality ( $P=0.956$ ) in newly admitted COVID-19 patients did not reach statistical significance when compared to the vitamin D sufficient group. However, when each VitD status group was analyzed, an increasing gradient was noted with a strongest correlation seen in the severely deficient subgroup and both outcomes – severe disease course (insufficient  $P=0.714$ ; deficient  $P=0.562$ ; severely deficient  $P=0.210$ ) and death (insufficient  $P=1.00$ ; deficient  $P=0.785$ ; severely deficient  $P=0.690$ ).

**Conclusion:** In this single-center, retrospective study, baseline VitD insufficient status and VitD deficient status were not associated with increased risk for a severe COVID-19 disease course and death. Findings of suboptimal baseline VitD levels in the majority of patients suggests, that rational VitD supplementation in COVID-19 patients to achieve normal levels may be beneficial given its general safety and cost. Randomized trials and a larger population size are recommended to further elucidate the potential associations of VitD levels and COVID-19 outcomes observed in this study.

**Disclosure of Interest:** None declared.

## P160

### HYPOPHOSPHATEMIA AND REFEEDING SYNDROME AFTER ICU ADMISSION: THE POTENTIAL NEGATIVE IMPACT ON OUTCOME IN INTENSIVE CARE UNIT PATIENTS

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**Rationale:** Intensive care unit (ICU) patients often experience electrolyte imbalance in general and hypophosphatemia (hP) in particular. hP is found to be highly correlated with refeeding syndrome (RS) This study aimed to examine the occurrence of hP after ICU admission and initiation of enteral feeding on morbidity and mortality.

**Methods:** 275 medical-surgical ICU patients were retrospectively obtained from the patient data management system and divided into 3 groups: A-normal phosphate level (2.5–4.5mg/dL; n = 63), B-low phosphate level (<2.5mg/dL; n = 102), C- high phosphate level (>4.5mg/dL; n = 90). Demographic data and phosphate as other electrolyte were obtained at days 0, 1, 2, 3 and 4. Length of ventilation (LOV), length of stay (LOS), and 28 days mortality were noted. Statistical analysis used T-Test for independent samples and Pearson correlation between variances. The Helsinki committee approved the study.

**Results:** Mean age was 57 $\pm$ 20.3 years, APACHE II score was 20.4 $\pm$ 7.4 and not significant between groups. No significant difference was found between the three groups in LOS [A = 11.5  $\pm$  9.1; B = 12.3 $\pm$  9.2; C = 12.0 $\pm$ 12.0 (days)]. LOV in group B, was longer (14.0 $\pm$ 10.0 days) in the maximum caloric intake group compared to the reduced caloric intake group [(8.0 $\pm$ 7.0 days),  $p < 0.05$ ]. As well in group B, those who received dietary intake higher than 50% of the recommended intake had a longer LOS (14.0 $\pm$ 10.0 days) than those who received caloric intake lower than 50% of the recommended daily intake (10.0 $\pm$ 8.0 days) ( $p < 0.006$ ). No significant difference was found in mortality rate between groups.

**Conclusion:** hP and RS could result in complications such as increased length of hospitalization and mechanical ventilation. The association between high calorie intake and low phosphate levels is a main factor. Monitoring the ICU patients together with energy modulation should be a main concern for the improvement of patient's outcome.

**Disclosure of Interest:** None declared.

## P161

**IMPACT OF A SIMPLIFIED ICU NUTRITION PROTOCOL DURING THE 1ST WAVE OF THE COVID-19 PANDEMIC**

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**Rationale:** The COVID-19 pandemic led to a major increase in the number of patients in the intensive care unit (ICU) with huge organizational challenges. Therefore, a pragmatic approach with a simplified nutrition protocol (SNP) was needed to maintain quality of care. This observational retrospective study aimed to evaluate the impact of the SNP on the quality of nutrition therapy for critically ill COVID-19 patients.

**Methods:** All COVID-19 patients with a minimum 4 days stay in the ICU of the Geneva University Hospitals (March 9 to May 19, 2020) were included. The nutritional outcomes since day 4 were compared between patients admitted to the ICU before and after the implementation of the SNP. Patients whose ICU stay was across the date of the SNP implementation were excluded from analysis.

**Results:** Out of 119 patients, 48 were included in the before-group and 24 in the after-group. The mean age was 63.2 ( $\pm$  SD 12.7) years and 76% were men. As shown in the table, calories and proteins provided by nutrition therapy and the % of days in the energy target increased after SNP implementation. No significant difference was observed in % of days in the protein target.

Mean $\pm$ SD	SNP before-group (n=48) (March 9 – April 5, 2020)	SNP after-group (n=24) (April 6 – May 19, 2020)	p-value
Total calories provided, kcal/d (including propofol and glucose)	1070 ( $\pm$ 505)	1357 ( $\pm$ 396)	0.018
Total proteins provided, g/d	37 ( $\pm$ 18)	51 ( $\pm$ 17)	0.002
% of days in the energy target (80-100%)	11 ( $\pm$ 15)	20 ( $\pm$ 17)	0.021

**Conclusion:** The total daily calorie and protein intake as well as the percentage of days in the energy target increased significantly after implementing the SNP. Further nutrition therapy improvements with better protein coverage are needed to assess the impact of this approach on patients' clinical outcomes.

**Disclosure of Interest:** None declared.

## P162

**NUTRITIONAL ADEQUACY IN MECHANICALLY VENTILATED COVID-19 PATIENT: ARE DIFFERENT FROM OTHER CRITICALLY ILLNESS PATIENTS?**

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**Rationale:** Enteral feeding intolerance is common during the early and late acute phases of critical illness. Early experience with COVID-19 patients suggests that gastrointestinal symptoms are common and associated with greater severity of illness. This study aims to assess the nutritional adequacy of energy, protein and prescribed versus administered volume of enteral nutrition in mechanically ventilated (MV) COVID-19 patients and compared with critically ill non COVID-19 patients.

**Methods:** We conducted a retrospective review of adult patients admitted on the COVID-19's Intensive Care Unit (ICU) between March 2020 and April 2021. The protein and energy adequation (% of goal delivered) and digestive symptoms (diarrhea, vomiting and bloating) were evaluated and after compared with patients in non Covid-19 ICU.

**Results:** We analyzed 302 eligible patients, 227 in COVID-19 group and 75 in non COVID-19 group. The mean adequacy of energy were 80% in both groups and protein 82% (IQR 1 - 149%) in COVID-19 group and 72% (IQR 0 – 138%) in non COVID-19 ( $p=0.04$ ). Only bloating was significant higher in non COVID-19 patients (6.6% x 3.5%,  $p= 0.0001$ ). There were no difference in vomiting or diarrhea.

**Conclusion:** Critically ill patients with COVID-19 have a good tolerance of enteral nutrition therapy, maybe even better than other critically ill patients non COVID.

**Disclosure of Interest:** None declared.

## P163

**TOLERABILITY OF ENTERAL NUTRITION IN EXTRACORPOREAL MEMBRANE OXYGENATION AND COVID-19**

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**Rationale:** The use of veno-venous extracorporeal membrane oxygenation (vv-ECMO) is increasing during COVID-19 pandemic. Previous studies are controversy about tolerance of enteral nutrition to providing adequate nutrition support for patients on vv-ECMO. We aimed to evaluate the tolerance and adequation of enteral nutrition (EN) therapy in vv-ECMO COVID-19 patients compared with COVID-19 patients without vv-ECMO.

**Methods:** We conducted a retrospective review of adult patients admitted on the COVID-19's Intensive Care Unit (ICU) between March 2020 and April 2021. The protein and energy adequation (% of goal delivered) and ade-

quation of prescribed versus administered volume of enteral nutrition were evaluated in vv-ECMO and non vv-ECMO patients.

**Results:** We analyzed 126 eligible patients, 29 in vv-ECMO group and 97 in non vv-ECMO group. The mean age was 63 (SD 13,12) and 40% were obese. Mean energy were 85% (IQR, 4 - 129%) in vv-ECMO patients and 81% (IQR, 1 - 149%) in non vv-ECMO patients ( $p 0.056$ ) and protein 87% (IQR, 3 e 168%) in vv-ECMO and 84% (IQR, 3 e 190%) in non vv-ECMO ( $p = 0.04$ ). The adequacy between prescribed versus administered volume of enteral was greater in vv-ECMO group 84% (IQR, 5 e 100) versus 79% (IQR 1 – 100),  $p 0.004$ .

**Conclusion:** Adequate energy and protein delivery during vv-ECMO is possible and EN is safe and well-tolerated during ECMO. Prospective studies investigating optimal feeding in this patient cohort are required.

**Disclosure of Interest:** None declared.

## P164

**VITAMIN D STATUS OF CRITICALLY ILL PATIENTS WITH COVID-19**

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**Rationale:** Vitamin D may enhance the immune response against respiratory viruses. Vitamin D treatment might decrease the incidence of viral respiratory tract infections in patients with vitamin D deficiency<sup>(1)</sup>. NICE guidance<sup>(2)</sup> concluded further research is required to confirm the impact of vitamin D on COVID-19 and studies are currently in progress. It is not common practice to test vitamin D status on admission to intensive care

units (ICU). We sought to determine the vitamin D status of acutely severe respiratory failure patients presenting with COVID-19 in a large tertiary ICU in the UK.

**Methods:** We reviewed 99 consecutive patients with COVID-19 admitted to ICU between November 2020 and April 2021. All required mechanical ventilator support. Serum concentration of 25 hydroxyvitamin D was measured using a tandem mass spectrometer. Deficiency was considered if serum concentration was <25nmol/litre. Vitamin D supplementation was administered to all patients with recognised deficiency. This retrospective review was conducted with institutional approval and no patient consent was required.

**Results:**

- 44% (44/99) of patients had vitamin D levels tested
- 48% (21/44) of those tested were classed as deficient
- Mean age: deficient 48 years (SD ±9 years), non-deficient 51 years (SD ±11 years)
- Mean Body Mass Index (BMI): deficient 29.6 kg/m<sup>2</sup> (SD ±7.4), non-deficient 28.7 kg/m<sup>2</sup> (SD ±8.1)
- Incomplete data for ethnicity of patients so unable to compare between groups
- Average time from admission to blood test result = 14 days (range 1-57 days)

**Conclusion:** Vitamin D deficiency was common (48%) in a population of adult patients with severe respiratory failure due to COVID-19. Testing vitamin D status is simple and relatively low cost (£16.45/test). Treating vitamin D deficiency in these patients might be of value. We conclude that routine testing of vitamin D status of COVID-19 critical care patients may be of benefit.

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**Disclosure of Interest:** None declared.

**P165**

**IMPACT OF MEDICAL NUTRITION THERAPY ON CLINICAL OUTCOMES IN ADULT CRITICALLY ILL INTENSIVE CARE UNIT (ICU) PATIENTS IN EUROPE: RESULTS FROM THE EUROPN STUDY**

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**Rationale:** EuroPN characterised current medical nutrition therapy in critically ill adults with ICU length of stay ≥5 days in Europe and assessed associations between nutrition and clinical outcomes.

**Methods:** Patient data on caloric and protein intake was collected in a multinational, prospective cohort study until either day 15 of ICU stay, day of ICU discharge or death, then followed up until day 90. Associations between different daily caloric and protein intake categories (low: <10

kcal/kg/d, <0.8g/kg/d; medium: 10-20 kcal/kg/d, 0.8-1.2 g/kg/d; high: >20 kcal/kg/d; >1.2g/kg/d) with death and weaning from invasive mechanical ventilation (IMV) were evaluated using flexible additive cox-type models<sup>1</sup>.

**Results:** 77 ICUs in 11 countries recruited 1,172 patients (characteristics in Table 1). 84.3% of patients required ventilatory support, of which 87.4% IMV. Medium caloric and protein intake were significantly associated with earlier weaning from IMV compared to lower or higher intakes, based on daily adjusted hazard ratios over the study period. Medium caloric intake was significantly associated with reduced 90-day mortality risk vs. lower intake, unlike with higher intake. Association between protein intake and survival was non-significant.

**Table 1**

Patient characteristics.

Variable	Median [IQR]%
Age	66 [56;74]
BMI	27 [24;31]
APACHE II	19 [13;26]
SOFA	7 [4;10]
ICU LOS	10 [7;16]
ICU mortality	14%
Hospital mortality	21%
90-day mortality	24%

**Conclusion:** Medium caloric and protein intake was associated with significantly earlier weaning from IMV, and medium caloric intake with increased overall survival in critically-ill patients from the EuroPN study.

**References:**

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**P166**

**LONGITUDINAL PROFILES OF RESTING ENERGY METABOLISM OF ADULT COVID-19 PATIENTS IN INTENSIVE CARE**

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**Rationale:** Data on how the resting energy metabolism (REE) of ventilated adult COVID-19 changes over time and how well it can be predicted is lacking. Our **aims** were: 1) To investigate the performance of the ESPEN-formula for estimating REE compared to IC, accounting for inter- and intra-individual variability; 2) To investigate parameters influencing REE in ventilated adult patients with COVID-19.

**Methods:** Ventilated adults with PCR-confirmed COVID-19 that underwent at least 1 indirect calorimetry (IC) measurement in the ICU were retrospectively analyzed. Recordings of temperature, heart rate and RASS scores closest to the time of IC, anthropometric data, medication use, inflammatory lab values and ventilator settings were considered as potential covariates of REE through linear mixed modeling. The REE ESPEN-formula was defined as 25 kcal/kg/day and compared to IC using Bland-Altman limits of agreements (LOA) with 95% CI adjusted for repeated measurements. Odds ratio's (OR) for correct REE estimation and robust CI were calculated using Generalized Estimating Equations.

**Results:** A total of 100 IC measurements were obtained from 41 (29.3% female) patients. The median (Q1;Q3) number of IC measurements was 2 (1;3) with a median of 6 (2;7.5) days between successive measurements.

Patients had a median age of 64.33 (58.6;69.7) years at baseline, with a mean (SD) baseline BMI of 30.5 (27.4;32.8) kg/m<sup>2</sup>. The median ICU and ventilator day at time of first IC measurement were respectively 7 (5;14) and 6 (3;14). 70/100 IC's did not fall in the interval of 20-25 kcal/kg/day, coinciding with 32 (56%) different patients. The bias of the ESPEN-formula was -164 kcal/day with lower LOA -1628 (-2142;-1281) kcal/day and upper LOA 1301 (954;1815) kcal/day. Correct REE estimation was associated with RASS score (95% IC OR 0.87;0.99) and ICU day (1.09;2.16). REE was significantly predicted by height ( $\beta=32.5$ ;  $p<0.01$ ), albumin ( $\beta=26.6$ ;  $p=0.058$ ), WBC ( $\beta=23.1$ ;  $p=0.009$ ), temperature ( $\beta=131.4$ ;  $p=0.039$ ), minute volume ( $\beta=41.8$ ;  $p=0.037$ ) and ICU day ( $\beta=-7.1$ ;  $p=0.048$ ).

**Conclusion:** REE in ventilated adults with COVID-19 is characterized by a high intra- and inter-individual variation and poorly predicted by the ESPEN equation. REE varies over time and depends on inflammatory and anthropometric parameters.

**Disclosure of Interest:** None declared.

## P167

### THORACIC SARCOPENIA AS A PREDICTIVE FACTOR OF SARS-COV2 OUTCOMES

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**Rationale:** Evaluation of CT sarcopenia as a predictor of intensive care hospitalization during SARS-COV2 infection.

**Methods:** Single-center retrospective study of patients admitted to hospital with SARS-COV2 infection. The estimation of muscle mass (muscle area and skeletal muscle index (SMI)) for sarcopenia, measurement of muscle density for muscle quality and body adiposity, were based on CT views at the T4 and L3 levels measured at admission. Demographic data, percentage of pulmonary parenchymal involvement as well as the orientation of patients during hospitalization and the risk of hospitalization in intensive care were collected.

**Results:** A total of 162 patients hospitalized for SARS-COV2 infection were included (92 men/70 women, average age 64.6 years, BMI of 27.4 kg/m<sup>2</sup>). Muscle area at L3 was significantly associated with patient's pejorative outcomes (124.4cm<sup>2</sup> [97; 147] vs 141.5 cm<sup>2</sup> [108; 173]) ( $p = 0.007$ ), as was a lowered SMI (76% vs 38%  $p < 0.001$ ) and the muscle area measured in T4 (OR = 0.98 [0.97; 0.99]), ( $p = 0.026$ ). Finally, abdominal visceral fat area at L3 was also associated with a higher risk of hospitalization in intensive care (249.4cm<sup>2</sup> [173; 313] vs 147.5cm<sup>2</sup> [93.1; 228]) ( $p < 0.001$ ).

	Ajusted Odds-Ratio*	p
<i>a. Adjustment</i>		
Muscle density L3	0.98 [0.94 ; 1.03]	0.5
Muscle surface L3	0.97 [0.95 ; 0.98]	<0.001
SMI	5.32 [1.90; 14.87]	0.001
SMD	1.81 [0.64 ; 5.15]	0.26
Superficial fat L3	0.98 [0.93 ; 1.05]	0.69
Visceral fat L3	1.01 [1.001 ; 1.02]	0.015
Muscle density T4	0.98 [0.926 ; 1.04]	0.5
Muscle surface T4	0.98 [0.97 ; 0.99]	0.004
*After adjusting to sex, BMI, percentage of lung damage and associated pulmonary embolism		
<i>b. Comparison of T4 and L3 muscle surface area</i>		
Muscle surface T4	0.99 [0.98 ; 1.01]	0.87
Muscle surface L3	0.97 [0.95 ; 0.99]	0.006
Sex	6.92 [2.1 ; 22.82]	0.001
BMI	1.11 [1.01 ; 1.21]	0.026
Percentage of lesion	1.08 [1.05 ; 1.11]	<0.0001
Pulmonary embolism	0.66 [0.05 ; 8.01]	0.73

SMD : Skeletic Mass Density ; SMI : Skeletic Mass Index

**Conclusion:** Thoracic and abdominal sarcopenia are independently associated with an increased risk of hospitalization in intensive care unit, suggesting the need to assess sarcopenia on admission during SARS-COV2 infection.

**Disclosure of Interest:** None declared

## P168

### IATROGENIC MALNUTRITION IS MORE PREVALENT IN CRITICALLY ILL COVID-19 PATIENTS THAN IN NON-COVID-19 PATIENTS, ESPECIALLY WHEN DISCHARGED TO THE WARD

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**Rationale:** Adequate nutritional therapy has a positive effect on morbidity and mortality. International benchmarking (Nutritionday project) reveals large variation in caloric and protein intake of both critically ill and hospitalized patients (1). Both physiological (fever, heart rate, vasoactive medication) and organizational (personal protective equipment, limited resources) factors might influence treatment possibilities in COVID-19 patients admitted and discharged from ICU. We aimed to investigate whether COVID-19 patients have the same quality of care as their non-COVID counterparts.

**Methods:** Nutritional adequacy was prospectively studied in ICU patients, COVID and non-COVID with an ICU length of stay of 7 days or longer until hospital discharge or 8 weeks hospital stay. Nutritional needs were determined by indirect calorimetry (caloric target) and calculated on body weight (proteins) both during the patients' ICU stay and on the ward (conform the appropriate ESPEN guidelines). Nutritional therapy adequacy was defined by the ratio intake/needs and expressed in %. Statistical analysis was performed to compare both groups.

**Results:** Thirty-nine patients with a mean age of 62 years, 11 female and 28 male, with a mean BMI of 29kg/m<sup>2</sup> were followed during a time span from 7 to 63 days. The mean measured Resting Energy Expenditure was 2079 kcal/day (28 kcal/kg/day) in ICU and 2115 kcal/day (26 kcal/kg/day) in the ward for COVID-19 patients, 1764 kcal/day (23 kcal/kg/day) in ICU and 1461 kcal/day (18 kcal/kg/day) in the ward for non-COVID patients. The median observed overall daily intake was 1385 kcal and 70g of protein in COVID-19 patients, 1425kcal and 65g of protein in non-COVID patients. On a daily basis, the nutritional adequacy (intentional and non-intentional) was:

		ICU	Ward
Calories	COVID-19	70 %	50 %
	Non-COVID	81 %	70 %
Proteins	COVID-19	71 %	44 %
	Non-COVID	70 %	52 %

**Conclusion:** Patients hospitalized to ICU because of COVID-19 have a higher metabolism and a lower nutritional adequacy than their non-COVID counterparts. Barriers should be identified and overcome to be able to provide high-quality nutritional therapy and thereby alter the outcome of critically ill COVID-19 survivors, with an emphasis on their post-ICU phase.

#### References:

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## P169

**HIGH-PROTEIN INTAKE AND EARLY EXERCISE IN ADULT INTENSIVE CARE PATIENTS: A RANDOMIZED CONTROLLED PHASE III STUDY TO EVALUATE THE IMPACT ON FUNCTIONAL OUTCOMES**

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**Rationale:** We evaluated the efficacy of high protein intake and early exercise versus standard nutrition care and routine physiotherapy on the outcome of critically ill patients.

**Methods:** We randomized mechanically ventilated patients expected to stay in the intensive care unit (ICU) for at least 4 days. We used indirect calorimetry to determine energy expenditure and guide caloric provision to the patients randomized to the high protein and early exercise (HPE) group and the control group. Protein intakes were 1.48 g/kg/day and 1.19 g/kg/day medians respectively; while the former was submitted to two daily sessions of cycle ergometry exercise, the latter received routine physio-

**Table 1**

Nutritional variables.

	D1 (ICU admission) N=1152	D2 N=1152	D5 N=1059	D10 N=543	D14 N=349
Caloric intake (kcal/kg)	0.0 [0;4.3]	9.4 [2.3;16.3]	19.7 [12.2;25.9]	22.4 [16.3;27.8]	24.3 [18.8;29.1]
Protein intake (g/kg)	0.0 [0.0;0.0]	0.3 [0.0;0.8]	0.9 [0.5;1.3]	1.1 [0.7;1.5]	1.2 [0.9;1.5]

Data expressed as Median [IQR]

therapy. We evaluated the primary outcome physical component summary (PCS) score at 3 and 6 months) and the secondary outcomes (handgrip strength at ICU discharge and ICU and hospital mortality).

**Results:** We analyzed 181 patients in the HPE (87) and control (94) group. There was no significant difference between groups in relation to the calories received. However, the amount of protein received by the HPE group was significantly higher than that received by the control group ( $p < 0.0001$ ). The PCS score was significantly higher in the HPE group at 3 months ( $p = 0.01$ ) and 6 months ( $p=0.01$ ). The hospital mortality was expressively higher in the control group ( $p=0.006$ ). We found an independent association between age and 3-month PCS and that between age and group and 6-month PCS.

**Conclusion:** This study showed that a high-protein intake and resistive exercise increase the survival rate and the physical quality of life of critically ill patients.

**Disclosure of Interest:** None declared

## P170

**MEDICAL NUTRITION THERAPY IN ADULT CRITICALLY-ILL INTENSIVE CARE UNIT (ICU) PATIENTS IN EUROPE: RESULTS FROM THE EUROPN STUDY**

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**Rationale:** EuroPN assessed nutritional intake and balance in critically ill adults with ICU length of stay  $\geq 5$  days in Europe.

**Methods:** Multinational, prospective cohort study analyzed daily and cumulative caloric, protein intake and balance (ratio intake to predefined targets based on 2019 ESPEN Critical Care Guideline<sup>1</sup>) for all observation days until ICU day 15, day of ICU discharge or death.

**Results:** 77 ICUs in 11 countries recruited 1,172 patients. Median [IQR] values for age 66 [56;74] years, BMI 27 [24;31], APACHE II 19 [13;26], SOFA 7 [4;10]. Median ICU length of stay was 10 [7;16] days. 58% of patients received enteral nutrition (EN), 46% parenteral nutrition (PN), and 24% combined EN+PN. Median start of EN/PN was on ICU day 2. 64% received  $>70\%$  of caloric and 45%  $>70\%$  of protein ESPEN targets. Most patients received 10-20 kcal/kg/d (48%) and  $<0.8$  g/kg/d protein (56%). Cumulative median caloric and protein balances were 83% and 65% of targets, with a slow ramp-up during first ICU days. EN+PN were more effective in reaching ESPEN targets than EN or PN alone.

**Conclusion:** In patients treated in European ICUs, caloric intake from day 5 was aligned to ESPEN Guideline targets, unlike protein intake, which was consistently below expected.

**References:**

Singer P, Blaser AR, Berger MM, et al. ESPEN guideline on clinical nutrition in the intensive care unit. *Clin Nutr.* 2019 Feb;38(1):48-79

**Disclosure of Interest:** M. Matejovic Consultant for: Fresenius, Speakers Bureau of: Fresenius, O. Huet: None declared, K. Dams Consultant for: Fresenius, Speakers Bureau of: Baxter, Nestlé, G. Elke Consultant for: Cardinal Health, Nutricia, Speakers Bureau of: Baxter, C. Vaquerizo Alonso Consultant for: Vegenat, Speakers Bureau of: Nestlé, Abbott, Vegenat, A. Csomos: None declared, L. Krzych: None declared, R. Tetamo: None declared, Z. Puthuchear: None declared, O. Rooyackers: None declared, I. Tjäder: None declared, W. Hartl: None declared, H. Kuechenhoff: None declared, M. Hiesmayr Consultant for: Baxter, Speakers Bureau of: Nestlé, Baxter, SSPC.

## P171

**MUSCLE LOSS AFTER ACUTE SEVERE DYSPHAGIC STROKE INITIAL RESULTS OF THE MUSCLE ASSESSMENT IN STROKE STUDY IN TURKEY-MASS-TR**

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**Rationale:** The clinical spectrum, causes and prognostic significance of in-hospital skeletal muscle mass loss in patients with acute ischemic stroke have not been sufficiently elucidated.

**Methods:** MASS-TR is a multi-center, prospective, observational study performed at 8 Turkish University Hospitals between January 2019 and June 2020. Adult patients with acute severe (NIHSS  $> 8$ ) stroke needing tube feeding were included. Computed tomographic (CT) imaging of the mid-arm, L3 vertebrae and mid-thigh muscles was performed in first 48 hours and on fourteenth day. Systemic variables such as daily caloric and

protein intake, post-stroke infection development, mechanical ventilation need, clinical severity scores including NIHSS, NUTRIC, SOFA and APACHE were determined. Muscle cross sectional areas (CSA) were measured with Image-J and percentage changes were calculated. More than 10% CSA reduction was considered as a muscle mass loss (MML) criterion.

**Results:** Of 104 patients completed the 2-week study period, significant MML was detected in 73% of arms, 49% of thigh muscles, 47% of psoas in paralyzed side, 46% in arms, 48% in thighs and 42% in psoas in non-paralytic side. Significant CSA decrease was detected in 22% of abdominal wall and 40% of paraspinal muscles. Average daily calorie and protein deficit showed strong positive correlation with arm muscle CSA decrease on both sides ( $p < 0.05$ ). While thigh muscle CSA decrease and protein/calorie deficit failed to show a significant correlation, calorie deficit was correlated significantly with CSA decrease of abdominal wall and paralytic side psoas muscles, protein deficit with abdominal wall muscle loss ( $p < 0.05$ ). In multivariate analysis, infections, intubation, sepsis, DM, APACHE and NUTRIC scores were defined as significant determinants of MML. Features of lower extremity myoedema and overall feasibility of muscle CT were determined.

**Conclusion:** MASS-TR demonstrated objective muscle mass loss in most of the acute severe ischemic strokes. This is more pronounced on the upper limb and ipsilateral side, but appears to be generalized. The most likely compensatory variable for this loss is the prevention of calorie and protein deficiencies in tube feeding.

**Disclosure of Interest:** None declared

## P172

### EATING DESIRE AND EXPERIENCES OF THIRST, HUNGER, NAUSEA AND PAIN IN TRACHEOSTOMIZED ICU PATIENTS, AN EXPLORATIVE STUDY

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**Rationale:** Critically ill tracheostomized patients are prone to experience loss of appetite, thirst, nausea, dysphagia and aspiration during recovery. These symptoms (or adverse events) all contribute to increased risk of malnutrition, thus ensuring adequate nutritional intake is important. The aim of this study was to explore eating desire, ability to swallow and experience of thirst, hunger, nausea as well as pain in ICU tracheostomized patients.

**Methods:** This was an explorative study including 30 tracheostomized patients. A questionnaire design was used to report the patients' desire to eat and degree of thirst, hunger, nausea, pain using either a four-point categorical scale (None, little, moderate, very) with visual figures or a numeric rating scale (None/very). Ability to swallow was assessed using The Facial-Oral Tract Therapy Swallowing Assessment of Saliva combined with the Modified Evan's Blue Dye test.

**Results:** A total of 27 patients experienced a desire to eat, 30 patients felt thirsty, 18 patients felt hunger, 10 patients experienced nausea and 21 patients felt pain. Additionally, three patients were unable to swallow, nine patients were able to swallow modified texture and 18 patients had normal swallowing function.

**Conclusion:** The study found that the majority of tracheostomized ICU patients had sensory needs for food and drink intake (desire to eat, thirst and hunger) despite also having feelings of nausea and pain. Further, the clinical assessment of swallowing ability indicates that oral intake was possible for 27 out of 30 patients. The study Results indicate that tracheostomized patients may have unfulfilled needs for oral food and drink intake. This should be further investigated in larger populations and addressed through feasible interventions in clinical practice.

**Disclosure of Interest:** None declared

## P173

### FEASIBILITY OF ACHIEVING DIFFERENT PROTEIN TARGETS USING A HIGH-PROTEIN ENTERAL FORMULA IN CRITICALLY ILL PATIENTS

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**Rationale:** Combining energy and protein targets during the acute phase of critical illness is challenging. Energy should be provided progressively to reach targets while avoiding overfeeding and ensuring sufficient protein provision. This prospective study evaluated the feasibility of achieving protein targets guided by 24-hour urinary nitrogen excretion while avoiding overfeeding when administering a high protein-to-energy ratio enteral nutrition (EN) formula.

**Methods:** Critically ill adult mechanically ventilated patients with an APACHE II score  $> 15$ , SOFA  $> 4$  and without gastrointestinal dysfunction received EN with moderate calorie content for 7 days. Protein need, determined by 24-h urinary nitrogen excretion, was targeted at  $\leq 1.2$  g/kg (Group A, N=10) or 1.5 g/kg (Group B, N=22). Variables assessed included nitrogen intake, excretion, balance; resting energy expenditure (REE); phase angle (PhA); gastrointestinal tolerance of EN.

**Results:** Demographic characteristics of groups were similar. Protein target was achieved using urinary nitrogen excretion measurements. Nitrogen balance worsened in Group A but improved in Group B. Daily protein and calorie intake and balance were significantly increased in Group B compared to Group A. REE was correlated to PhA measurements. Gastric tolerance of EN was good.

**Conclusion:** Achieving the protein target using urinary nitrogen loss was feasible in this hypercatabolic population. Reaching a higher protein target was associated with improved nitrogen balance and a better energy intake without overfeeding. PhA appears to be related to REE and may reflect metabolism level, suggestive of a new phenotype for nutritional status.

**Disclosure of Interest:** P. Singer Grant / Research Support from: Fresenius-Kabi, I. Bendavid: None declared, L. Stadlander: None declared, I. Benarye: None declared, I. Kagan: None declared

## P174

### APPLYING LEARNING FROM 1ST TO THE 3RD WAVE OF THE COVID19 PANDEMIC: NUTRITIONAL PROVISION IN CRITICAL CARE

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**Rationale:** The aim of this analysis was to compare route and adequacy of nutrition support in patients with COVID19 admitted to an intensive care unit (ICU) between March-June 2020 (T1) compared to January-April 2021 (T2).

**Methods:** Parameters related to nutrition support were collected from the records of all patients admitted to ICU with COVID19 with length of stay of  $\geq 7$  days on mechanical ventilation requiring artificial nutrition support. Data was collected during the late acute phase which was defined as day 4-7 post intubation. Energy and protein intake was compared to calculated estimated nutritional requirements.

**Results:** 35 patients met the inclusion criteria in T1, 94% were on enteral nutrition (EN), 3% parenteral nutrition (PN) and 3% EN+PN. In T2, there were 54 patients (92% EN, 2% PN and 6% EN+PN).

Of patients who achieved  $< 70\%$  of energy and protein requirements in T1 ( $n=17$ ) 35% had constipation or ileus and 47% had GI intolerance (high gastric residual volumes or vomiting). In T2 ( $n=19$ ), 84% experienced constipation or ileus and 63% had GI intolerance. 35% of patients in T1 had hypernatraemia vs. 47% in T2 and 41% in T1 had hyperglycaemia vs. 100% in T2 despite only 12% and 32% of patients respectively having a history of diabetes.

	March – June 2020 (N=35)	January – April 2021 (N=54)	P value
Energy (% requirements met)	85 (24)	96 (23.0)	0.022
Protein (% requirements met)	68 (28)	79 (26.1)	0.076

**Conclusion:** Despite a higher incidence of GI intolerance in T2, a statistically significant improvement in energy targets was noted. There was a clinically significant trend in protein intake which may be attributed to prompt initiation of modular protein supplements or perhaps an earlier

transition from fat-based sedation. Meeting protein requirements while preventing overfeeding remains a challenge in the ICU.

**Disclosure of Interest:** None declared.

## P175

### THE PROGNOSTIC VALUE OF MODIFIED NUTRIC SCORE FOR PATIENTS IN CARDIOTHORACIC SURGERY RECOVERY UNIT: A RETROSPECTIVE COHORT STUDY

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**Rationale:** Malnutrition is highly prevalent in critically ill patients. Heyland and his colleagues introduced the modified Nutrition Risk in the Critically ill (mNUTRIC) score to evaluate the nutritional risk of patients in intensive care unit (ICU). It was reported that mNUTRIC score was a predictive factor of mortality for patients in medical or mixed ICU, whereas the relationship between mNUTRIC and prognosis of patients in cardiothoracic surgery recovery unit (CSRU) is unclear and related researches are limited.

**Methods:** We conducted this retrospective cohort study to explore the value of mNUTRIC score in CSRU patients. We identified totally 4,059 patients from the Multiparameter Intelligent Monitoring in Intensive Care III (MIMIC III) database.

**Results:** The optimal cut-off value of mNUTRIC score was 4, and a total of 1,498 (36.9%) patients were considered at high nutritional risk (mNUTRIC  $\geq 4$ ). A multivariate logistic regression model indicated that patients at high nutritional risk have higher hospital mortality compared with those at low nutritional risk (OR=2.49, 95% CI: 1.32-4.70,  $p=0.005$ ). Further, a Cox regression model was established adjusted for age, white blood cell (WBC), and body mass index (BMI). The Kaplan Meier curve indicated that patients at high nutritional risk have poorer 365-days (HR=1.76, 95% CI: 1.30-2.37,  $p<0.001$ ) and 1000-days (HR=2.30, 95% CI: 1.87-2.83,  $p<0.001$ ) overall survival.

**Conclusion:** The mNUTRIC score could not only predict hospital mortality but also be an independent prognostic factor for long-term survival in CSRU patients. More well-designed clinical trials are needed to verify and update our findings.

**Disclosure of Interest:** None declared.

## P176

### SERUM SELENIUM STATUS AMONG CRITICALLY ILL SURGICAL PEDIATRIC PATIENTS

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**Rationale:** Selenium plays a pivotal role in the endogenous antioxidant defense mechanism and inflammatory pathways. Previous studies reported that most of critically ill children have low serum selenium levels upon the pediatric intensive care unit (PICU) admission time. Decreased serum levels of selenium were associated with increased incidence of multiple organ failure and deteriorated clinical outcomes. There is an obvious lack of evidence investigating the acute changes of serum selenium concentrations following acute stress.

**Methods:** This prospective cross-sectional study was carried out at the PICU of Akbar pediatric hospital in Mashhad-Iran in 2019. A total of 65 children who were candidate for major gastrointestinal surgeries and PICU admission following their surgeries were enrolled. Serum selenium concentration was measured in pre and post stages of the surgical controlled stress.

**Results:** The median concentrations of pre and post-operative (day -1, +1) serum selenium in the studied patients were 38.49 and 38.9 ng/mL, respectively (P-value  $>0.05$ ). Only 21.5% and 18.4 % of participants

(N=14,12) had optimal concentrations of selenium ( $>50$  ng/mL) before and after the surgery induced acute stress, respectively (P-value  $>0.05$ ).

Variables	Before surgery state (N= 65)	Post-operation state (N= 65)	P-value
Serum selenium concentration; Median value	38.49	38.9	0.1
Optimal concentrations of selenium; number (percent)	14 (21.5)	12 (18.4)	0.2

**Conclusion:** According to the findings of the present study and the Results of previous studies in Iran, selenium deficiency prior to the acute stress may be a major problem. Screening for the potential selenium deficiency prior to the major surgeries may be beneficial to improve the antioxidant defense system function as well as clinical outcomes in surgical critically ill children.

**Disclosure of Interest:** None declared

## P177

### FEEDING CRITICAL CARE PATIENTS: CAN INDIRECT CALORIMETRY HELP?

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**Rationale:** Recent guidelines support the use of indirect calorimetry (IC) to monitor and plan nutritional therapy in critical care patients. We aimed to: 1) compare energy requirements (ER) assessed through IC with those estimated using standard formulas; 2) compare estimated protein requirements (1,3 gr/Kg) with protein intake through artificial nutrition.

**Methods:** We conducted an observational study comprising 33 IC tests in a non-random sample of adult patients in an intensive care unit (ICU), selected on account of their eligibility for IC assessment, as proposed by the manufacturer of the Q-NRG+ CI device that was used. ER were measured by IC and estimated using patients' adjusted weight (AW) as follows: up to 3 days in ICU, ER=0.7x20KcalxAW; 4 to 7 days in ICU, ER=0.7x25KcalxAW; 8 or more days in ICU, ER=25KcalxAW. Patients were classified according to length of ICU stay: 2 days – early acute stage; 3–7 days – late acute stage;  $\geq 8$  days – rehabilitation stage.

**Results:** When IC was used, 12 patients were in early acute stage (Group A), 8 patients were in late acute stage (Group B), and 13 patients were in the rehabilitation stage (Group C).

We found statistically significant differences ( $p<0.05$ ) in ER using standard formulas and ER assessed by IC in all groups of patients. When compared with IC, standard formulas underestimated ER, on average, by  $486\pm 322$  Kcal in group A ( $p<0.001$ ) and by  $335\pm 360.1$  Kcal in group B ( $p<0.001$ ). In group C, mean underestimation was  $116\pm 496.8$  Kcal, but differences between the two methods were not statistically significant ( $p=0.418$ ).

Regarding protein, estimation also resulted in significantly higher ( $p<0.001$ ) requirements than the quantity that was able to be provided to patients. According to estimation, protein intake should have been higher, on average, by 86.3g (SD=27) in group A, by 43.7g (SD=40.4) in group B, and by 42.4g (SD=22.26) in group C. All intra-group differences between estimation and protein provided were statistically significant ( $p<0.001$  for groups A and C;  $p=0.018$  for group B).

**Conclusion:** According to our data, ER are significantly different according to the method used for estimation in early stage of illness during ICU stay. Although further studies are needed, strategies do improve nutritional support must be developed and IC can be a useful tool for monitoring ICU patients.

**References:**

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**Disclosure of Interest:** None declared.

## P178

## POSTPYLORIC DRUG ADMINISTRATION IN ENTERAL NUTRITION

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**Rationale:** The distal end of the feeding tube (FT) has an important role for drugs in terms of bioavailability, complications and interactions. This study was aimed to determine the drugs that are not appropriate for post-pyloric administration in patients followed by nutrition support team.

**Methods:** This study was retrospectively conducted in clinical nutrition unit of a university hospital. Patients records between January 2017–December 2020 was evaluated. Adult patients (≥18 years) with post-pyloric FT were included. The appropriateness of drugs that administered was assessed by using the information provided by the manufacturer, scientific databases and literature. The study was approved by the local Ethics Committee.

**Results:** Total of 2247 patients were evaluated during the study period and 65 (2.89%) of those were included; 36 (55.4%) of them were male, median age was 62 (range:22-91) and median follow up period was 15 days (range:7-30 days). Ten patients (15.4%) had FT related mechanical complications. While patients' 463 (28.52%) out of 1623 drugs administered via FT were evaluated, appropriate administration, administration without specific information and inappropriate administration were detected in 212 (45.78%), 211 (45.57%) and 40 (8.63%) drugs, respectively. Common inappropriate drugs were sucralfate (25%), folic acid (7.5%) and mycophenolate mofetil (5%). Drugs such as levofloxacin, rifampicin, levothyroxine, ciprofloxacin, warfarin were appropriate for administration through post-pyloric feeding, however nutrient-drug interactions were determined with them.

**Conclusion:** Almost half of the drugs were appropriate for post-pyloric administration. Considering the risks such as ineffectiveness or toxicity of the drugs, to provide optimal pharmaceutical and nutritional treatment together, drugs should be evaluated carefully before administration via post-pyloric FT.

**Disclosure of Interest:** None declared.

## P179

## BETTER NUTRITIONAL ADEQUACY IS ASSOCIATED WITH LOWER MORTALITY IN CRITICALLY ILL PATIENTS WITH COVID-19

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**Rationale:** A new virus has wiped out countless human lives in the past two years, while we are still learning how to better manage and identify prognostic factors. Critically ill patients are known to have worse prognosis when receiving less nutritional therapy than prescribed. This study aims to assess whether there is an association between adequacy of enteral nutritional therapy (ENT) and prognosis in critically ill patients with COVID-19.

**Methods:** A multicenter retrospective cohort study was conducted involving 5 general private hospitals in Brasília (Brazil). All patients over 18 years old who were admitted to the ICU by COVID-19 and needed ENT were included. Sex, age, BMI, adequacy of NET received were evaluated and correlated with mortality during hospitalization using the Chi-Square test.

**Results:** A total of 703 patients were evaluated, 58.9% of whom were male, and 66.7% over 60 years of age. The average BMI was 28.2 kg/m<sup>2</sup>, with the following distribution of nutritional status: malnourished (8.0%), eutrophic/overweight (53.1%), and obese (38.9%). In total, 62.5% of the patients received more than 80% of the prescribed ENT. The average hospital stay was 24.9 ± 16.8 days and the overall mortality was 61.3%. Mortality according to

nutritional status was: eutrophic/overweight 64.8% (RR 1.0), malnourished 87.5% (RR 1.07 95%CI 1.05 - 1.09) and obese 50.9% (RR 0.79 95%CI 0.61 - 1.02). Considering the adequacy of ENT, patients who received more than 80% had a mortality of 54.7% while patients who received less than 80% of the prescribed had a mortality of 72.3% (RR 1.12 95%CI 1.06 - 1.18).

Parameter	Mortality (%)	Relative risk (95%CI)	p
Mortalidade geral	61,3		
<b>Sex</b>			
Male	64,7	1,78 (1,62 – 1,95)	0,02
Female	56,4		
<b>Age</b>			
≥ 60 years	71,0	1,73 (1,44 – 2,08)	<0,0001
< 60 years	41,9		
<b>Nutritional status</b>			
Eutrophic/Overw.	62,4	1,0	
Malnourished	75	1,07 (1,05 – 1,09)	0,05
Obese	56,9	0,79 (0,62 – 1,02)	0,15
<b>Adequacy of ENT</b>			
< 80%	72,3	1,12 (1,06 – 1,18)	<0,0001
≥ 80%	54,7		

**Conclusion:** This retrospective analysis suggests an association with higher mortality in patients who received less than 80% of the prescribed ENT. Efforts to improve nutritional adequacy should be implemented in critically ill patients with COVID-19 to reduce the risk of mortality.

**References:**

Cereda E, Guzzardella A, Klersy C, et al. Early caloric deficit is associated with a higher risk of death in invasive ventilated COVID-19 patients. Clin Nutr. 2021 Mar 2:S0261-5614(21)00094-7.

**Disclosure of Interest:** None declared.

## P181

## IMPACT ON CALCULATED ENERGY REQUIREMENTS WHEN ESTIMATING HEIGHT USING ULNA LENGTH VERSUS VISUAL HEIGHT ESTIMATION FOR CRITICALLY ILL PATIENTS WITH COVID-19

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**Rationale:** Patients with COVID-19 admitted to Royal Papworth Hospital's Critical Care Unit (RPH) are critically ill and usually intubated upon arrival. Often height is unknown and cannot be measured accurately, so is estimated visually. Ulna length can also be used to estimate height, using BAPEN 2006 guidelines<sup>1</sup>.

Height is used to calculate body mass index (BMI); therefore height has an impact on calculated energy requirements since BMI is used to determine which weight is used within energy requirement calculations. Accurate energy requirements are vital to avoid the detrimental effects of over or underfeeding<sup>2</sup>.

Here we compare the difference between heights when estimated from ulna length (ulna ht) and estimated visually (est ht), and the impact of these estimations on calculated energy requirements.

**Methods:** 99 consecutive patients with COVID-19 were admitted to RPH during the UK's second wave (September 2020 - March 2021); patients were included in the analysis if they had both an ulna ht and est ht recorded.

Both height estimations were then used to calculate energy requirements, using 25-30 kcal/kg, depending on intubation status, BMI and haemofiltration.

**Results:** Of the 99 patients, 30 had data for both ulna ht and est ht. Ulna ht and est ht differed in 93% of the patients studied. Height used affected the calculated energy requirements in 77% of the patients; when using ulna ht, requirements of 16 patients increased by a mean of 101 kcal (SD ±76 kcal), the requirements of 7 patients did not change and the requirements of 7 patients decreased by a mean of 105 kcal (SD ±47 kcal).



**Conclusion:** The method of height estimation can affect calculated energy requirements. We conclude that ulna length is a simple method to adjunct visual height estimations until an objective measurement can be taken.

**References:**

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2. Zusman et al. *Resting energy expenditure, calorie and protein consumption in critically ill patients: a retrospective cohort study.* Critical Care. 2016;20(1):367.

**Disclosure of Interest:** None declared.

**P182**

**THE RESTING METABOLIC RATE IN CRITICALLY ILL PATIENTS IS ASSOCIATED WITH FAT/FAT FREE MASS RATIO BUT NOT WITH FAT FREE MASS**

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**Rationale:** The nutritional status of critically ill patients is evaluated by risk scores and assessed by measurements such as indirect calorimeter and bio-electrical impedance analysis. The functionality of patients surviving ICU is of great importance and surrogate markers can be muscle mass and strength. Muscle mass has a different metabolic profile than fat mass. We aimed to explore the associations between resting metabolic rate, body

	R1				R2				R3		Final tool
	Reviewed	Modified	Added	Removed	Reviewed	Modified	Added	Removed	Reviewed	Consensus achieved	
Knowledge items	34	13	01	02	14	04	00	01	04	01	32
Observational items	41	01	01	00	02	01	00	00	01	01	42

composition, nutritional status and muscle strength in critically ill patients surviving ICU.

**Methods:** Thirty-four critically ill adult patients who stayed >7 days at the intensive care unit of UZ Brussel, were assessed on day 7 of admission. The following outcomes were recorded: resting energy expenditure (measured by indirect calorimetry), phase angle, fat free mass (FFM) and fat/FFM ratio (measured by bio-electrical impedance analysis), nutritional status (Nutritional Risk Score), maximal handgrip strength (Martin Vigorimeter). Associations were explored by Pearson Correlation coefficient.

**Results:** Resting energy expenditure (1897 ± 873 kcal/day) was significantly associated (-.422, p=.03) with the fat/FFM ratio (0.47 ± 0.18) but not with FFM (59.0 kg ± 15.3) nor phase angle (4.05° ± 1.3). Only 7 patients were able to perform the maximal handgrip strength test at day 7 of ICU (40.0 kPa ± 22.1). For these patients, maximal handgrip strength was significantly associated (r = -0.44, p=0.01) with the Nutritional Risk Score (3.9±1.3).

**Conclusion:** In critically ill patients with prolonged ICU stay, resting energy expenditure was not associated with fat free mass but it was associated with the ratio between fat and fat free mass. A lower fat mass compared to fat free mass could be relevant to predict resting energy expenditure to guide nutritional therapy in the absence of indirect calorimetry. A higher maximal handgrip strength is correlated to a lower risk on malnutrition which is in line with clinical gut feeling.

**Disclosure of Interest:** None declared.

**P183**

**A TOOL FOR ASSESSING NURSES' KNOWLEDGE AND PRACTICES ON ENTERAL NUTRITION THERAPY;A MODIFIED DELPHI STUDY**

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**Rationale:** A culturally applicable tool for assessing nurses' knowledge and practices on enteral nutrition therapy is lacking in Sri Lanka. The objective was to adapt and validate a tool to assess nurses' knowledge and practices on enteral nutrition therapy, in caring for critically ill patients in Sri Lanka.

**Methods:** A three-step modified Delphi method was utilized. The tool was adapted in English with the original authors' permission<sup>1</sup>, following nursing and enteral nutrition guidelines in Sri Lanka. It had 34 knowledge assessment questions in 09 aspects on enteral nutrition and 41 items for observe feeding practice. Eight experts in community medicine, palliative care nursing, critical care medicine, and clinical nutrition from critical care and educational settings were invited. In round(R)1, review forms were emailed to the experts, asking to rate each item under 03 subheadings on a 1-5 Likert scale. Mean was calculated via SPSS statistics version 21. Agreement of 80% of the experts was taken as the cut off to remove an item. Mean of ≥03 was taken as agreement of the experts on cultural appropriateness and satisfactory judgmental validity of an item. If it was <03, modifications suggested by the experts were considered. Common terms used by the population to describe technical terms were replaced by culturally appropriate words or phrases as suggested by the experts. Iteration went up to 3 rounds until achieving consensus for all the items, and in R3, experts were contacted via Zoom or telephone for further opinion.

**Results:**

**Conclusion:** Modified Delphi method was appropriate in achieving judgmental validity through consensus for developing a culturally applicable research tool.

**References:**

1. Shahin MA, Mohamed WY, Sayed M. Nurses' Knowledge and Practices regarding Enteral Nutrition at the Critical Care Department of Al-Manial University Hospital in Egypt: Impact of a Designed Instructional Program. *J Am Sci.* 2012,8(11):397-405

**Disclosure of Interest:** None declared

**P184**

**INVESTIGATING NUTRITION AND FUNCTIONAL OUTCOME SEVERELY ILL ICU PATIENTS – THE "INFO"-STUDY**

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**Rationale:** For patients in the intensive care unit (ICU), especially for severely critically ill patients and their subgroups, uncertainty remains about the best medical nutrition therapy (MNT) and its influence on functional outcomes.

**Methods:** This single-center multi-ICU prospective observational study ("INFO", NCT04180852) evaluates the MNT of severely ill surgical ICU patients, who were in need of mechanical ventilation for more than 48 hours. The correlation between the MNT, clinical and functional outcomes was analyzed. Muscle mass, functional and quality-of-life outcomes were measured longitudinally at inclusion, ICU and hospital discharge and 30

days after discharge. Predefined subgroups were neurosurgery, abdominal surgery, cardiac surgery, elderly and obese patients.

**Results:** 98 patients (mean  $\pm$  standard deviation: age 65.26  $\pm$  12.04 years, 61% male, BMI 26.67  $\pm$  6.20 kg/m<sup>2</sup>, admission sequential organ failure assessment score [SOFA] Score 9.55  $\pm$  3.12) were recruited in 6 months. **Clinical outcomes:** durations in median [interquartile range]: ICU length-of-stay 28.0 [15.8 - 44.3] days; hospital length-of-stay 31.0 [20.0 - 56.0] days; mechanical ventilation 18.4 [8.5 - 31.9] days; noradrenalin 7.1 [3.6 - 15.9] days. Mortality: 31% (ICU), 34% (hospital), 47% (30 days after discharge).

**MNT:** During the ICU stay in the chronic phase (> day 7), energy delivery was 21.90 [18.16 - 27.14] kcal/kg/d and mean protein delivery was 0.93 [0.49 - 1.39] g/kg/d.

**Functional outcomes:** The evaluation of the functional and quality-of-life-outcomes and their correlation with the MNT is still ongoing, but Table 1 summarizes current Results. Patients experienced considerable increase in frailty as measured by the Clinical Frailty Scale, which did not recover 30 days after discharge, as well as progressive loss of muscle mass as measured by quadriceps thickness and mid-upper-arm circumference. Strength outcomes improved from ICU to hospital discharge as measured by 6-minute walk test, handgrip strength and quadriceps strength.

**Table 1.**

Functional outcomes presented as median [interquartile range] or mean  $\pm$  standard deviation. Abbreviations: CFS: Clinical Frailty Scale, MUAC: Mid-upper-arm circumference, 6MWD: 6 Minute Walk Distance, \*values only for patients healthy enough to attempt testing.

	ICU Admission	ICU Discharge	Hospital Discharge	30 d after Discharge
CFS	3.29 $\pm$ 1.40	5.90 $\pm$ 1.55	5.83 $\pm$ 1.36	5.30 $\pm$ 1.55
Quadriceps thickness in cm	2.24 [1.73-3.02]	1.72 [1.33-2.15]	1.64 [1.28-2.05]	
MUAC in cm	32.9 [30.3-35.7]	28.8 [27.3-32.1]	28.9 [27.4-30.3]	
Handgrip strength in kg *		14.9 [9.4-23.1]	16.4 [10.7-23.2]	
Quadriceps strength in kg *		5.4 [4.5-6.1]	6.2 [5.7-8.4]	
6MWD in meters *		87 [40-125]	103 [80-174]	

**Conclusion:** Present data underlines the expected loss of muscle mass and function in the course of critical illness and recovery. Our analysis is still ongoing. Our study may provide new insights about the relation between nutritional intake and functional and quality of life- outcomes in the diverse cohort of severely critically ill patients.

**Disclosure of Interest:** None declared

## P186

### EVOLUTION OF THE COVID19 PATIENT WITH COMPLETE ENTERAL NUTRITION IN INTENSIVE CARE UNIT AT THE HOSPITAL DISCHARGE

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**Rationale:** The nutritional decline associated with the COVID19 disease can influence the mean stay and complications in the patient in Intensive Care Units (ICU). The aims were to describe the evolution of specialized nutritional support in the patient COVID19 at discharge of ICU. To assess the degree of development of dysphagia and the nutritional treatment at discharge.

**Methods:** Longitudinal retrospective study in 71 patients admitted to the ICU with COVID infection between March and May 2020. Clinical variables: age, sex, Charlson index, length of stay, dysphagia were collected; it was estimated anthropometric variables: weight, height; and we collect data about oral nutritional supplementation during admission and at discharge. The study was approved by the Ethics Committee(P120-1952).

**Results:** The mean age was 61.84(13.68) years. Charlson index was 3(2-5). 33 (46.5%) patients died. The median stay in the ICU was 20(15.75-32) days and the mean stay was 37(26.75-63) days. At discharge, 8(21%) patients had dysphagia. 21(55.2%) patients were prescribed oral nutritional supplements(ONS) during the stay in the hospital ward. ONS was maintained at discharge in 6(15.7%) patients. Among the patients who were prescribed

ONS during admission, they were older (61.81(13.39) vs55.05(15.86) years;p=0.04); they had been longer stay in ICU (40.47(29.10) vs24.57(17.58)days;p=0.01); although there were no differences in the Charlson index. Patients who were prescribed oral supplementation at discharge had a longer mean stay (83.50(49.85)vs(41.06(22.51) days;p<0.01). It was observed that those who suffered dysphagia at discharge had spent more time in the ICU (32(20-66)vs23(16-35)days;p=0.01). When performing the univariate analysis, a relationship was observed between the mean ICU stay and the probability of developing dysphagia (OR:1.035(1.004-1.07);p=0.02).

**Conclusion:** The presence of dysphagia at discharge in the patient admitted for COVID19 is related to the length of stay in the ICU. The prescription of oral nutritional supplementation was related to the mean length of stay and the age of the patients.

**Disclosure of Interest:** None declared.

## P187

### DETERMINATION OF ENERGY EXPENDITURE IN VENTILATED CRITICALLY ILL PATIENTS INDIRECT CALORIMETRY VS PREDICTIVE FORMULAS

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**Rationale:** Critical illness is associated with hypercatabolism and hypermetabolism and critically ill patients hospitalized for more than 48 hours are considered at risk of malnutrition and adequate nutritional support should be provided. In hospital settings predictive formulas (PF) are used to calculate energy expenditure (EE), but in critically ill patients (CI), PF evidenced inaccurate determinations. Indirect Calorimetry (IC) is the gold standard method for determining the EE and guide the nutritional therapy of CI patients. Our objective was to compare the EE determined by IC and FP in ventilated CI patients.

**Methods:** Observational, descriptive and cross-sectional study, performed in CI of Intensive Care Unit of Divino Espírito Santo Hospital, Azores. Patients with EE determined by IC were included. Hemodynamically and / or respiratory unstable patients with Positive End Expiratory Pressure values> 10-12 cmH<sub>2</sub>O and high fraction of inspired O<sub>2</sub> ( $\geq$ 60%) were excluded. CI patients data was collected to calculate the EE through the FP, namely: 20, 30 and 35 kcal / kg / day, Faisy, Ireton-Jones, Harris-Benedict, Mifflin-St. Jeor, Owen, Penn-State University (PSU) (2003 and 2010) and Swinamer. To determine the EE by CI, the equipment CARESCAPE Monitor B650 was used. IBM Statistical Package for the Social Sciences program, version 25, was used for statistical analysis.

**Results:** Data from 30 CI (36.7% female), with a mean age of 61  $\pm$  12 years, was included. The mean EE determined by CI was 1859  $\pm$  608 kcal / day. Comparing EE measured by CI, the FP 20 kcal / kg / day calculated - 346  $\pm$  440 kcal / day (p < 0.001), Faisy -88  $\pm$  486 kcal/day (p < 0.001), Ireton-Jones - 117  $\pm$  564 kcal / day (p = 0.137), Owen's -315  $\pm$  478 kcal / day (p < 0.001), Swinamer's -175  $\pm$  465 kcal / day (p < 0.001), Basal metabolism-Harris-Benedict -361  $\pm$  449 kcal / day (p < 0.001) and Mifflin-St. Jeor -444  $\pm$  449 kcal / day (p < 0.001), underestimating the EE. Comparing EE measured by IC, the FP of 25 kcal / kg calculated + 32  $\pm$  464 kcal / day (p < 0.001) and comparing IC with FP 30 kcal / kg/day calculated + 410  $\pm$  514 kcal / day (p < 0.001), EE-Harris-Benedict + 571  $\pm$  545 kcal / day (p < 0.001), EE-Mifflin-St. Jeor + 440  $\pm$  542 kcal / day (p < 0.001), PSU-2003 + 594  $\pm$  489 kcal / day (p < 0.001) and PSU-2010 + 452  $\pm$  498 kcal / day (p < 0.001), overestimating the NE.

**Conclusion:** The EE calculated by PF were significantly lower or higher than that measured by CI, so when used, due to the lack of precision, guide nutritional support inadequately.

**Disclosure of Interest:** None declared

## P188

### PARENTERAL NUTRITION IN CLINICAL PRACTICE: A MULTICENTER OBSERVATIONAL STUDY

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**Rationale:** The use of Parenteral Nutrition (PN) has evolved over the years due to technical improvements that make PN as safe as EN. Indeed, their use and when to administered PN in critical care has been controversial [1]. The aim of our study was to describe the use of PN in the ICU, as well as its different patterns of administration. We also evaluated nutritional variables associated with mortality when total PN was administered.

**Methods:** National multicenter prospective observational study (37 hospitals). Demographic data and comorbidities, reason for admission, nutritional assessment, caloric-protein dose administered (up to 14 days), laboratory variables, and complications, were collected. Statistical analysis was performed independently using univariate and multivariate analysis (SPSS 20.0).

**Results:** 229 patients who received PN during their admission to the ICU were included. The mean age was 63.55±13.9 years; 67.7% were men; BMI: 26.9±5.1 Kg·m<sup>-2</sup>; APACHE II: 20.3±7.6. 48% and 46.7% were medical and surgical patients respectively. Only 23.6% (54) received early PN (<48h). They received a mean caloric and protein dose of 19.1±6.7 Kcal/Kg/d and 0.99±0.4 g/Kg/d respectively.

112 (49%) received total PN and 117 (51%) received also enteral nutrition (mixed PN). Mortality in these subgroups was highly variable, with lower mortality for patients who received total PN (24.11% vs 37.21% (NE-PN) vs 25.68% (PN-NE), as well as the patterns of administration in mixed PN (see Figure 1).

When analyzing factors associated with mortality, it was observed that a high NUTRIC Score (Hazard Ratio (HR): 1.334; 95% CI: 1.013-1.758; P=0.041) was associated with higher mortality, while higher Prealbumin levels on day 7 they were associated with lower mortality (HR: 0.982; 95% CI: 0.971-0.994; P=0.002).

**Conclusion:** There is great variability when PN is administered in the ICU, which may probably require a greater consensus and higher standardization among different hospitals. Nutritional risk, as well as laboratory variables, may be associated with mortality in these patients.

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## P189

### NUTRITION THERAPY IN CRITICALLY ILL PATIENTS WITH COVID-19 IN PRONE POSITION: A FEASIBLE PROTOCOL

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**Rationale:** Appropriate nutritional therapy (NT) determines favorable outcomes in COVID-19 (CV19) critically ill patients (CIP)<sup>1</sup> which presents great challenges due to complications that hinder progression of diet to the protein energetic target. As it is a new disease, most Guidelines showed inadequate recommendations regarding NT. Especially the infusion of enteral nutrition (EN) in the prone position (PP), which, differently from what recommended, was not safe, except in a trophic flow<sup>2</sup>. There are 3 challenges to NT of CIP with CV19 that have raised disagreements between teams: 1-high energy expenditure of CV19<sup>3,4</sup>; 2-EN during the PP<sup>5</sup>; 3-need to use opioids, sedatives and neuromuscular blockers in usually higher doses<sup>6</sup>.

**Methods:** Literature review.

**Results:** Recommendations Protocol: 1) Early EN: start EN, 24-48 h after hemodynamic resuscitation/metabolic stability. 2) EN Indication: oral diet's acceptability <60% of required, and if Non-invasive Ventilation/Non-Rebreather masks are applied for a long time (patient cannot eat and breathe at the same time). High-flow nasal catheter facilitates swallowing. 3) PP: position a orogastric (OGT) and a nasoenteric tube (NET) immediately after orotracheal intubation to avoid repetitive exposure to virus<sup>7</sup>. Confirm the radiological positioning of the NET 6h after. 4) EN formula Type: polymeric EN with high caloric density/hyperprotein (1,5 or 2 kcal/mL): CV19 patients are often anasarctated, hypervolemic and poorly distributed. 5) EN in PP: open the OGT 3 h before pronating the patient and drain gastric content. Raise the head of the bed by 30° (reverse Trendelenburg position-RTP), infuse prokinetics drugs and only then, start EN, but no more than in trophic flow (around 20-30 mL/h) during prone period. Do not infuse water filtered by the nasoenteric tube during PP. 6) EN in Supine Position: start EN 1 h supine the patient. Increase diet flow to the total caloric value, but don't try to compensate for the low volume infused in the PP, as this will bring risk of gastroparesis and vomiting. 7) EN x vasoactive drugs (VAD): NE is permissive if VAD are between 0.14-0.3 mcg/kg/min<sup>7</sup>. 8) Indication of Parenteral Nutrition (PN): start PN, by a multi-chamber bag, if PP greater than 3 days or if RTP impracticable. 9) PN bag type: prefer smaller volume PN bag with 625 mL (infusion in central venous access) avoiding water overload. Peripheral infusion bag contains 1206 mL. 10) Total Parenteral Nutrition: if gastric intolerance greater than 5-7 d and PP more than 7 d and/or patients with severe Nutritional Risk<sup>2</sup>.

**Conclusion:** Enormous difficulties in adequately nourishing CIP with CV19 during PP led to the development of this protocol. This is easy to apply, based on the real world of the lack of human and financial resources from the pandemic caused by SARS-CoV-2.

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**Disclosure of Interest:** None declared.

## P190

### AN ANALYSIS OF NUTRITION SUPPORT IN THE INTENSIVE CARE UNIT DURING THE COVID19 PANDEMIC

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**Rationale:** The aim of this analysis was to determine the characteristics of COVID-19 patients assessed by critical care dietitians during the COVID-19 pandemic.

**Methods:** Nutrition parameters were collected for all patients admitted to the intensive care unit (ICU) with COVID-19 and a length of stay (LOS) >48hrs. Data was compared from March-June 2020 (T1) to January-April 2021 (T2).

**Results:** 64 patients in T1 and 77 patients in T2 were assessed by a critical care dietitian and 100% required nutrition support. Mean age in T1 was 60.6yrs (66% male) compared to 63.1yrs in T2 (62% male). Mean BMI was 29.6kg/m<sup>2</sup> in T1 and 30.2kg/m<sup>2</sup> in T2. 72% of patients required mechanical ventilation in T1 and 78% in T2 with the remainder on non-invasive ventilation (NIV). During T1 78% transferred to ward level care with 48% in T2. The average ICU LOS of 16 days in T1 and 22 days\* in T2 (\*2 patients remain in ICU at time of data analysis). Of those that transferred to the ward 100% required on going dietetic input at both time periods. In T1 41% were discharged on enteral nutrition (EN) and 50% discharged on EN in T2. Type of nutrition support during ICU stay is described in the table below.

Type of nutrition support	March-April 2020	Jan-April 2021
Oral nutrition support (ONS)	34%	17%
Enteral nutrition (EN)	55%	58%
ONS + supplementary EN	6%	12%
Parenteral nutrition	0%	1%
EN + supplementary PN	5%	12%

**Conclusion:** All COVID-19 patients with an ICU LOS >48hours were assessed by a critical care Dietitian.

The patient profile was similar in both cohorts and 100% required nutrition support with ONS, EN, PN or a combination of these.

All patients on NIV required ONS with increasing numbers being commenced on supplementary EN in T2.

On transfer to ward level care 100% of patients required nutrition support highlighting the need for on-going dietetic input.

**Disclosure of Interest:** None declared.

## P191

### CALORIES ADMINISTERED TO CRITICALLY ILL PATIENTS CAN BE REGULATED USING THE C-REACTIVE PROTEIN LEVEL AS AN INDICATOR: A RETROSPECTIVE COHORT ANALYSIS

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**Rationale:** The C-reactive protein (CRP) level reflects the severity of various diseases, including inflammatory diseases. We hypothesized that the quantity of energy fed to a patient could be regulated using CRP as an indicator.

**Methods:** This single-center retrospective cohort study included patients who received tube feeding under ventilator control in the intensive care unit (ICU) for  $\geq 14$  days from October 2017 to September 2020, with a maximum observation period of 90 days after admission. To evaluate the effect of overfeeding at the time of invasiveness using concrete numerical values, high invasion was defined as CRP levels  $\geq 10$  mg/dL, and the achievement of target calorie intake was defined as a day when  $\geq 20$  kcal/kg of calories was administered. If the CRP level exceeded 10 mg/dL on the day after the target calorie goal was achieved, the excess CRP level over 10 mg/dL was assumed to be an indicator of the severity of overfeeding. Furthermore, the total proportion of the CRP level that exceeded 10 mg/dL after reaching the target calorie intake was calculated. The subgroups of surviving and non-surviving patients were separately evaluated, and the Results were compared.

**Results:** In total, 81 patients were included in the analysis, with 63 and 18 patients in the survival and non-survival groups, respectively. Cox regression analysis showed that only the total proportion of CRP level that exceeded 10 mg/dL after reaching the target calorie intake was significantly related to mortality.

**Conclusion:** When the CRP level exceeded 10 mg/dL, the administration of calories >20 kcal/kg could be associated with worse mortality. This result may answer the question of when to limit calories during the ICU stay, and these preliminary findings should be validated in future prospective studies.

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## P192

### COMPARATIVE STUDY ON THE CLINICAL OUTCOMES OF CRITICALLY ILL COVID-19 PATIENTS BETWEEN THOSE WITH ADEQUATE AND INADEQUATE NUTRIENT INTAKE ADMITTED AT ST. LUKE'S MEDICAL CENTER

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**Rationale:** The early detection of malnutrition in critically ill COVID-19 patients and its management is very essential towards better clinical outcomes. This study aims to determine the associations of adequacy in nutrient intake and length of hospital stay, ICU length of stay, ventilator days and mortality.

**Methods:** This retrospective study included all critically ill COVID-19 adult patients that met the inclusion criteria and assessed by the Clinical Nutrition Service admitted at the ICU of St. Luke's Medical Center from March to December 2020. Adequacy of calorie and protein intake, mortality, number of ventilator days, length of ICU and hospital stay were documented. Descriptive statistics were used to summarize the data with P-values of <0.05 considered significant. The adequacy of calorie and protein intake was defined as 75% of calorie and protein goals. Data analysis was applied to compare clinical outcomes of critically ill COVID-19 patients between those with adequate and inadequate intake with the outcomes - mortality, mechanical ventilator days, length of ICU days and length of hospital stay.

**Results:** A total of 155 patients were included in the study, average age of 66 years old, majority male (65%). More than 36% of patients had normal BMI; however, more than 50% have a BMI of at least 25.0. More than half of patients had an enteral route of feeding (54%), while the rest mostly had oral feeding (40%). A prevalence of 33% for inadequate protein intake and 32% for inadequate calorie intake have been estimated. Overall, 89% of patients used mechanical ventilator, with an average length of use of about 15 days. The average length of ICU stay is 12.65 days, while the average hospital stay is almost double, at 23.15 days. More than a third of the patients expired (39.35%) while more than 60% were discharged.

The study primarily focused on comparing outcomes among different level of nutritional status of patients. Inadequate calorie and protein intake had a significantly higher proportion of use of mechanical ventilator; however, the average length of use for both groups are not significantly different. The length of ICU stay and total length of hospital stay is also comparable between both groups. The proportion of mortality is significantly higher among patients with inadequate calorie intake (84%) versus those with adequate calorie intake (19%). Similarly, higher mortality rate seen among inadequate protein intake (78%) versus those with adequate protein intake (20%).

**Conclusion:** Adequate nutrient intake in critically ill COVID-19 patients were associated with decreased mortality rate, ICU and hospital length of stay but, longer mechanical ventilator days. Several factors may have affected the adequacy in nutrient intake which includes hemodynamic instability, diagnostic/therapeutic procedures, tolerance/complications of feeding, poor appetite, poor documentation of food intake and the severity of disease condition. Most of the patients that expired were the elderly population with comorbidities. The great impact of improved clinical outcomes highlights the importance of nutrient intake monitoring in the optimization of nutrition delivery among critically ill COVID-19 patients.

**Disclosure of Interest:** None declared.

## P193

**ANTHROPOMETRIC AND WEIGHT CHANGES DURING HOSPITAL STAY IN CRITICALLY ILL PATIENTS WITH COVID-19**

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**Rationale:** The aim of the study was to evaluate the anthropometric measurements and weight loss during hospital stay in critically ill COVID-19 patients

**Methods:** A prospective cohort study was performed in the Hospital General de Mexico. We included hospitalized patients with COVID-19 in ICU. The anthropometric measurements (knee height, mid-upper arm (MUA), and calf circumference (CC)) were evaluated weekly. The weight estimation was performed using Lees formula. Moreover, we registered the Urinary Nitrogen Excretion (UNE), the length of stay (LOS), the deaths, and the evidence of edema at the time of limb evaluation. The statistical analysis was performed in SPSS, no normal variables were expressed in medians and interquartile range (IQR), the categorical variables were expressed in proportions. median differences were calculated with *Mann–Whitney U test*.

**Results:** Were included 18 ill patients; 13 (72.2 %) were men. The median (IQR) age was 54 (13) years. The differences of weight between admission and delivery or dead to ICU were not statistically significant; weight 73.54±12 vs 68.8±15 kg ( $p > 0.05$ ); MUA 31.8±3.6 vs 30.3±4.4 cm ( $p > 0.05$ ); CC 35.9±4.1 vs 33.6±5.5 cm ( $p > 0.05$ ). However, 33.3% of the patients had edema in at least one of the anthropometric evaluations. The median of UNE was 9.34 (16) gN/d, and LOS was 14.5 (16) days. The mortality rate was of 60%.

**Conclusion:** COVID-19 pandemic is a public health problem around the world. The in-hospital weight loss is a common problem during ICU stay, and the severe inflammatory response can reduce the body reserves. An anthropometric evaluation and adequate nutritional support are necessary to reduce the weight loss. We did not find statistical differences in anthropometric measurements and weight in COVID-19 patients during their hospital stay.

**Disclosure of Interest:** None declared

## P194

**TYPE AND FREQUENCY OF HEPATOTOXIC MEDICATION AND OF USE OF PARENTERAL NUTRITION IN A TERTIARY CARE INTENSIVE CARE UNIT**

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**Rationale:** Liver disturbances are often observed in critically ill patients. Different etiologies are known including parenteral nutrition and drugs. The aim was to identify the 5 most used drugs with a potential hepatotoxic effect in the adult ICU.

**Methods:** Data on common used drugs in the period 1/1/2019 – 31/12/2019 in a 24-bed adult tertiary ICU in Brussels, Belgium were extracted from the pharmacy's digital stock program. A list of medication with hepatotoxic profile was designed based on literature review. The use of parenteral nutrition in the same period was studied.

**Results:** 150.481 units of medication were listed and sorted by name and ranked by frequency of use. By comparison of both lists a top five of most frequently used hepatotoxic drugs was made: Paracetamol 1 gr intravenous (11.431 vials), amoxicillin-clavulanic acid 1gr IV (4.548 vials),

flucloxacillin IV ( 1.028 vials), valproic acid IV (1.021 vials) and trimethoprim-sulfamethoxazole IV (571 vials). One thousand four hundred seventeen multi-chamber parenteral nutrition bags were administered to the same ICU population in the same year.

**Conclusion:** Hepatotoxic medication and parenteral nutrition are extensively used in an adult tertiary ICU. This should be considered in future research on Parenteral Nutrition Associated Liver Disease.

**Disclosure of Interest:** None declared.

## P195

**GLUTAMINE FOR SEPSIS IN SEVERE PROTEIN ENERGY MALNUTRITION: A CASE REPORT IN CLINICAL NUTRITION PERSPECTIVE**

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**Rationale:** Protein energy malnutrition in sepsis leads to increased mortality and complication rate. The vicious cycle between sepsis and malnutrition is linked to unfavorable outcome. Glutamine deficiency was found in malnourished and high inflammation condition such as emergency surgery. Glutamine, an amino acid, becomes essential in hypercatabolic condition and acts as a fuel for immune system; however, its benefit in sepsis is still debatable.

**Methods:** A Case Report.

**Results:** A 29-year old male was consulted to the Clinical Nutrition Department on day-8 post-exploratory laparotomy and ileostomy due to ileocecal adenocarcinoma. He had an unintentional weight loss for 2 months and his body mass index was between 13 – 14 kg/m<sup>2</sup>. He was severely malnourished (Subjective Global Assessment score C) and had severe hypoalbuminemia with edema. The administration of nutrition therapy was initiated from 760 kcal and increased gradually with total energy expenditure target of 1900 – 2100 kcal via oral and parenteral nutrition with 18.5% - 25.6% protein. After 8 days of treatment, he developed sepsis and, along with sepsis protocol from other department, such as antibiotic according to blood culture result, we administered intravenous glutamine with a dose of 0.35 gram per kilogram of body weight per day for 5 days. Multivitamin, minerals and nutrition supplementations were administered; which were vitamin A, B1, B2, B6, B12, C, D, E, Zinc, Iron, snakehead fish extract and curcuma extract. During 35 days of nutritional therapy treatment, he achieved an average of 81.3% and 91.9% of energy and protein target, respectively. Procalcitonin level was decreased from 79.72 ng/dL to 1 ng/dL after 4 dosage of intravenous glutamine. In addition, the edema, neutrophil-to-lymphocyte ratio, and functional capacity were markedly improved.

**Conclusion:** Glutamine is a potential specific clinical nutrition therapy in improving metabolic condition of malnourished sepsis patient.

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**Disclosure of Interest:** None declared.

## Liver and gastrointestinal tract

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### CHANGES IN GUT MICROBIOTA, NUTRITIONAL AND LIVER PARAMETERS IN PATIENTS WITH ALCOHOLIC LIVER DISEASE

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**Rationale:** Cross-sectional studies have shown dysbiosis in patients with chronic liver disease. This longitudinal prospective study aimed to evaluate the nutritional status and gut microbiota of patients with alcoholic hepatitis (AH) and alcoholic cirrhosis (AC) and to describe the relationships between these parameters.

**Methods:** We included biopsy-proven severe AH and AC patients without recent exposition to antibiotics. The following data were collected at baseline, months 3 and 6: dry body weight, body height, body composition by tetrapolar bioimpedance analysis (Nutriguard®, Geneva formula)<sup>1</sup> and anthropometric measurements, indirect calorimetry (Quark®), 3-day dietary report, MELD-score, quality of life (EQ-5D®), alcohol abstinence, blood tests, and gut microbiota assessed by metagenomics analysis. Data are presented as median (lower and upper quartile) and compared at baseline and follow-up with non parametric tests. Microbiota comparisons were performed using principal coordinate analysis (PCoA), PERMANOVA, Shannon diversity index estimate, ANCOM, and Wilcoxon tests.

**Results:** We included 10 AH and 12 AC patients. At baseline, age and nutritional parameters did not differ between groups but AH patients had a significantly higher MELD score, C-reactive protein, total bilirubin and hepatic venous pressure gradient than AC patients (all p<0.05). During the follow-up, 7 AH patients and 4 AC patients became alcohol abstinent. In AH patients, some nutritional parameters (cf. table), as well as the MELD-score (p=0.001) and the quality of life (p=0.036) significantly improved during the follow-up. In AC patients, only the quality of life (p=0.001) improved. Overall microbiota profiles were significantly different between AH and AC groups already at baseline (PERMANOVA p=0.03). No significant changes in overall microbiota structure were found between time points of the same group of patients. However, in AH patients, the relative abundance of some typically oral species, belonging to genera *Streptococcus*, *Actinomyces* and *Fusobacterium* significantly decreased during the follow-up.

Variables	Baseline	3 <sup>th</sup> month	6 <sup>th</sup> month
Phase angle, degrees	4.1 (3.1-4.9)	4.9 (4.1-5.9)	5.1 (4.6-5.6)*
Mid-arm circumference, mm	293 (255-320)	310 (275-340)	328 (295-360)*
Skinfold thickness, mm	14.9 (10.5-24.3)	19.8 (12.1-25.5)	27.8 (16-31)*

\*p<0.005 (Friedman tests)

**Conclusion:** Some nutritional parameters improved in AH patients but not in AC patients, while the proportion of oral bacteria in the gut decreased. This changes may be explained by the probable role of alcohol abstinence. Future analyses should systematically evaluate the impact of alcohol abstinence on the nutritional improvements and gut microbiota changes, to assess the links between gut microbiota changes and nutritional parameters.

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**Disclosure of Interest:** None declared

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### THE EFFECT OF PROBIOTICS ON THE TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE IN PEDIATRIC PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Rationale:** Non-alcoholic fatty liver disease (NAFLD) is nowadays the most common chronic pediatric liver disease. Recently, clinical studies have been conducted investigating the impact of probiotics' supplementation in the management of pediatric NAFLD. We conducted a meta-analysis in order to examine the role of probiotics in pediatric NAFLD.

**Methods:** A systematic literature search in major electronic databases (PubMed, Scopus, EMBASE) was carried out and eligible randomized clinical trials examining probiotic supplementation versus placebo in children with NAFLD were included. Primary outcomes were changes in liver enzymes levels (ALT, AST). Secondary outcomes were changes in lipid profile, anthropometric characteristics (Waist circumference, BMI), fasting blood glucose and ultrasound evaluation. Quality of the eligible studies was assessed by Cochrane risk-of-bias tool for randomized trials and a random effect model was used to estimate Mean Difference or Risk Ratio and 95% CI. **Results:** Five studies with a total of 239 cases were included in our meta-analysis. Probiotic supplementation resulted in a statistically significant decrease in ALT levels (-7.51 IU/l; 95% CI, -11.28 to -3.73; p<0.00001), AST levels (-7.52 IU/l; 95% CI, -12.15 to -2.89; p<0.001), BMI (-2.00 kg/m<sup>2</sup>; 95% CI, -3.07 to -0.93; p<0.0002), waist circumference (-1.37 cm; 95% CI, -2.39 to -0.35; p<0.008), total cholesterol levels (-6.02 mg/dl; 95% CI, -10.08 to -1.96; p<0.004) and triglycerides levels (-3.95 mg/dl; 95% CI, -6.04 to -1.87; p<0.0002) in comparison to placebo.

**Conclusion:** Probiotic supplementation seems to improve transaminases levels and anthropometric characteristics in children with NAFLD. The possible effect of probiotics on liver histology improvement in pediatric NAFLD should be examined in future studies.

**Disclosure of Interest:** None declared

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### GASTROINTESTINAL AND SENSORY SYMPTOMS, NUTRITIONAL MANAGEMENT, AND ENERGY-PROTEIN INTAKE IN HOSPITALIZED PATIENTS WITH COVID-19

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**Rationale:** Gastrointestinal and sensory manifestations (GSM) reported in COVID-19 may affect food intake, favoring malnutrition and poor prognosis. We characterized the impact of GSM and oral nutritional supplementation on energy-protein intake and clinical outcome in adult COVID-19 patients (RT-PCR positive).

**Methods:** Patients (n=357) from 2 different centers were studied, in general and stratified by disease severity (neutrophil/lymphocyte ratio). Presence of diarrhea, constipation, nausea, anorexia, abdominal pain, dysgeusia and anosmia was recorded at admission and the attendance of energy-protein needs (EPN), based on food intake (plate diagram sheets), during hospital stay. Patients not achieving 60% of their EPN for 2 consecutive days received a high-energy-protein oral nutritional

supplement (ONS). Data were submitted to descriptive and comparative statistical analysis.

**Results:** Most patients (63.6%) presented GSM at admission. Anorexia was the most prevalent (44%) GSM and more frequent among severely than moderately ill patients (Fisher,  $p < 0.001$ ). At the first follow-up day, patients with anorexia or  $> 1$  GSM were more likely to not achieve than to achieve 60% EPN (Fisher,  $p \leq 0.050$ ). Frequency of hospital discharge was 54.6% in patients combining respiratory manifestations with GSM and 83.1% in patients with only respiratory manifestations. Patients requiring ONS (26.9%) had a good adherence to the intervention (79.3%) and attended their EPN during 95.7% of supplementation time. In mean, their hospital stay was 3 days longer than patients not requiring ONS, but they had a similar hospital discharge (90.8% vs. 91.3%, respectively).

**Conclusion:** GSM prevalence was high in COVID-19 patients and impaired EPN attendance and patient recovery. ONS was well accepted and aided to achieve EPN and, potentially, hospital discharge.

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## P199

### THE ACUTE EFFECT OF A B-GLUCAN-ENRICHED OATBREAD ON GASTRIC EMPTYING AND POSTPRANDIAL GLYCEMIA – A RANDOMIZED CROSSOVER TRIAL IN HEALTHY ADULTS

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**Rationale:** The oat-derived dietary fiber  $\beta$ -glucan has been shown to reduce postprandial glycemia, however, the mechanisms responsible for the blood glucose-lowering effect are not completely clear. Thus, the aim of this study was to investigate the acute effect of a  $\beta$ -glucan-enriched oatbread on gastric emptying rate and the subsequent postprandial glycemic and insulinemic responses.

**Methods:** A randomized crossover trial was conducted in healthy adults receiving 25 g available carbohydrates from a  $\beta$ -glucan-enriched oatbread (94.1 g bread; 10.8 g dietary fiber; 4.0 g  $\beta$ -glucan) or a control wholewheat bread (60.1 g bread; 3.4 g dietary fiber, 0 g  $\beta$ -glucan) in a random order at two non-consecutive days. Gastric emptying rate, assessed by real-time ultrasonography, was calculated as percentage change of the gastric antrum area at 15 and 90 min after initiation of the bread consumption. Blood samples were collected in the fasting state, and 15, 30, 45, 60, 90, and 120 min postprandially. Two hour-postprandial glycemic and insulinemic responses were measured as incremental area under the curve (iAUC) above the fasting baseline values.

**Results:** Twenty-two subjects (aged  $25 \pm 3$  years; 64% female; BMI  $23 \pm 3$  kg/m<sup>2</sup>) were included in the study. Preliminary results indicate consumption of the oatbread to result in a slower gastric emptying rate compared to the wholewheat bread;  $34 \pm 4$  % vs.  $48 \pm 3$  % ( $p < 0.009$ ), respectively. In addition, there was significant difference in the postprandial glycemic response, indicated by a significant lower iAUC after consumption of the oatbread compared to the wholewheat bread ( $57 \pm 46$  vs.  $98 \pm 54$  ( $p < 0.009$ ),

respectively). iAUC for postprandial insulinemic responses was  $953 \pm 444$  vs.  $1458 \pm 734$  ( $p < 0.01$ ) for the oatbread and wholewheat bread, respectively.

**Conclusion:** The current study demonstrated that a  $\beta$ -glucan-enriched oatbread compared to a wholewheat bread reduced the rate of gastric emptying in addition to reduce the postprandial glycemic and insulinemic responses in healthy adults, indicating  $\beta$ -glucans to affect gastric emptying which subsequently affects postprandial glycemia.

**Disclosure of Interest:** None declared.

## P200

### INTESTINAL FAILURE ASSOCIATED LIVER DISEASE AFTER WEANING OFF HOME PARENTERAL NUTRITION: A 12-MONTH FOLLOW UP

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**Rationale:** The pathogenesis of Intestinal Failure Associated Liver Disease (IFALD) is multifactorial due to factors parenteral nutrition- and gastro-intestinal- related. Data on children with chronic intestinal failure (CIF) showed that IFALD may persist after weaning off Home Parenteral Nutrition (HPN)<sup>1</sup>; data on adults are still missing.

The aim of this study was to assess the prevalence and incidence of IFALD in adult patients with CIF during the first year after weaning off HPN.

**Methods:** Study population: patients with CIF who weaned off HPN between 2016 and 2019. Liver function tests were assessed at weaning (T0), after six months (T6) and after 12 months (T12). Liver ultrasound and elastography were performed at T0 and at T12. The diagnosis of IFALD was performed according to the IFALD-categories<sup>2</sup>: -cholestasis (a value  $\geq 1.5$  ULN on two of  $\gamma$ GT, ALP, conjugated bilirubin for  $\geq 6$  months); - fibrosis by FIB4-index (age (years) x AST)/ Platelets ( $10^9/L$ ) x ALT (<sup>1/2</sup>) and -fibrosis by elastography (kPa  $\geq 7$ , F2); -steatosis (liver ultrasound, US).

**Results:** Thirty-five patients were enrolled (F 65%, age  $46 \pm 13$  years, Short Bowel Syndrome 85%). Frequency of IFALD-categories at T0- (T6)-T12: -cholestasis 11%-(2%)-5%.-steatosis 8%-9%;-fibrosis by FIB4 0%-(0%),0; -fibrosis by elastography 0%-7%. Incidence of IFALD (new cases after T0): -cholestasis 3%,-steatosis 6%; -fibrosis by FIB4 0%,-fibrosis by elastography 3%. Resolution of IFALD (disappearance after T0): -cholestasis 9%; -steatosis 3%,-fibrosis (FIB4 and elastography) 0%.

**Conclusion:** During the first year of weaning off HPN, all the IFALD-categories may persist, particularly steatosis. A resolution of IFALD may occur, most frequently cholestasis. Steatosis showed the highest incidence of IFALD; fibrosis by elastography may appear despite weaning off HPN.

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**Disclosure of Interest:** None declared.

## P201

### THE EFFECT OF OMEGA-3 FATTY ACIDS SUPPLEMENTATION ON PEDIATRIC PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Rationale:** Non-alcoholic fatty liver disease (NAFLD) is the most common chronic liver disease in children and several studies have investigated the potential role of omega-3 fatty acids supplementation as a treatment option. A meta-analysis was conducted to evaluate the efficacy of omega-3 fatty acids (n-3 FA) in the treatment of pediatric NAFLD.

**Methods:** A systematic literature search until was performed through major electronic databases (PubMed, Scopus and Embase) till February 2021 for randomised controlled trials examining n-3 FA versus placebo in children with NAFLD. Change in liver enzymes (ALT, AST) and liver steatosis improvement were considered as primary and change in GGT, lipids, blood glucose, HOMA-IR and Waist Circumference as secondary outcomes. Risk of bias assessment was conducted with the Cochrane risk-of-bias tool (RoB 2). A random-effects model was used to calculate the pooled Mean Difference (MD) for continuous outcomes or the pooled Odds Ratio for dichotomous outcomes with the accompanying 95% CI.

**Results:** A total of 6 RCTs with 378 patients were finally included in the study. Treatment with n-3 revealed a statistically significant reduction in liver enzymes (ALT IU/L: -11.34, 95% CI: -15.61 to -7.07,  $p < 0.01$ ; AST IU/L: -4.72, 95% CI: -8.09 to -1.36,  $p = 0.006$ ) as well as a significant improvement in liver steatosis assessed by ultrasonography (OR: 0.31, 95% CI: 0.16 to 0.62,  $p = 0.001$ ), when compared to placebo.

**Conclusion:** n-3 FA supplementation can improve liver function and liver steatosis in children with NAFLD. Further research is essential to determine their potential role in the treatment of pediatric NAFLD and their effect on liver histology.

**Disclosure of Interest:** None declared.

## P202

### HYDROGEN–METHANE BREATH TESTING RESULTS INFLUENCED BY ORAL HYGIENE

**Table 1.**

Subjects Meeting Diagnostic Criteria within 80 minutes Depending on Oral Hygiene in 69 Tests.

Criteria	Meets criteria for diagnosis: n (%)			Difference between 3 methods <sup>a</sup>	Difference between any 2 methods <sup>b</sup>		
	A. No (pre) mouthwash	B. Single T <sub>0</sub> mouthwash	C. Always (post) mouthwash		A vs B	A vs C	B vs C
+20 ppm hydrogen over baseline	12 (17.4)	13 (18.8)	8 (11.6)	0.072	1.00	0.289	0.125
+12 ppm methane over baseline	24 (34.8)	42 (60.9)	17 (24.6)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.118	<b>&lt;0.001</b>
+15 ppm combined over baseline	35 (50.7)	52 (75.4)	27 (39.1)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.057	<b>&lt;0.001</b>
+10 ppm hydrogen btw 2 samples*	17 (24.6)	5 (7.2)	8 (11.6)	<b>0.003</b>	<b>0.004</b>	0.022	0.549
+10 ppm methane btw 2 samples*	26 (37.7)	38 (55.1)	24 (34.8)	<b>0.004</b>	<b>0.012</b>	0.804	<b>0.009</b>
+10 ppm hydrogen or methane btw 2 samples*	37 (53.6)	43 (62.3)	30 (43.5)	0.052	0.362	0.210	<b>0.035</b>

a= Cochran's Q test; b=McNemar's test (alpha-value 0.016); T<sub>0</sub>=baseline; \*between any 2 consecutive samples up to 80 minutes. Statistical significance  $p < 0.05$  in bold font

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**Rationale:** Criteria for preparation of the oral cavity is not a standard inclusion in current guidelines for hydrogen-methane breath testing. The aim of this study was to determine how a pre-test mouthwash may impact breath test Results upon which diagnosis and treatment recommendations are based.

**Methods:** Participants presenting for breath testing who had elevated ( $\geq 10$ ppm) baseline hydrogen or methane gas were administered a chlorhexidine mouthwash.

Where expired hydrogen or methane were substantially reduced by the mouthwash (-10ppm or -25% of hydrogen and/or methane), participants were enrolled in the intervention. Testing proceeded as per usual protocols, with breath samples collected **both before and after** a chlorhexidine mouthwash at each collection point for the duration of breath testing.

The data were evaluated using Cochran's Q test and post-hoc McNemar's tests with Bonferroni correction to compare between each of three constructs, and thus predict how a chlorhexidine mouthwash might influence breath test Results and subsequent diagnostic status. Each of the three methods were compared, as follows:

1. Assuming no mouthwash - assessing pre-mouthwash data.
2. Assuming a single mouthwash administered at baseline only.
3. Assuming mouthwashes administered at each sample-collection interval.

**Results:** Of 388 breath tests, basal elevations were observed in 96 (24.7%). Fasting methane gas was  $\geq 10$ ppm in 81%, and  $\geq 20$ ppm in 60.8% of those meeting inclusion criteria.

Area under the curve (AUC) calculations pre- vs post-mouthwash were -20.2 ppm (SD 28.1)  $p < 0.001$  and -36.2 ppm (SD 35.1) for hydrogen and methane respectively.

Application of six different criteria used to calculate positive increases in hydrogen and/or methane gas revealed significant differences according to whether a mouthwash was administered or not, as presented in Table 1. Chlorhexidine mouthwash did not alter the number of participants who met the diagnostic criteria of +20ppm hydrogen above baseline.

No significant differences were noted across the 6 diagnostic criteria when comparing "no mouthwash" and "mouthwash at all collection points".

A single mouthwash administered at baseline was more likely to result in four of the six diagnostic criteria being met compared to either no mouthwash being administered, or a mouthwash at each sample collection point - all  $p < 0.05$ .

Over one third (37.7%) of tests which would have returned a negative result had a mouthwash been administered prior to collection of each sample would meet criteria for positive if a single mouthwash had been given at baseline ( $p < 0.001$ ).

**Conclusion:** Elevated hydrogen and/or methane gas at baseline may be modified by a mouthwash. This has the potential to affect test interpretation and subsequent diagnosis. The practice of administration of a single mouthwash prior to commencement of testing may result in substantive false positive Results.

**Disclosure of Interest:** None declared.

## P203

### AST AND ALT CORRELATE WITH OXIDATIVE STRESS IN HPN PATIENTS

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The role of the oral microbiota in measured breath hydrogen and methane warrants exploration to inform best practice for pre-test oral hygiene.

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## P203

### AST AND ALT CORRELATE WITH OXIDATIVE STRESS IN HPN PATIENTS

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**Rationale:** The study aimed to compare the ratios of the liver transaminases - AST (aspartate aminotransferase) and ALT (alanine aminotransferase) and the rate of oxygen consumption in platelet mitochondria in patients with long-term PN (parenteral nutrition) and to explain their role in the metabolism of cellular energy and changes in the liver.

**Methods:** In the study blood samples were taken from 87 patients undergoing HPN (home parenteral nutrition) for at least 2 years (study group) and 42 healthy volunteers (control group). Levels of liver transaminases (AST, ALT) and CRP (C Reactive Protein) were analyzed and mitochondria were isolated from platelets. Measurements of blood parameters were carried out using the traditional sampling method, while the degree of mitochondrial damage was analyzed using the Oxygen Consumption Assay according to the protocol described by the manufacturer (Agilent, USA). Additionally, genomic DNA was isolated from whole blood and digested with the Fpg protein following the manufacturer's instructions (New England Biolabs) to confirm the ethene and propane-derived DNA bases formed during lipid peroxidation.

**Results:** AST and ALT levels were closely related to the CRP protein, and the formation of damage, induced by molecular oxygen in both control and test subjects was similar in the mitochondria of blood platelets. Both types of indicators were grouped right next to the "hot spots" induced by oxidative stress in the mitochondria. For both hyperoxia and hypoxia in the oxygen consumption assay method and after digestion, Fpg glycosylase recognized oxidized purines of the 8-oxoG type as well as Fapy Ade and FapyGua in genomic DNA. In both the control and test groups, the levels of damage differed significantly among themselves to reach high values in the test group. The values of the hepatic indexes and those induced by the Mito Xpress Xtra and Intra fluorescent probes used in the molecular oxygen consumption method overlapped.

**Conclusion:** In the analyzed indicators of the liver and mitochondria of blood platelets, we observed spots that are very susceptible to structural disturbances in energy production and easily modified by lipid peroxidation products, including ethane and propane derivatives of DNA bases. This process may be associated with the use of certain types of nutritional components of parenteral nutrition admixture. The study showed that even the smallest changes in oxygen metabolism in the mitochondria and liver indices are consistent with each other, and AST and ALT may be new potential markers of the oxidative layer, based on which we can estimate the degree of damage both to the liver, after administration of specific parenteral nutrition, and to mitochondria.

**Disclosure of Interest:** None declared

## P204

### ANALYSIS OF NUTRITIONAL INDICATORS ON LIVER TRANSPLANTATION OUTCOMES

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**Rationale:** Nutrition plays a vital role in all the three phases (pre, peri, post) of liver transplantation (LT). This study was performed to ascertain the nutritional status of Indian adult end-stage liver disease patients, implement a nutrition protocol, & analyze the effect of nutritional support on perioperative LT outcomes.

**Methods:** This was a prospective, single-center study which enrolled adults listed for the LT between October 2014 & April 2018. Consecutive patients, who consented, met the inclusion criteria, & underwent LT, were included. All patients' demographic data, medical history, anthropometric & functional measurements, & nutritional intake were documented. Statistical analysis was performed using SPSS version 25.0.

**Results:** Out of the 319 patients were enrolled who met the inclusion criteria & 152 underwent LT, predominantly deceased donor LT 119(78.3%). Of the 152 patients aged 50.6±8.3 (25-60) years; majority were men (82.9%). The mean body mass index (BMI) and handgrip strength (HGS) were 23.0±4.5kg/m<sup>2</sup> and 23.0±8.2kg respectively, & Subjective Global Assessment (SGA) rated 88.2% as malnourished. The mean prescribed versus intake of energy & protein were 2148.6±233.1 calories &

98.9±14.0g; 1686.7±318.9 calories & 67.6±15.1g, respectively. The Very High Protein High Calorie Oral Nutrition Supplement (VHPHC ONS) had a significant impact on improving the achievers of ≥80% targeted protein intake 28(39.4%) versus 14(17.3%) with the High Protein High Calorie Oral Nutrition Supplement (HPHC ONS) (p=0.002).

The univariate analysis indicated a significant increase in hours of ventilation with baseline SGA rated malnutrition, weaker baseline & 1<sup>st</sup>-month pre-LT follow-up HGS (<20kg), non-achievers of post-intervention ≥80% targeted protein & energy intake at 1<sup>st</sup>-month pre-LT follow-up (p<0.05). A significant reduction in ventilation was associated with achievers of prescribed energy intake, early initiation of feed (<24hours), & VHPHC ONS (p<0.01) during LT hospitalization.

The univariate analysis indicated a significant increase in the incidence of infection during LT hospitalization with increasing hours of ventilation, perioperative non-achievers of targeted energy & protein intake, delayed food / feed initiation, & weaker HGS (<20kg) during discharge after LT (p<0.05) & a lower rate of infection with VHPHC ONS (p=0.000).

The mean length of ICU & hospital stay was 14.9±11.2 days & 16±12.1 days respectively. Patients who had a longer LOS-ICU (p=0.040) and hospital (p=0.037) during LT hospitalization exhibited weaker HGS in the perioperative phase during discharge associated with significant muscle wasting related to surgery.

A total of 135 patients (88.8%) were discharged alive after LT. The perioperative in-hospital mortality rate was 11.2% compared to 10% in most transplant units (Fanl *et al.*, 1999), and other determinants, including donor and recipient variables, may also play an essential role in the patients' outcome.

The univariate analysis of perioperative LT mortality indicated a significant increase with an increasing MELD score of ≥25, presence of pre-LT HRS complication, baseline SGA rated malnutrition, baseline & 1<sup>st</sup> month pre-LT follow-up HGS (<20kg) & non-achievers of ≥80% targeted energy & protein intake at 1<sup>st</sup> month pre-LT follow-up & during LT hospitalization, food/feed initiation of >24hours (p<0.05) & reduced mortality in patients on VHPHC supplementation (p<0.05).

Further analysis of HGS on LT in-hospital mortality at the different time points in the pre-transplant phase was significant and indicated that non-survivors had weaker HGS at baseline and at 1<sup>st</sup> and 3<sup>rd</sup>-month follow-up which had a significant impact on the perioperative mortality (p<0.05). Several studies corroborate this result as skeletal muscle contractile function is not a direct measure of muscle mass but has been used as a measure of sarcopenia and HGS predicts the incidence of major complications and mortality (Álvares-da-Silva and Reverbel da Silveira, 2005; Wang *et al.*, 2016). The present study findings also confirm that malnourished patients undergoing LT have increased mortality. Achieving at least ≥80% targeted energy intake (calories) and protein intake (g) with VHPHC ONS during pre-transplant and perioperative phase and initiating food/feed within 24 hours of LT will help reduce perioperative in-hospital mortality.

The step-wise binary logistic regression analysis of all the variables computed did not show significance to predict perioperative survival, as there may be other confounding factors including donor & recipient variables related to the in-hospital mortality during the perioperative period. **Conclusion:** This study, explains that customized nutritional intervention helped in achieving early goal-directed (≥80%) nutritional targets before & after LT. The pre-LT baseline malnutrition indicated by weaker HGS of <20kg & non-achievers of ≥80% targeted energy & protein in the 1<sup>st</sup>-month pre-LT after intervention are among the significant predictors of LT morbidity & mortality.

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## P205

**FIRST LINE DIET AND LIFESTYLE INTERVENTION REDUCED MEDICATION USE IN PATIENTS WITH IRRITABLE BOWEL SYNDROME**

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**Rationale:** Irritable bowel syndrome (IBS) is a functional gastro-intestinal disorder affecting 10-15% of the Western population<sup>1</sup>. Management includes both non-pharmacological and pharmacological treatment. It is estimated that 33% - 91% of patients receive a prescription for medication<sup>2</sup>. There is a dearth of research on the effect of non-pharmacological interventions on the requirement for medications. First line diet and lifestyle advice incorporates healthy eating practices, regular exercise, sleep hygiene and stress management. Our study aims to compare the use of medication in patients with IBS before and after dietitian led diet and lifestyle intervention.

**Methods:** Baseline clinical data including the global symptom question (GSQ) ('do you currently have satisfactory relief of your gut symptoms?') and medication use were recorded from consecutive patients before receiving first line diet and lifestyle intervention from a clinical specialist dietitian. Personal targets and goals were set for each individual at baseline. The assessment was repeated three months later following intervention. Data were analysed using SPSS (IBM, v.24). Paired categorical data were analysed using McNemar's test, and a paired t-test was used to compare continuous data.

**Results:** N=116 patients received first line diet and lifestyle intervention for the management of IBS, of which n=100 (86.2%) reported symptomatic improvement (GSQ=yes). In those who improved, the mean (SD) number of daily medications reduced from 0.76 (0.1) to 0.57 (0.7) following three-month intervention (P=0.025, 95% CI (0.24, 0.36)). When comparing those requiring no medication, 1 medication, or 2+ medications daily, there was a reduction in medication use following the intervention (McNemar's Test, P=0.034).

**Conclusion:** Non-pharmacological management improved symptoms for patients with IBS and reduced use of medication. Moreover, the success rate of the intervention was high with almost 9 in 10 patients achieving symptomatic relief. We suggest that all patients with IBS have access to a specialist gastroenterology dietitian.

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**Disclosure of Interest:** None declared

## P206

**GUT MICROBIOTA COMPOSITION CHANGE IN TYPE 1 DIABETES BRAZILIAN PATIENTS**

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**Rationale:** Gut Microbiota (GM) profile may change in autoimmune diseases such as Type 1 Diabetes mellitus (T1DM), although there is heterogeneity across studies. Our aim was to evaluate changes in the GM of Brazilian patients with autoimmune T1DM.

**Methods:** After local ethics Committee approval, we have studied: 20 patients with autoimmune T1DM and 41 healthy controls, matched by sex, age (36.7±10.8 vs. 32.5±8.8 years respectively) and body mass index (25.2 ± 3.3 vs. 23.8±2.7 kg/m<sup>2</sup> [p=0.08] respectively). All of them provided fecal samples. The GM profile was assessed by the 16S rRNA (V3-V4) gene

sequencing, considering only high-quality/quantity reads (DADA2 [v1.8.0]). Appropriate statistical analyzes were performed using the JASP Team software (2020, v0.14.1).

**Results:** The comparison of T1DM patients with healthy controls did not find differences in gut microbiota richness (Chao1 index) and diversity (Shannon index). Nevertheless, at the phylum level, T1DM patients exhibited a comparative higher ratio of Firmicutes/Bacteroidetes along with a lower abundance of Proteobacterias (p≤0.050). Furthermore, at genus and species levels, T1DM patients exhibited a comparative higher level of Eubacterium coprostanoligenes, Intestinimonas, Bifidobacterium, Ruminococcaceae UCG-010, Ruminococcus 2, *Bifidobacterium adolescentis* along with lower levels of Alistipes, Bacteroides, Bilophila, Butyricimonas, Odoribacter, Oscillibacter, *Alistipes putredinis*, *Bacteroides vulgatus* and *Bilophila wadsworthia* (p≤0.050).

**Conclusion:** The gut microbiota of Brazilian patients with autoimmune T1DM was marked by changes at phylum, genus, and species levels. On the other hand, no changes were observed in gut microbiota richness or diversity, as usually observed in patients with autoimmune diseases.

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## P208

**THE BENEFICIAL IMPACT OF NUTRITIONAL TREATMENT IN NON-CIRRHOTIC PATIENTS WITH ACUTE LIVER DECOMPENSATION AFTER BARIATRIC SURGERY**

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**Rationale:** Hepatic decompensation can occur in the absence of cirrhosis after bariatric surgery (BS), sometimes leading to death, despite "rescue" transplant treatments. The clinical presentation and management of these patients are poorly described.

**Methods:** We describe the clinical characteristics, histological findings and clinical management of patients without cirrhosis who developed acute hepatic decompensation after BS in our single tertiary-care hospital.

**Results:** From 2014 to 2019, 6 patients (mean age 44 years) underwent a transvenous liver biopsy for acute liver decompensation after BS. The time between BS and the onset of symptoms varied widely (min. 8 months, max. 17 years). Mean percentage of weight loss was high (43%) with an excess body weight loss of 98%. The clinical presentation was: fatigue and jaundice (5/6), leg edema (3/6) and ascites (1/6). Blood test showed increased transaminases (ALAT 53 UI/L, ASAT 130 UI/L), bilirubin (6 mg/dL) and INR (1.5) with a low albumin level (27 mg/dL). Histology revealed steatosis, hepatocyte ballooning but also portal inflammation with polymorphonuclear cells and bile duct alterations. Mean fibrosis score was 2. Due to the prominent malnutrition among the patients, nutritional treatment was started in all patients (parenteral nutrition only in 2 patients, parenteral and enteral feeding in 3 patients and only oral supplements in 1 patient). Three patients had diuretics and two patients had intravenous albumin supplementation. The clinical course was favorable in all patients with a mean follow-up of 36 months.

**Conclusion:** Acute liver decompensation in the absence of cirrhosis can occur after BS with a highly variable delay. A special histological signature is present with the coexistence of steatosis and bile duct alterations with

portal inflammation. Substantial clinical improvement with appropriate refeeding seems to be effective.

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## P209

### GUT MICROBIOTA AND NUTRITIONAL PARAMETERS DIFFER IN HEMODIALYSIS PATIENTS VS. HEALTHY SUBJECTS

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**Rationale:** Protein energy wasting (PEW) is common in hemodialysis (HD) patients and associated with poor outcomes. This cross-sectional study compared gut microbiota and nutritional parameters of HD patients with and without PEW, chronic kidney disease (CKD) patients and healthy subjects.

**Methods:** HD patients with PEW (albumin <38g/l; dietary intakes <30 kcal/kg/d and <1g protein/kg/d) were matched for age and sex to HD patients without PEW, stage 4 CKD patients and healthy non-obese subjects. The primary endpoint was composition of gut microbiota. Secondary endpoints were body composition, resting energy expenditure, physical function and activity, and systemic inflammation. PERMANOVA and DeSeq2 were used to compare microbiota among the groups. Friedman tests were used to compare continuous data. If significant, they were followed by a Wilcoxon signed rank test to evaluate differences between HD patients with PEW and the other groups.

**Results:** We included 33 patients and 11 healthy subjects. Composition of gut microbiota differed between healthy subjects and HD patients with ( $p=0.0005$ ) or without PEW ( $p=0.03$ ). DeSeq2 analysis identified decreased proportions of some propionate/butyrate-producing species (*Dialister*, *Alistipes*, *Eubacterium*) and increased levels of *Streptococcus anginosus* in HD patients. Compared to healthy subjects, HD patients with PEW had lower resting energy expenditure ( $p=0.032$ ), mean steps per day ( $p=0.005$ ), maximal handgrip strength ( $p=0.007$ ) and higher plasma IL-6 levels ( $p=0.005$ ). Maximal handgrip strength was lower in HD patients with PEW than in CKD patients ( $p=0.014$ ). The other parameters were not significantly different between groups.

**Conclusion:** Gut microbiota differed between HD patients and healthy subjects. As expected, nutritional parameters were impaired in HD patients with PEW. Whether modulation of gut microbiota improves nutritional status of HD patients remains to be demonstrated.

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## P210

### EARLY ASSESSMENT OF BODY COMPOSITION IN PATIENTS WITH LIVER TRANSPLANTATION

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**Rationale:** Patients with liver cirrhosis frequently present alterations in body composition consisting of decreased muscle mass, increased body water and variable alterations in fat mass. The objective was to study body composition in the immediate postoperative period of liver transplantation, as well as 1 month later by bioimpedance measurement.

**Methods:** A body composition study was carried out using the bioimpedance InBody S10 in patients undergoing liver transplantation, postoperatively and 1 month after discharge. Several markers were analyzed: ASM/height<sup>2</sup>, percentage of body fat, phase angle (PA) and extracellular water ratio (ECW ratio). It was considered: low muscle mass when the ASM/height<sup>2</sup> was <7 kg/m<sup>2</sup> in men or <5.5 kg/m<sup>2</sup> in women; normal PA according to the standardized tables by age and sex and using the cut-off value of 4°; normal ECW ratio between 0.360-0.390; and normal fat mass in men between 10-20% and in women between 18-28%. The comparison of means was carried out using the Student's t test for paired samples and the comparison of proportions using the McNemar test.

**Results:** 30 patients (80% men) were included. The age was 60.2 (9.4) years. The median stay was 10.5 (7.0-20.8) days. The time elapsed between the two evaluations was 36.1 (14.0) days. 96.7% of the patients had some of the body composition parameters altered both after transplantation and 1 month later. The assessment of body composition before and 1 month after discharge from transplantation is shown in the following table. There was a difference in lean mass at -0.35 (1.03) kg, this difference being greater in women than in men (-1.25 (1.13) vs -0.12 (0.89),  $p = 0.014$ ). It was not different according to age. The mean stay was similar for men and women.

Variable	Baseline	1 month	p-value
Patients with low lean mass (%)	13,3	26,7	0,219
PA (°)	4,1 (1,1)	4,3 (0,9)	<b>0,045</b>
Patients with low PA (%)	86,7	90	1,000
Patients with PA>4° (%)	50,0	66,7	<b>0,125</b>
ECW ratio	0,400 (0,013)	0,397 (0,012)	<b>0,041</b>
Patients with high ECW ratio (%)	76,7	70,0	0,687
Patients with low fat mass (%)	10,0	6,7	0,607
Patients with high fat mass (%)	53,3	53,5	0,607

**Conclusion:** Alterations in body composition in patients with liver cirrhosis in the immediate post-transplant period, as well as 1 month later, are very frequent (96.7% in both periods). The value of ECW ratio and PA improves 1 month later, but the other parameters did not change significantly. Women lose more lean mass than men 1 month later. It would be interesting to compare these data with other body composition assessment techniques, as well as to evaluate patients in the longer term.

**Disclosure of Interest:** None declared

## P211

### NUTRIENT INTAKE IS NOT ASSOCIATED WITH DUODENAL PATHOLOGY IN FUNCTIONAL DYSPESIA

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**Rationale:** Despite bothersome and common meal-related symptoms in functional dyspepsia (FD), the role of food components remains unclear. We have confirmed duodenal eosinophil and mast cell infiltration with increased mucosal permeability in FD, but the underlying mechanisms are unknown (1).

**Methods:** FD patients (Rome IV criteria) and healthy controls (HC) completed symptom (PAGI-SYM) and food frequency questionnaires with collection of

duodenal biopsies (histology and permeability) before and after pantoprazole 40mg daily for 4 weeks (PPI). Between- and within-group changes were studied using linear mixed models. Spearman correlations were done between food intake and symptoms or duodenal mechanisms in FD.

**Results:** We included 29 FD patients (24 female) and 30 HC (21 female) with similar age ( $31 \pm 2$  yrs). Similar baseline calorie, sugar and fat but lower protein and fibre intake (both  $p=.03$ ) in FD did not change after PPI (table). Within FD, protein intake was linked with symptoms ( $r=.53$ ,  $p<.05$ ) and calories with mast cells ( $r=-.56$ ,  $p<.05$ ). No correlations were found between (changes in) macronutrients and duodenal immune cells or permeability in FD.

Baseline	FD	HC
Carbohydrates (g/day)	171.28 $\pm$ 19.99	173.78 $\pm$ 8.32
Fat (g/day)	44.8 $\pm$ 4.4	49.37 $\pm$ 2.62
Fiber (g/day)	17.02 $\pm$ 2.79	18.96 $\pm$ 1.07
Protein (g/day)	50.06 $\pm$ 4.06	63.2 $\pm$ 2.95

**Conclusion:** Compared to controls, protein and fibre intake was lower in FD, and higher protein intake was linked to symptoms in FD. Although calorie intake was lower with increased duodenal mast cells, no associations were found between macronutrients and duodenal immune cells or permeability in FD. Future studies should focus on individual food components and microbial changes as potential mediators of food-induced symptoms in FD.

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**Disclosure of Interest:** None declared

#### P212

##### THE GLIM CRITERIA FAILED TO DIAGNOSE MALNUTRITION IN PATIENTS AWAITING LIVER TRANSPLANT

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**Rationale:** The Global Leadership Initiative on Malnutrition (GLIM) is a new framework that aims to operationalize the diagnosis of malnutrition. The GLIM consists of the combination of at least one phenotypic (PC) and one etiologic criteria (EC). To verify its reliability, the authors recommend contrasting it with a standard tool.

**Methods:** This is an observational retrospective study aiming to compare the prevalence of malnutrition by GLIM and by the Subjective Global Assessment (SGA) in liver cirrhosis patients. The study was carried out with adult patients awaiting liver transplant in 2006, 2009/2010, and 2015 at the Alfa Institute of Gastroenterology/Transplant Clinic/Brazil. Nutritional status was assessed using the SGA and 20 different combinations of the GLIM criteria. The used PC were unintentional weight loss, low body mass index and reduced muscle mass (estimated by arm muscle area-AMA, and handgrip strength), according to the GLIM cut off recommendations. The EC were reduced food intake (<15kcal/kg), Model for End-Stage Liver Disease (MELD) and MELD-sodium ( $\geq 12$ ), Child-Pugh score (B or C) and serum albumin (<2.8g/dL). Sensitivity, specificity, and kappa values were calculated to compare each GLIM model to SGA.

**Results:** 311 patients were included, median age of 52 (45-59) years old and 69.1% male. The malnutrition prevalence according to SGA was 68.8% and ranged between 0.7 and 40.3% considering the different GLIM models. In general, the GLIM models showed low sensitivity (0.9-49%) and good specificity (78-100%) versus SGA, with the highest sensitivity values and reasonable agreement ( $k=0.2-0.24$ ) obtained with AMA as PC, and MELD-sodium, Child-Pugh score or MELD as EC.

**Conclusion:** Thus, the prevalence of malnutrition by the GLIM showed low agreement with SGA, and GLIM may not be a reliable tool in this population. Specific parameters for cirrhotic patients are necessary to improve this tool.

**Disclosure of Interest:** None declared

#### P213

##### NUTRITIONAL INTERVENTIONS TO INCREASE FIRMICUTES AND/OR BACTEROIDETES IN HEALTHY ADULTS: A SYSTEMATIC REVIEW

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**Rationale:** The dysbiosis of intestinal microbiota appears to compromise its functions and influence the development of several diseases. The aim of this systematic review was to identify nutritional interventions that promote the growth of dominant phyla (*Firmicutes* and *Bacteroidetes*) in healthy adults.

**Methods:** PubMed and CINAHL databases were searched. Only randomised placebo-controlled trials, including healthy adults without history of gastrointestinal disease, severe chronic disease, abdominal discomfort, or constipation were included. Papers not written in English or if antibiotics were included during the intervention period were excluded. Study appraisal was independently conducted by two reviewers, and a qualitative research synthesis was performed.

**Results:** Out of the 224 records identified, 27 studies were included, comprising a total of 1097 participants. The studies showed that interventions with probiotics, prebiotics and symbiotics can significantly increase ( $p < 0.050$ ) the abundance of bacteria belonging to the phylum *Firmicutes* and/or *Bacteroidetes*, in comparison to the placebo group. Interventions with sucralose and phosphorus supplementation did not have positive results. Besides, as evidenced in some of the included studies, the baseline microbiota composition and diet, namely the intake of fiber, seems to influence the results of the interventions.

**Conclusion:** Interventions with prebiotics, probiotics, and symbiotics may positively modulate the microbiota of healthy adults. However, more homogeneous, high-quality, and well-reported studies are needed to draw concrete conclusions about which nutritional interventions are most effective in different circumstances, with the purpose of re-establishing a balanced intestinal microbiota.

**Disclosure of Interest:** None declared

#### P214

##### ASSESSMENT OF PROTEIN AND LEUCINE INTAKE OF PATIENTS ON THE WAITING LIST FOR LIVER TRANSPLANTATION

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**Rationale:** Malnutrition is prevalent in patients on the waiting list for liver transplantation (LTx). The management of malnutrition in this patient involves an adequate supply of calories, proteins and essential amino acids, like l-leucine (LEU).

**Methods:** Longitudinal study with nutritional intervention/counseling of patients on the waiting list for LTx (>18y; 2019/2020) for 12weeks. The food intake was assessed using a 24-h recall and a three-day food record. All foods and beverages consumed were recorded and quantified in proteins and LEU. The cut-off point for adequate calories and protein consumption/kg was equal to or greater than 30kcal/kg/d; 1.2 g of protein/kg/d and 7.5 g LEU/d. SPSS 20.0 was used for statistical analysis (Wilcoxon test).

**Results:**

A total of 28 patients ( $54.9 \pm 9.6$  years, 71.4% men) were assessed. The consumption of protein and LEU increased between weeks 0 and 8, but decreased again at the 12 weeks (table 1). Thus like the consumption of calories. Adequate consumption of calories was attended by 24.4%, 42.8%,

32.1% and 24.4%, in baseline and weeks 4, 8 and 12, respectively. However, there was no difference in consumption to value total caloric during the follow-up.

**Table 1**

Quantity (mean) and distribution of patients according to adequate consumption of proteins and leucine.

Mean value (% adequate intake)	Baseline	4 weeks	8 weeks	12 weeks
Protein (g/kg)	0.9 (0.2–2.0)a	1.1(0.1–1.9)a	1.1(0.4–2.2)ab	0.8 (0.3–1.5)ac
%>1.2g/kg	32.1%	46.4%	42.9%	32.1%
LEU (g/d)	4.3 (1.7–12.1)a	5.3(0.1–13.4)ab	7.0(0.9–13.7)b	5.1(1.8–9.6)ab
%7.5g/d	14.3%	25.0%	21.4%	25%

Note: different letters p<0.05

**Conclusion:** In this population, reduced intake of calories, proteins and leucine was observed. There was an increase in intake initially, but it returned to baseline levels at 8/12 weeks.

**Disclosure of Interest:** None declared

## P215

### COMPARISON OF ANTHROPOMETRIC AND BIOCHEMICAL CHARACTERISTICS BETWEEN PEDIATRIC NAFLD PATIENTS AND HEALTHY CONTROLS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Rationale:** Diagnosis of highly prevalent and rapidly increasing pediatric non-alcoholic fatty liver disease (NAFLD) requires valid, sensitive and specific screening methods. This study aims to investigate the differences in anthropometrical and biochemical characteristics between pediatric NAFLD patients and healthy controls.

**Methods:** Major electronic databases (MEDLINE, Scopus and Embase) were searched through March 2021 for studies describing the characteristics of pediatric NAFLD patients and age-matched controls. The primary and secondary outcomes were the comparisons of anthropometric and biochemical-lipid profile respectively. Quality assessment was performed by using the Newcastle-Ottawa Scale and the Results were expressed as mean differences with 95% confidence intervals.

**Results:** Sixty studies were included in the meta-analysis and differences in body weight (BW) of the control group led to the formulation of two comparisons: by comparing pediatric NAFLD patients with lean/normal weighted controls, a statistically significant difference was demonstrated in BW (22.9 kg, 95%CI 14.0 to 31.8, P<0.00001), height (3.07 cm, 95%CI 0.21 to 5.94, P=0.04), BMI (2.52 kg/m<sup>2</sup>, 95%CI 2.13 to 2.91, P<0.00001) and waist circumference (WC) (25.7 cm, 95%CI 20.6 to 30.9, P<0.00001). Similar statistically significant results were obtained by comparing pediatric NAFLD patients with overweight/obese children in BW (6.25 kg, 95%CI 3.27 to 9.22, P<0.0001), height (2.84 cm, 95%CI 0.90 to 4.77, P=0.004), BMI (2.16 kg/m<sup>2</sup>, 95%CI 1.71 to 2.62, P<0.00001) and WC (7.38 cm, 95%CI 6.14 to 8.63, P<0.00001).

**Conclusion:** Anthropometry and biochemistry between children and adolescents with NAFLD compared with controls are statistically significantly different. Future studies could assess the validity of these characteristics in NAFLD screening.

**Disclosure of Interest:** None declared

## P216

### REDUCTION OF BENEFICIAL GUT BACTERIA CAN INCREASE INTESTINAL PERMEABILITY IN INACTIVE SYSTEMIC LUPUS ERYTHEMATOSUS

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**Rationale:** Emerging evidence in active systemic lupus erythematosus (SLE) patients suggest a role of altered gut microbiota (GM) composition in the pathogenesis of this disease but mechanisms are not completely defined. Our aim was to assess the GM composition and intestinal permeability (IP) of SLE with inactive disease (I-SLE).

**Methods:** Twenty-one consecutive female patients with I-SLE (SLEDAI=0) under exclusive hydroxychloroquine (HCQ) therapy at a stable dose were included. Twenty age- and gender-matched healthy controls (HC) were evaluated. Subjects were tested for fecal and plasma samples. The GM profile was assessed by the 16S rRNA(V3-V4) gene sequencing, considering only high-quality/quantity reads (DADA2 [v1.8.0]), and IP was assessed using plasma zonulin (Elisa test). The study was approved by local ethical committee. Statistical analyzes were performed using the JASP Team software (2020, v0.14.1), was selected Student's t test or Mann-Whitney as appropriate.

**Results:** GM richness and diversity (Chao and Shannon index) were similar in I-SLE and HC (p=0.395; p=0.293, respectively). I-SLE exhibited a low presence of the beneficial *Eubacterium coprostanoligenes* group (0.82±1.19% vs 1.65±1.45%; p=0.013) and levels were inversely correlated with plasma zonulin (r=-0.454; p=0.039). Other beneficial bacteria for the host were decrease in I-SLE women compared to HC (*Christensenellaceae R-7 group*; *Eubacterium eligens group*; *Lachnospiraceae ND3007, UCG-001 and UCG-0004*), while *Prevotella copri*, known as detrimental for host was over-represented (3.75±7.79% vs 1.61±3.76%; p=0.036).

**Conclusion:** In inactive SLE patients using HCQ, GM demonstrated alterations at genus level that may promote a toxic inflammatory microenvironment and enhance IP in this disease. Moreover, the lower *Eubacterium coprostanoligenes* group representation may account for the higher IP in SLE.

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## P218

### ANTI-INFLAMMATORY DIETARY PATTERN IN HIV-NAFLD PATIENTS AS DRIVE TO WEIGHT LOSS: PRELIMINARY RESULTS

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**Rationale:** To determine the efficacy of an individualized nutritional intervention approach in patients living with Human Immunodeficiency Virus (PLHIV) with non-alcoholic fatty liver disease (NAFLD).

**Methods:** Patients were randomly allocated for nutritional intervention (HIV-Diet group), promoting adherence to the Mediterranean diet with a structured meal plan, or generic recommendations for healthy eating (HIV-Generic). Weight loss was compared between groups. Dietary inflammatory index (DII) was determined from food frequency questionnaires, with positive or negative Results associated with either, respectively, a more or less inflammatory dietary pattern.

**Results:** Fifty five patients were included, age 54±11years, 73% men, BMI≥25kg/m<sup>2</sup> in 71% (n=39). Patients were diagnosed 18±8years before; the majority with TCD4+≥500cel/mm<sup>3</sup>, all with undetectable viral load. Fibroscan® suggested F1-F2 in 27% (n=15) and F3-F4 in 9% (n=5) of patients; 28 patients were allocated to HIV-NAFLD Generic group and 27 to HIV-NAFLD-Diet group, with no baseline anthropometric or clinical differences between groups. During the intervention period, weight loss was more frequent in the HIV-NAFLD-Diet group vs. HIV-NAFLD-Generic, at 1 Month: 64% vs. 35% p=0.036; 3 months: 79% vs. 17% p<0.001 and 6 months: 92% vs. 11%; p<0.001. At 6 months, the HIV-NAFLD-Diet group lost 1.6±1.5kg and the HIV-NAFLD-Generic gained 1.2±2.1kg (p<0.001). Patients on HIV-NAFLD-Diet presented lower DII scores (p=0.047), although there were no differences in average daily caloric intake. Those in HIV-NAFLD-Diet who had lower DII presented greater weight loss (r=-0.438; p=0.027). Planned biochemical and Fibroscan® reassessment was impossible due to a national lockdown.

**Conclusion:** Personalized nutritional intervention in PLVHIV promotes weight loss, with a less pro-inflammatory dietary pattern being associated with higher weight loss magnitude.

**Disclosure of Interest:** None declared.

## P219

### FEASIBILITY OF A 3-MONTH SUPPORTIVE AMBULANT NUTRITION THERAPY (SANT) IN MALNOURISHED PATIENTS WITH LIVER CIRRHOSIS AND CHRONIC PANCREATITIS

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**Rationale:** Patients (pat) with liver cirrhosis (LC) or chronic pancreatitis (CP) are often affected by malnutrition and their hospital stays are usually too short to treat malnutrition effectively. The aim of this study was to investigate whether LC/CP pat adhere to a 3-month outpatient nutrition therapy program (SaNT) upon hospital discharge.

**Methods:** This work is part of the research project *EnErGie* which is supported by the European Social Fund (ESF/14-BM-A55-0007-11/18). Fifteen malnourished (GLIM) pat (7 LC: 51 ± 6 years, 3 male/4 female and 8 CP: 56 ± 16 years, 5 male/3 female) were included in SaNT between Jul 2019 and Nov 2020. SaNT consisted of taking oral nutritional supplements (ONS, targets ≥400 kcal/d, ≥20 g protein/d) for 4 weeks, 8-12 nutritional phone coachings by trained dietitians (bi)weekly over 3 months and two in person visits in the outpatient clinics (1 month, 3 month). Feasibility was evaluated by: 1) Remaining in SaNT for 90 days, 2) Compliance to ONS (mean % of daily targets), 3) Availability by phone for agreed appointments, 4) Compliance with in person visits. Energy expenditure and protein requirements were calculated using 30 kcal/kg BW/d and 1.2 g /kg BW/d, respectively.

**Results:** Overall, 14/15 (93%) pat completed SaNT, one LC pat dropped out due to death. Average energy intake by ONS was 480 ± 228 (0-868) kcal and 24.5 ± 15.0 (0- 58) g protein per day. Nine pat (60%) achieved on average 75-100 % of daily ONS targets, 2 pat (13%) between 50-<75 % and 4 pat (26%) either denied ONS or achieved <50 % of the target intake. ONS comprised 26 ± 14 (0-54) % of calculated energy expenditure and 31 ± 19 (0-72) % of protein requirements per day. Average ONS compliance was comparable in LC and CP (69.9 ± 36.6% vs 63.8 ± 37.4%, p = 0.757). The availability to agreed phone calls was 79.5 ± 20.5 % and the time per coaching averaged 12.3 ± 2.5 min. All study visits in outpatients clinics (n=29, 100%) took place with only 4 visits delayed by more than 2 weeks.

**Conclusion:** Sound pat compliance from this study demonstrates that transsectoral nutritional care is feasible in pat with LC or CP. This is the prerequisite for an effective malnutrition-focused SaNT program, on which we will report upon separately.

**Disclosure of Interest:** None declared

## P220

### GUT MICROBIOTA ALTERATIONS CORRELATES WITH GUT PERMEABILITY IN ULCERATIVE COLITIS PATIENTS IN CLINICAL REMISSION

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**Rationale:** Ulcerative colitis (UC), an inflammatory bowel disease (IBD), is a chronic and disabling inflammatory pathological condition. Gut microbiota (GM) alterations and gut permeability (GP) are considered factors possibly associated with disease activity and prognosis in UC. The aim of this study was to evaluate alterations in GM composition and GP of UC patients, comparing them to a control group (CG).

**Methods:** Fecal samples were collected from UC patients (n=20) and healthy individuals (CG, n=46), matched by sex, age, and body mass index. Fecal microbiota profile was assessed by the 16S rRNA (V3-V4) gene sequencing, considering only high-quality/quantity reads (DADA2 [v1.8.0]). GP was measured by zonulin concentrations in stools, determined with ELISA kit (Elabscience®). Statistical analyzes were performed using the JASP Team software (2020, v0.14.1). Student's t or Mann-Whitney test were used as appropriate. This study was approved by the local Ethics Committee.

**Results:** At phylum level, Fusobacteria (0.023) and Actinobacteria (0.023) were significantly dominant in the UC group, compared to the control group and at family and genus levels, Bifidobacterium (0.018) and Lachnospiraceae (0.015) were less detected in UC. GM richness (Chao1 Index) was poor in UC individuals (0.009), but no significant change in diversity (Shannon Index) was observed. In GP analysis, fecal zonulin was significantly higher in UC group vs. CG (< 0.01). This alteration strongly correlated with GM alterations, specifically with increased species of *Bacteroides plebeius* (p= 0.04, r= 0.82) and *Parasutterella excrementihominis* (p= 0.04, r= 0.82).

**Conclusion:** Compared to healthy control, the UC group showed GM alterations, elevated fecal zonulin. In addition, GP correlated with GM alterations.

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## P221

### ANXIETY AND DEPRESSION IN IRRITABLE BOWEL SYNDROME (IBS)

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**Rationale:** Irritable Bowel Syndrome (IBS) has been widely associated with psychological disorders. The aim of this study was to assess the prevalence of anxiety and depression in a group of patients with IBS attending TUH, and to look at the association between anxiety or depression and the severity of IBS and changes post dietetic intervention.

**Methods:** Data was collected from patients referred to dietitians in TUH with a diagnosis of IBS. Patients were sent screening forms including the

Hospital Anxiety and Depression Scale (HADS) and the Irritable Bowel Syndrome Symptom Severity Scale (IBSSSS). These were repeated after dietetic intervention. The Global Symptom Question (GSQ), “Do you have satisfactory relief of your gut symptoms?” was also asked and used to determine the success of dietary intervention.

**Results:** Baseline data was collected for 496 patients. 339 (68%) had anxiety (HADS<sub>A</sub> ≥8) and 192 (39%) had depression (HADS<sub>D</sub> ≥8). The prevalence of both anxiety and depression increased as IBS severity increased. 46% of patients with mild IBS (IBSSSS ≤174) had anxiety, increasing to 74% of patients with severe IBS (IBSSSS ≥300). Similarly 11% of mild IBS sufferers had depression increasing to 53% among severe IBS sufferers. Follow up data was recorded for 128 people who attended the dietitian for diet and lifestyle intervention for their IBS. Those followed up did not differ significantly from the baseline group in IBS severity or HADS scores. Following intervention 81 (63.3%) of the 128 answered yes to the GSQ. Mean IBSSS scores, HADS A & D scores decreased significantly (p=0.000, 0.016, 0.005). Those who responded to dietary intervention had significantly lower IBSSS scores (278 vs 319, p=0.010) and HADS<sub>D</sub> (6.0 vs 8.0, p=0.006) scores at baseline and had lower levels of depression (33% vs 55%, p=0.015).

**Conclusion:** Anxiety and depression are common comorbidities of IBS and increase as IBS severity increases. Both can be improved with dietary and lifestyle interventions aimed at improving IBS symptoms. Patients with higher HADS D scores at baseline were less likely to respond to dietary intervention.

**Disclosure of Interest:** None declared.

## P222

### ALTERED GUT MICROBIOTA AND GUT PERMEABILITY IN CROHN'S DISEASE PATIENTS IN CLINICAL REMISSION

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**Rationale:** Crohn's disease (CD) is a chronic inflammatory bowel disease (IBD), which is associated with alterations in gut microbiota (GM) and increased gut permeability (GP). The aim of this study was to evaluate GM composition and GP in CD patients in remission comparing to healthy subjects.

**Methods:** Faecal samples were obtained from Crohn's disease patients (n=20) and healthy subjects (control group (CG), n=46) matched by sex, age, and body mass index. GM profile was assessed by the 16S rRNA (V3-V4) gene sequencing, considering only high-quality/quantity reads (DADA2 [v1.8.0]). Gut permeability was measured by zonulin concentrations in faeces, determined with ELISA kit (Elabscience®). Statistical analyses were performed using the JASP Team software (2020, v0.14.1), and Student's t or Mann-Whitney tests were used for comparison of variables. This study was approved by the local Ethics Committee.

**Results:** Compared to the CG, at phylum level CD group exhibited an increased in relative abundance of Proteobacteria (0.023). CD microbiota showed lower richness (Chao1 Index) and diversity (Shannon Index) comparatively with CG (0.045 and 0.024, respectively). At genus and species levels, higher Bifidobacterium (0.032) and Dialister (0.014) were observed in CG and Escherichia-Shigella (0.046), Escherichia coli (0.024) and *Prevotella copri* (0.016) in disease group. No change in *Akkermansia muciniphila* and *Faecalibacterium prausnitzii* (potentially beneficial bacteria) was identified. In GP analysis, fecal zonulin was significantly higher in CD group as compared with the CG (< 0.01).

**Conclusion:** Compared to healthy subjects, CD group showed higher GP and GM alterations with increased percentage of pro-inflammatory groups and decrease in richness and diversity in GM.

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## P223

### DIFFERENCES BETWEEN GUT MICROBIOTA PROFILE AND GUT PERMEABILITY IN ULCERATIVE COLITIS VS. CROHN'S DISEASE PATIENTS IN CLINICAL REMISSION

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**Rationale:** Inflammatory bowel disease (IBD), comprising Crohn's disease (CD) and Ulcerative Colitis (UC), are chronic inflammatory diseases associated with alterations gut microbiota (GM) and gut permeability (GP). We aimed to investigate the differences in GM and GP profile in patients with IBD.

**Methods:** Faecal samples were collected from CD patients (n=20) and UC patients (n=20) matched by sex, age, and body mass index. Faecal microbiota profile was assessed by the 16S rRNA (V3-V4) gene sequencing, considering only high-quality/quantity reads (DADA2 [v1.8.0]). Gut permeability was measured by zonulin concentrations in faeces, determined with ELISA kit (Elabscience®). Statistical analyses were performed using the JASP Team software (2020, v0.14.1), and Student's t or Mann-Whitney tests were used for comparison of variables. This study was approved by the local Ethics Committee.

**Results:** The analysis revealed significant structural differences between the two IBD groups. CD showed lower bacterial Chao richness (0.045) and Shannon diversity (0.024) compared to the UC group. GP analysis showed increased permeability (0.043) in CD group. Escherichia-Shigella and Escherichia coli were dominant in CD group (0.021) while Lachnospiraceae (0.008) and Roseburia (0.030) were dominant in UC group.

**Conclusion:** Comparison between IBD clinical remission groups showed different gut profiles, with a significant decrease in richness and diversity and increased gut permeability in CD patients.

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## P224

### EVALUATION OF COMPLIANCE OF CLINICAL PRACTICES IN GASTROINTESTINAL DISEASES WITH ESPEN GUIDELINES

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**Rationale:** This study was aimed to evaluate the compliance of clinical practices in gastrointestinal diseases with ESPEN guidelines.

**Methods:** The study was conducted on online platform with 60 dietitians who were in the nutritional support team in different provinces of Turkey. The online form created consists of 12 questions about clinical applications in liver diseases and 8 questions of bowel diseases.

**Results:** Firstly, 60% of the dietitians stated that the nutrition support team personnel in their institutions had clinical nutrition training. When the clinical applications in liver diseases are evaluated; the rate of those using subjective global assessment as a screening tool was determined as 59.7% (C



evidence). In these patients, 53.9% of dietitians calculated energy needs as 25–30 kcal/kg/day, and 56.9% calculated protein needs as 1.2–1.5 g/kg/day (C evidence). If patients are unable to provide adequate oral intake, the rate of dietitians who use tube feeding is 86.6% (A evidence), and the rate of those using formulas containing whole protein in nutrition is 40% (C evidence). The rate of those who comply with ESPEN's C evidence level suggestion that "PEG should not be applied in tube feeding" was determined as 53.8%. The preference rate of more concentrated high-energy formulas in acidic patients is 41.2% (C evidence), and the rate of using DZAA-rich formulas in patients with hepatic encephalopathy during enteral nutrition (A evidence) is 51.9%. In patients with moderate or severe malnutrition who could not be fed orally or enterally enough, the rate of immediate parenteral feeding was 46.2% (A evidence), and the rate of parenteral nutrition in patients with a fasting period longer than 72 hours was 76.9% (C evidence). While the rate of dietitians using low n-6 unsaturated fatty acid content oil emulsions is 53%, the rate of those who give vitamin B1 before starting glucose infusion to reduce the risk of Wernicke encephalopathy is 35.3%; two of them is recommended by ESPEN at the C proof level.

When the clinical applications in bowel diseases are evaluated; the proportion of dietitians who stated that combined therapy (enteral nutrition and drugs) were used (C evidence) in cases with poor care and inflammatory stenosis in their intestines was 23.3%; and the ratio of dietitians who stated that oral nutritional support is provided in the case of inflammation in the intestine (B evidence) is 46.6%. In cases with preoperative weight loss and low albumin levels, the rate of perioperative nutrition practice (C evidence) was 53.3%. If there is no ongoing intra-abdominal sepsis or perforation, the ratio of parenteral nutrition to be combined with oral / enteral food (B evidence) is 68.3%. In short bowel syndrome, 43.3% of dietitians reported that they applied parenteral nutrition to ensure fluid electrolyte replacement and adequate nutrient intake (B evidence); the rate of those who state that an increasing adaptation has been achieved with enteral nutrition products given as a supplement to normal foods (C evidence) is 56.6%. In determining the patients with undernutrition risk, the rate of those who use subjective global assessment (C evidence) is 51.6%.

**Conclusion:** In the light of these Results, it was thought that health professionals working in the nutritional support team should focus on clinical nutrition education and increase their awareness of guideline recommendations.

**Disclosure of Interest:** None declared.

## P225

### DIET IMPACT PERCEPTION IN INFLAMMATORY BOWEL DISEASE PATIENTS

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**Rationale:** Inflammatory Bowel Disease (IBD) is an autoimmune disease resulting from the interaction between exposure to environmental factors (including, among others, stress and diet) and the intestinal microbiome, in genetically predisposed individuals. Over the course of IBD, patients acquire knowledge about which foods to avoid and which to prioritize, according to their personal susceptibility, in order to keep the disease stable. This study aimed to understand the perception of diet impact in IBD patients.

**Methods:** An observational analytical study in a Portuguese sample of patients with IBD was conducted. Sample information was collected through an online questionnaire published on the Chron and Colitis Association's social media.

**Results:** 76 individuals (64 of which are women) answered this questionnaire. Food is considered a trigger by 75.7% when associated with other factors, and 45.9% of subjects as an isolated responsible factor. Fats and oils were considered the most critical (58.1%), followed by the group of dairy products (56.8%), legumes (55.4%) and vegetables (52.7%). Alcoholic beverages, piri-piri and fried food were also considered as trigger foods by 71.1%, 84.2% and 84.2%, respectively. Concerning to remission phases of the disease, foods were considered as a positive contribute by 44.7% of the individuals.

**Conclusion:** In this study, IBD patients considered the role of food (especially if associated with other factors) to be essential in the course of the disease, contributing as a trigger of crises and, simultaneously, helping in recovery. Regarding the foods considered as triggers, individuals tend to indicate specific foods, according to their individual susceptibility, so the nutritional intervention may prove to be more effective if it is individualized and appropriate on a case-by-case basis.

**Disclosure of Interest:** None declared.

## Nutrition and chronic disease

### P226

#### EFFECT OF TEDUGLUTIDE ON PARENTERAL SUPPORT IN PATIENTS WITH SHORT BOWEL SYNDROME: A COHORT STUDY FROM THE CANADIAN HOME PARENTERAL NUTRITION REGISTRY

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**Rationale:** Teduglutide is a synthetic GLP-2 analog approved for the treatment of adult's patients with short bowel syndrome (SBS) and has been shown to reduce parenteral support (PS) requirement. The objective of this study was to assess the effect of teduglutide on PS in SBS patients enrolled in the Canadian Home Parenteral Nutrition (HPN) registry.

**Methods:** This is a retrospective analysis of prospectively collected data extracted from the password protected, internet-based Canadian HPN registry. Adult patients treated with teduglutide between January 2015 and 2021 were included. Data was collected every 6 months from 9 participating programs across Canada and included demographics, anthropometrics, PS prescriptions, survival and quality of life based on the Karnofsky Performance Status (KPS). Responders were defined as daily PS volume reduction of  $\geq 20\%$  from baseline. Data was compared using Wilcoxon Rank Sum tests for continuous variables, Fisher's exact tests for categorical variables and presented as mean  $\pm$  standard deviation.

**Results:** 32 patients [(19 (59%) women; age 57.56  $\pm$  12.81 years)] were included, representing about 50% of patients receiving teduglutide in Canada. The main cause of SBS was Crohn's disease (n=15, 47%); length of remaining small bowel was 79.54  $\pm$  58.55 cm and; 14 patients (44%) had a colon in continuity. Patients were on PS for 9.13  $\pm$  7.45 years before starting teduglutide with 5.4  $\pm$  1.6 infusion days/week and a daily volume of 1884.05  $\pm$  1268.60 ml. 69% (n=23) were responders and 28% (n=9) achieved PS independency. Baseline BMI and KPS were comparable between responders and non-responders and remained comparable after 2 years of treatment. Response at 18 months was associated with longer PS duration before teduglutide (p=0.014) and higher oral intake (p=0.039). Non-response was associated with chronic use of narcotics (p=0.011). Those with weaned PS had longer PS duration (p=0.012), and a lower number of perfusion days per week before teduglutide (p=0.021). In our cohort, there were no differences in response and weaning based on anatomy. No severe adverse events were reported.

**Conclusion:** Teduglutide was effective in reducing or weaning PS in SBS adult patients, particularly in those with longer PS duration, higher oral intake, or lower number of perfusion days at baseline. Non-responders had significant chronic narcotic use.

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### P227

#### BIOELECTRICAL IMPEDANCE AND ANTHROPOMETRIC MEASUREMENTS FOR DIAGNOSIS OF SARCOPENIA, SARCOPENIC OBESITY AND ITS COMPONENTS IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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**Rationale:** Obesity and muscle impairment are related to a higher morbimortality risk in chronic kidney disease (CKD). The reference method for diagnosis, dual energy X-ray absorptiometry (DXA), is rarely feasible in clinical practice. So, we aim to evaluate the diagnostic capacity of bed-side measures/indexes associated with low muscle mass, sarcopenia, obesity, and sarcopenic obesity in CKD.

**Methods:** Sarcopenia was diagnosed according to the European Working Group on Sarcopenia in Older People revised consensus applying DXA (Hologic, GE) and hand grip strength (HGS) (Charder, MG 4800), and obesity according to the International Society for Clinical Densitometry. Cross-sectional and prospective analyses were carried out. Anthropometric parameters including arm and mid-arm muscle circumference, arm and corrected arm muscle area, triceps skin fold, adductor pollicis muscle thickness, calf (CC) and waist (WC) circumferences, WC/height (WC/H), conicity index and a body shape index were evaluated. Spectroscopy bioelectrical impedance (Body Composition Monitor, FMC) data including appendicular fat free mass (AFFM) and fat mass index (FMI) were assessed. Measurements were performed in 265 CKD patients in non-dialysis-dependent (ND), hemodialysis (HD), peritoneal dialysis (PD) and renal transplantation (KTx) treatment, consecutively, after 8-hour fast, drainage of the peritoneal dialysate and just after the midweek hemodialysis session. ROC and area under the curve (AUC) were applied for performance analyses and kappa coefficient for agreement analysis. Unpaired Student t-test was applied for comparison between groups ( $p \leq 0.05$ ).

**Results:** Patients had a mean age of  $48 \pm 10$  years old, 51% ( $n=136$ ) men, 31% in NDD ( $n=83$ ), 29% in HD ( $n=78$ ), 9% in PD ( $n=23$ ) and 31% in KTx ( $n=81$ ) groups. Prevalence of dynapenia, low muscle mass, sarcopenia, obesity and sarcopenic obesity was 15, 63, 10, 18 and 6% in women and 7, 37, 4, 30 and 6% in men, respectively. Dynapenia was present in 14, 13, 13 and 4% of NDD, HD, PD, and KTx patients, respectively. Low muscle mass was present in 28, 69, 52, and 52% of NDD, HD, PD, and KTx patients, respectively. Sarcopenia was present in 5, 12, 9, and 4% of NDD, HD, PD and KTx patients, respectively. Obesity was present in 35, 17, 4, and 26% of NDD, HD, PD, and KTx patients, respectively. Sarcopenic obesity was present in 1, 10, and 9% of NDD, HD, and KTx patients, respectively. AFFM and CC presented the best performances for low muscle mass diagnosis (AFFM AUC: women = 0.96, men = 0.94; CC AUC: women = 0.89, men = 0.85). FMI and WC/H were the best parameters for obesity diagnosis (FMI AUC: women = 0.99, men = 0.96; WC/H AUC: women = 0.94, men = 0.95). The cutoffs (sensitivity and specificity, respectively) for women were  $\text{AFFM} \leq 15.87$  (90%; 96%),  $\text{CC} \leq 35.5$  (76%; 94%),  $\text{FMI} > 12.58$  (100%; 93%), and  $\text{WC/H} > 0.66$  (91%; 84%); and for men,  $\text{AFFM} \leq 21.43$  (98%; 84%),  $\text{CC} \leq 37$  (88%; 69%),  $\text{FMI} > 8.82$  (93%; 88%), and  $\text{WC/H} > 0.60$  (95%; 80%). Sensitivity and specificity for sarcopenia diagnosis were for  $\text{AFFM} + \text{HGS}$  in women 85% and 99% and in men, 100% and 99%; for  $\text{CC} + \text{HGS}$  in women 85% and 99% and in men, 100% and 100%; and for sarcopenic obesity were for  $\text{FMI} + \text{AFFM}$  in women 75% and 97% and in men, 75% and 95%. Kappa analysis was: for low muscle mass applying AFFM, 0.82 in women and 0.76 in men and applying CC, 0.64 in women and 0.53 in men; for sarcopenia applying  $\text{AFFM} + \text{HGS}$ , 0.86 in women and 0.80 in men and applying  $\text{CC} + \text{HGS}$ , 0.71 in women and 0.59 in men; for obesity applying FMI, 0.83 in women and 0.77 in men and applying WC/H, 0.60 in women and 0.67 in men; for sarcopenic obesity applying  $\text{FMI} + \text{AFFM}$ , 0.78 in women and 0.71 in men. In the prospective analysis, 87 patients were reevaluated after  $10 \pm 2$  months. Both sexes tended to lose weight, HGS, and muscle mass and gain total and central adiposity with time. In prospective evaluation, all patients lost muscle mass. The ones with preexisting low muscle mass also lost fat mass. All the others patients gained total and central adiposity.

**Conclusion:** The tested bed-side measures/indexes presented excellent performance and could be applied in routine care of adult CKD patients for evaluation of the sarcopenia, sarcopenic obesity and its components.

**Disclosure of Interest:** None declared

## P228

### DO DIETARY PATTERNS INFLUENCE SURVIVAL IN HEMODIALYSIS PATIENTS?

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**Rationale:** Nutritional recommendations for hemodialysis (HD) patients focus on achieving sufficient energy and protein without exceeding phosphorus, potassium, sodium and fluids intake. We aimed to identify dietary patterns (DP) and analyze their relationship with all-cause (AC) and cardiovascular (CV) mortality in HD patients.

**Methods:** Longitudinal prospective multicenter study with 12 months of follow-up, 582 HD patients from 37 HD centers. Biochemical parameters, body composition and dietary intake (Food Frequency Questionnaire) were obtained. DP were derived from principal component analysis based on 20 food groups which were adjusted for total energy intake. Mean differences were evaluated using one-way ANOVA for variables normally distributed and Kruskal-Wallis test for variables not normally distributed. AC and CV deaths were registered and Kaplan Meyer analysis used to verify survival among the different DP. Statistical tests were performed with SPSS 26.0 software. A p-value lower than 0.05 was considered statistically significant.

**Results:** Patients' mean age was  $67.8 \pm 17.7$  years and median HD vintage was 65 (IQR: 43-104) months. Three different DP were identified: *Mediterranean pattern (MDp)* with high intake of vegetables, beans, peas and chickpeas, fish, olive oil, eggs, and low intake of milk and milk products; *Western pattern (Wp)* with high intake of soft drinks, home-made fried potatoes, caffeinated drinks, red and processed meat, and low intake of fruit and vegetable soup; and *Low animal protein pattern (LAPp)* with high intake of whole grain bread, cookies and sweets, vegetables soup and low intake of white bread, rice, pasta and potatoes. Patients following the MDp presented lower sodium levels compared to the Wp. A higher lean tissue index and lower fat tissue index was observed in patients following a MDp comparing to those with a LAPp. Patients following a MDp were those with the highest intakes of protein, omega 3 fatty acids, potassium and vitamins: B12, B6, C, D and folic acid and presented the lowest intake of sodium.

Considering AC mortality and despite no statistically significant differences observed, during the follow-up, 6 patients in the MDp died, whereas 8 deaths occurred in the Wp group and 15 died among patients who followed a LAPp ( $p=0.163$ ). The same trend was observed for CV mortality ( $p=0.631$ ).

**Conclusion:** Three different DP were identified in these HD population. The pattern which was closer to the well-known Mediterranean diet was associated with an adequate body composition and a better nutritional intake profile. A trend towards the MDp and higher survival was observed during the 12 months of the follow-up.

**Disclosure of Interest:** None declared

## P229

### PROBIOTIC FORMULATION INFLUENCES BLOOD CHOLESTEROL LEVELS: A RANDOMIZED, CONTROLLED TRIAL DURING THE COVID19 PANDEMIC

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**Rationale:** To study the effect of a probiotic formulation consisting of strains *L. plantarum* CECT7527, CECT7528 and CECT7529 (LP) on serum LDL cholesterol.

**Methods:** A randomized, double-blinded, placebo-controlled clinical trial in otherwise healthy adult patients with untreated LDL cholesterol  $\geq 160$  mg/dL at screening and providing informed consent. Placebo or LP ( $10^9$  cfu) capsule were taken once daily for 12 weeks. LDL, HDL, total cholesterol levels (TC) and triglycerides (TG) were measured in serum at baseline and after 12 weeks. Recruitment and intervention took place during the Covid19 pandemic in Hannover University (Germany), in three consecutive waves, March to December 2021. Thus, data was analyzed with linear model (GLM), with treatment arm as fix factor, recruitment wave as random factor, and baseline LDL, TC and TG values as covariates.

**Results:** 91 subjects (of 100 planned) were randomized and completed the study. Median age was 63.5 years (range: 38-76), 69% were female, and median baseline LDL and BMI were 188 mg/dL (range 149-229) and 26.3 Kg/m<sup>2</sup> (range 18,6-38,5), respectively. Study groups were well balanced at baseline, except for a trend difference in TG ( $p=0.079$ ). LP achieved a larger reduction from baseline in LDL ( $p=0.036$ ) and TC ( $p=0.086$ ) than placebo. No effects were observed on HDL or TG. Adjusting for treatment wave and baseline TG increased significance of effect for both LDL and TC ( $p<0.001$  vs placebo). Recruitment wave and baseline LDL, TC and TG values significantly modulated LDL and TC change (all  $p<0.05$ ). No adverse events or liver enzyme changes were detected. Statistical assumptions of GLM were met.

**Conclusion:** This probiotic formulation significantly lowered LDL and TC during a 12-week intervention, compared to placebo. Recruitment waves caused by Covid19 pandemic restrictions also accounted for significant variability.

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## P230

### EQUATIVE: QUALITY OF LIFE IN ADULT PATIENTS WITH SHORT BOWEL SYNDROME TREATED BY TEDUGLUTIDE, A FRENCH REAL-WORLD STUDY

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**Rationale:** Short bowel syndrome with intestinal failure (SBS-IF) requires use of parenteral support (PS) and highly impacts patients (pts) quality of life (QoL). Teduglutide (TED), a GLP-2-analog, has proven efficacy reducing

the need for PS. The study aimed to compare QoL in French TED vs non-TED pts.

**Methods:** EQUATIVE is a multi-centric observational study, enriching the French adult cohort of the SBS-IF Registry with cross-sectional collection of QoL. Enrolled pts initiated PS at least 12mos prior inclusion (Ti) and were stable. TED initiation and the first available visit at least 6mos prior Ti defined T0 in TED and non-TED pts respectively. Pts and disease characteristics were described at T0/Ti. Pts were matched with propensity scores based on T0 characteristics. Mean SBS-QoL<sup>TM</sup> and SF-12 physical (PCS) and mental (MCS) scores ( $\pm$ SD) were compared (Wilcoxon rank sum test). Mean difference in pair-differences (DPD) [ $\pm$ IC95] were calculated.

**Results:** Overall, 67 TED and 76 non-TED pts were enrolled and followed-up after T0 for 2.5 $\pm$ 0.9yrs and 1.2 $\pm$ 0.7yrs respectively. At T0, pts were 54 $\pm$ 17yrs old, 57% females. SBS duration was 10 $\pm$ 10yrs, after vascular (53%) or inflammatory bowel diseases (30%). Remnant small bowel length was 76 $\pm$ 53cm. Half pts had an end-jejunostomy. History of PS pre-T0 was 9 $\pm$ 9yrs, with volume of 10.5 $\pm$ 6.8L/wk administered 4.8 $\pm$ 1.6 times/wk. At Ti, on the 48 matched pairs, SBS-QoL<sup>TM</sup> score was significantly higher in TED (49 $\pm$ 37 vs 68 $\pm$ 44,  $p=0.03$ ) with DPD of -20 [-35; -5]. PCS and MCS were not different (45 $\pm$ 9 vs 42 $\pm$ 9,  $p=0.06$  and 47 $\pm$ 9 vs 44 $\pm$ 10,  $p=0.17$ ); 100% items improved in both scales.

**Conclusion:** This first study on QoL in SBS-IF in France showed significantly improved QoL in TED pts. Further studies are required to confirm findings. QoL scales could be more routinely used to better assess effectiveness of therapeutic strategies in SBS-IF.

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## P231

### EFFECT OF A NUTRITIONAL MODULATION OF THE GUT-BRAIN AXIS IN ALCOHOL-DEPENDENT PATIENTS

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**Rationale:** Our previous studies have shown that chronic alcohol abuse induces a leaky gut and alterations of the gut microbiota composition, which are correlated with the severity of psychological symptoms, suggesting the involvement of the gut-brain axis in the development of alcohol use disorders (AUD). The Gut2Brain study aims at supplementing AUD patients with prebiotics (inulin) in order to modulate the gut

microbiota composition and to evaluate the putative effect on metabolism, inflammation and behavior.

**Methods:** A randomized, double-blind, placebo-controlled study included 50 AUD patients hospitalized for a 3-week detoxification program.

The patients were assigned to inulin versus maltodextrin (placebo) daily supplementation for 17 days. Biological measurements (fecal microbial 16S rDNA sequencing, serum clinical biology), and validated questionnaires for psychological traits and gastrointestinal tolerance assessment were performed at the beginning and at the end of the study. Multiple regression analysis was used to assess the effect of inulin. Microbial data were analyzed using Mann–Whitney test and P-values were adjusted according to the Benjamini and Hochberg procedure.

**Results:** Prebiotic treatment was well tolerated by patients. All patients showed improvement in depression, anxiety and craving scores after 17 days regardless of the treatment group. Only patients treated with prebiotics significantly improved the sociability score. Placebo treatment led to sporadic changes in the gut microbiome whereas inulin increased *Bifidobacterium* and decreased *Bacteroides*, *Dorea* and *Ruminococcus torques* group ( $q < 0.1$ ). Neither inulin nor placebo supplementation had beneficial effect on systemic inflammation.

**Conclusion:** The Gut2Brain study shows that prebiotic like inulin can modulate the social behavior in AUD patients, but does not significantly modify biological outcomes. Picrust analysis and metabolomics data are in progress in order to evaluate the potential involvement of gut microbial metabolites in the modulation of gut-brain axis in AUD patients, that could be helpful to revisit nutritional recommendations addressed to AUD patients.

Gut2Brain study, clinicaltrials.gov: NCT03803709, <https://clinicaltrials.gov/ct2/show/NCT03803709>

Disclosure of Interest: None declared.

## P232

### ENHANCED ANABOLIC CAPACITY, BUT UNCHANGED ANABOLIC THRESHOLD IN CLINICALLY-STABLE NORMAL WEIGHT PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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**Rationale:** Previously we observed an enhanced anabolic response to high quality protein sip feeding in normal weight Chronic Obstructive Pulmonary Disease (COPD) on group level. To further explore this on an individual level and in a larger group of COPD patients, we used a recently developed isotope method (Clin Nutr 2019;38:1833–43) to assess whether the efficiency of dietary protein to promote protein anabolism (anabolic capacity) is enhanced and the minimal amount of protein to obtain protein anabolism (anabolic threshold) is altered in COPD patients as compared to healthy controls.

**Methods:** We studied 23 clinically stable COPD patients (GOLD stage: 2–4, age: 70.4 [66, 74.9] yo, 12 m/11 f, BMI: 27.3 [24.3, 30.2] kg/m<sup>2</sup>) and 16 controls (age: 67.1 [63.6, 70.7] yo, 8 m/8 f, BMI: 28.0 [26.2, 29.7] kg/m<sup>2</sup>). Subjects ingested sips of a mixture of hydrolyzed casein protein and carbohydrates (2:1) every 20 min for 4 h at 2 levels of protein intake (0.12 and 0.23 g \* kg lbm<sup>-1</sup> \* hr<sup>-1</sup>). We gave an IV primed continuous infusion of phenylalanine (L-ring[-D5]-PHE) and tyrosine (L-[13C9,15N]-TYR) and collected blood samples to assess net protein balance (whole body protein turnover minus PHE to TYR hydroxylation). We determined anabolic threshold (intake when net protein balance = 0) and anabolic capacity (slope) from linear regression between protein intake and net protein balance. Medical history, nutritional status (body composition by DXA), and lung function (FEV1) were assessed. Statistics by ANCOVA with covariates: age, gender, and BMI; estimate is the difference from matched-controls. Data are mean [95% CI],  $\alpha < 0.05$ .

**Results:** Net protein balance had a linear relationship with protein intake ( $p < 0.001$ ). The COPD group had greater anabolic capacity in comparison to

matched controls (0.9540 [0.9438, 0.9643] vs 0.9363 [0.9275, 0.9450],  $p = 0.0288$ ). The anabolic threshold was comparable ( $p = 0.2128$ ) between the groups (123 [103, 143] vs 153 [129, 178]  $\mu\text{mol PHE} * \text{kg lbm}^{-1} * \text{hr}^{-1}$ ). Anabolic capacity in COPD tended to be increased in subjects who experienced COPD exacerbations in the previous year ( $p = 0.099$ , estimate: 0.026) and decreased by diabetes ( $p = 0.030$ , estimate: -0.028). Nutritional status, lung function and disease severity did not affect the response to feeding in COPD group.

**Conclusion:** COPD patients in comparison to healthy subjects have an enhanced anabolic capacity but similar anabolic threshold in response to nutrition. However, the response to feeding in COPD is affected by comorbidities and disease severity.

Disclosure of Interest: None declared.

## P233

### MUSCLE-RELATED MIRNAS AND ITS RELATIONSHIP WITH CIRCULATING GDF-15 AND FGF-21 LEVELS IN PATIENTS WITH CARDIAC CACHEXIA

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**Rationale:** Cachexia is highly prevalent in patients with heart failure and we aimed to identify micro-RNA (miRNA) and cytokines likely associated with this condition

**Methods:** 27 patients with Heart Failure (NYHA classes II–IV) and 17 healthy controls were enrolled. Cachexia was defined as involuntary weight loss > 5% in the prior 6 months. GDF-15 and FGF-21 serum levels were assessed by ELISA. Total RNA was extracted from plasma and circulating levels of several miRNAs potentially involved in “muscle wasting” (miR15b-3p, miR21-5p, miR29a-3p, miR29b-3p, miR133a-3p, miR206, miR486-5p) were analyzed by RT-PCR

**Results:** Median GDF15 serum levels were higher in HF patients vs controls (1065.60 vs 418.80,  $p < 0.001$ ), whereas median FGF-21 were higher in patients with cardiac cachexia vs those without cachexia (412.30 vs 201.60,  $p = 0.046$ ). Plasma miR15b-3p median levels were lower in HF patients vs controls (0.80 vs 2.00,  $p = 0.002$ ), whereas we found in cachectic patients vs controls lower plasma levels of miR29b-3p and higher of miR486-5p (0.94 vs 1.60,  $p = 0.046$  and 0.30 vs 0.20,  $p = 0.036$ , respectively). miRNA15b-3p showed a negative correlation with GDF-15 levels ( $R = -0.33$ ;  $p = 0.029$ )

**Conclusion:** GDF-15 levels were modulated in HF and FGF-21 were increased in patients with cardiac cachexia. miR29b-3p and miR486-5p seem to play a key role in cardiac cachexia and miRNA15b-3p was downregulated in HF and negatively correlated with GDF-15 levels.

Disclosure of Interest: None declared.

## P234

### GLEPAGLUTIDE PHARMACOKINETIC PROFILE AFTER SINGLE SUBCUTANEOUS INJECTION IN HUMAN SUBJECTS WITH VARYING DEGREES OF RENAL FUNCTION

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**Rationale:** Glepaglutide (Zealand Pharma A/S) is a potent long acting GLP-2 analogue currently in phase 3 for the treatment of short bowel syndrome.

A clinical phase 1 trial was conducted to investigate the pharmacokinetics of glepaglutide in subjects with varying degrees of renal impairment to assess if dose adjustment of glepaglutide potentially could be warranted

**Methods:** Sixteen Caucasian subjects were enrolled, four with end stage renal disease (ESRD) not on dialysis (eGFR <15), four with severe renal impairment (eGFR 15 to <30) and eight matching controls with normal

renal function (eGFR  $\geq$ 90). Demographics, except eGFR, were similar in the groups. PK-blood samples were collected over a 14-day period following a single dose of 10 mg glepaglutide and were analyzed for the parent drug and the two metabolites (M1 and M2). A constructed analyte glepaglutide<sub>total</sub> was used for the primary endpoint (parent + M1 + M2), using a non-compartment approach.

The primary PK parameters were area under the curve between dosing and 168 hours (AUC<sub>0-168</sub>) and the maximum plasma concentration (C<sub>max</sub>), which were computed for glepaglutide, M1 and M2.

Safety and tolerability were assessed.

**Results:** Geometric mean ratios of glepaglutide<sub>total</sub> for AUC<sub>0-168</sub> was 0.96 [90% CI: 0.69-1.35] and C<sub>max</sub> was 0.90 [90% CI: 0.62-1.31]. Hence, the exposure of glepaglutide<sub>total</sub> was 4% and 10% lower in subjects with renal impairment compared to healthy subjects.

Glepaglutide was well tolerated with no serious adverse events reported.

**Conclusion:** There were no clinically relevant differences in the primary PK parameters in subjects with renal impairment compared to healthy matched subjects. This suggests that renal function is not affecting the systemic exposure of glepaglutide and therefore dose adjustment of glepaglutide in patients with renal impairment may not be warranted.

**Disclosure of Interest:** M. Askjær Agersnap Other: Salary - Zealand Pharma, K. Sonne Other: Salary - Zealand Pharma, K. M. Knudsen Other: Salary - Zealand Pharma, W. Sulowicz : None declared

## P235

### INCREASED SPECIES RICHNESS IN THE ORAL MICROBIOME BY A 13-WEEK PROTEIN AND COMBINED LIFESTYLE INTERVENTION IN OLDER ADULTS WITH OBESITY AND TYPE 2 DIABETES

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**Rationale:** While combined lifestyle interventions have multiple health benefits, their impact on the oral microbiome is not known. We explored the effects of a lifestyle intervention including protein drink on the oral microbiome in older adults with obesity and type 2 diabetes (T2D).

**Methods:** In a post-hoc analysis of the PROBE study, 87 subjects (66.5±6.1 years, 33% female) with tongue dorsum samples at baseline and week 13 were included. All subjects participated in a 13-week lifestyle intervention with exercise (3x/week) and hypocaloric diet (-600 kcal/day), and had been randomized to receive a test product (21g whey protein enriched with leucine and vitamin D) or isocaloric control (0g protein) 10x/week. T2D was subtyped as muscle insulin resistance (MIR, n=34) or no-MIR (n=36) based on available muscle insulin sensitivity index. Microbiome was analysed by V4 16s rDNA sequencing. Diversity, measured as species richness and Shannon diversity index, was statistically analysed with paired (within group) and independent (between groups) samples *t*-test.

**Results:** In the MIR subgroup, species richness (baseline 73.1±19.1, wk13 88.1±24.9; *p*<0.001) and Shannon diversity index (baseline 2.8±0.3, wk13 3.0±0.3; *p*=0.01) increased significantly over time, and change in species richness was significantly different between test (+15.0±11.5) and control (+0.7±18.2) (*p*=0.01). On the whole group level, diversity did not change over time and did not differ between study groups. Change in species richness significantly correlated with change in BMI (*r*=-0.25, *p*=0.02) and change in fasting glucose (*r*=-0.28, *p*=0.01).

**Conclusion:** Consuming a whey protein drink enriched with leucine and vitamin D during a combined lifestyle intervention increased species richness of the oral microbiome in obese T2D subjects with muscle insulin resistance.

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## P236

### IDENTIFICATION OF THE BREATH-SIGNATURE OF CHITIN-GLUCAN INSOLUBLE FIBER IN HEALTHY VOLUNTEERS

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**Rationale:** The fermentation of dietary fiber (DF) leads to the production of bioactive metabolites, the most volatile ones being excreted in the breath. The aim of this study was to analyze the profile of exhaled breath volatile metabolites (BVM) after supplementation with the insoluble DF chitin-glucan (CG) in healthy individuals.

**Methods:** The first study explores the effect of an acute dose of CG (4.5 g at day 2 versus 4.5g of maltodextrin at day 0) added to a standardized breakfast in fasting healthy volunteers (n = 15) on the BVM profile (Selected ion flow tube mass spectrometry, SIFT-MS methodology) and the fecal gut microbiota composition (Illumina sequencing). The second study evaluates the same parameters after ingestion of a breakfast rich in fiber prior and after a 3-week intervention with CG as a supplement (4.5g/day) in healthy individuals (n=15).

**Results:** Untargeted analyses highlighted that BVM fingerprint was highly influenced by the nutritional status of the subjects. Targeted analysis revealed that 6 BVM were significantly increased after a single ingestion of CG versus maltodextrin intake, including microbial metabolites such as butyrate or 2,3-butanedione. Three weeks of CG induces specific changes in the gut microbiota composition, especially an increased relative abundance of butyrate-producing bacteria including *Eubacterium* (*q*=0.008) and *Roseburia* (*q*=0.087) genera. The chronic administration of CG decreased or delayed the expiration of most exhaled BVM in favor of H<sub>2</sub> expiration. Among them, eight positively correlated with the fecal presence of *Faecalibacterium*, a dominant butyrate-producing bacteria.

**Conclusion:** Assessing BVM after DF intake is a non-invasive methodology allowing the identification of released bioactive bacterial metabolites that can be proposed as new biomarkers of fibers fermentation, potentially linked to their biological properties.

**Disclosure of Interest:** None declared

## P237

### EFFECT OF DIETARY COUNSELING ON NUTRITIONAL STATUS OF CHRONIC KIDNEY DISEASE PATIENTS ON HEMODIALYSIS

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**Rationale:** 40-50% of end stage renal disease patients were found to be malnourished. Periodic nutrition assessment and intervention with disease-specific dietary advices can increase survival rate and slow down disease progression. Thus, this study was conducted to assess the effect of single-time dietary counseling on nutritional status of CKD patients on hemodialysis.

**Methods:** Single-arm Pre- and Post- Interventional study was conducted in Defense Services General Hospital, Myanmar. 41 adult CKD patients on dialysis were studied. At 1<sup>st</sup> assessment, a 3-day food diary, anthropometric measurements and Patient-Graded Subjective Global Assessment (PG-SGA) were used to assess nutritional status and individual dietary

counseling was provided. All assessments were repeated after 1 month and, were analysed by using STATA 15.1.  $P < 0.05$  was considered as statistically significant.

**Results:** Though mean BMI remained the same, MAC was significantly improved after 1 month ( $P = 0.003$ ). Carbohydrate and fat intakes did not increase remarkably ( $P = 0.168$  and  $P = 0.287$ ). Mean protein intake increased from  $16.7\% \pm 3.9$  at baseline to  $17.9\% \pm 3.6$  at 2<sup>nd</sup> assessment with significant increase in total energy intake ( $P = 0.001$ ).

Mean total PG-SGA score of the participants decreased from 8.22 to 4.93 within 1 month ( $P = 0.0000$ ) indicating significant clinical and nutritional improvements. There were 24 Grade B patients (Moderate malnutrition), 17 Grade C patients (Severe malnutrition) and no Grade A patients (well-nourished) at baseline. This improved to 13 Grade A patients, 26 Grade B patients and 2 Grade C patients at 2<sup>nd</sup> assessment.

**Conclusion:** At 1 month after dietary counseling, there were significant improvements in MAC, PG-SGA scores, total calorie and protein intake with improved overall nutrition status. Therefore, single-time dietary counseling can improve nutritional status of CKD patients within short period of time.

**Disclosure of Interest:** None declared

## P238

### NUTRITIONAL ASSESSMENT OF PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS (IPF)

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**Rationale:** Several factors might have a negative impact on the nutritional status of patients with Idiopathic Pulmonary Fibrosis (IPF). These factors include an increased load on the respiratory muscles, the release of inflammatory mediators, the coexistence of hypoxemia, and physical inactivity. To date, more scientific evidence is needed on the nutritional risk of these patients and the detrimental impact that it may have on their prognosis.

The primary objective of this study was to assess the nutritional status of patients with IPF. According to the obtained data, the secondary objective was to evaluate the feasibility to conduct future studies regarding this matter

	Patients (n = 22)
Age	68
Gender	
Male	20 (90%)
Female	2 (10%)
Tobacco	
Never smoker	2 (10%)
Former smoker	20 (90%)
Associated diseases	
HTA	13 (59%)
DM	7 (31,82%)
DI	8 (36,36%)
Functional tests	
FVC (%)	68,80%
DLCO (%)	40,35%
Treatment	
Nintedanib	16 (72,73%)
Pirfednidona	6 (27,27%)
Respiratory insufficiency	
No	13 (59%)
Yes	15 (61%)
Exacerbations of IPF	
No	21 (95,46%)
Yes	1 (4,54%)
Follow-up (months)	25
Up and go test (meters)	440 m

**Methods:** This trial was a descriptive study of the nutritional status of IPF patients. Analysis of epidemiological, clinical and nutritional variables was carried out in all the participants.

**Results:** Twenty-two patients with IPF were analyzed, 20 men (90%), with a mean age of 68 years.

Table 1 shows demographic and clinical characteristics of the participants. Mean (SD) weight was  $81.3 \pm 14$ , a Phase Angle (PA) was  $4.9 \pm 0.7$ , Resistance (Rz) was  $522 \pm 63$ , Reactance (Xc) was  $44 \pm 7.1$ , Hydration was  $73\% \pm 2.5$ , Nutrition  $785 \pm 146$ , Fat Free Mass (FFM)  $56 \pm 8$  kg, Total Body Water (TBW)  $42 \pm 6.7$  L, Extra Cellular Water (ECW)  $22 \pm 3.9$  L, Body Mass Cell (BCM)  $25.8 \pm 5$  kg, Appendicular Skeletal Muscle Mass (ASMM)  $21 \pm 3.5$  kg, Skeletal Muscle Index (SMI)  $9 \pm 1.1$ kg.

According to ultrasonography, there was a mean (SD) for the area of  $3.7 \pm 1.2$ cm<sup>2</sup>, for the circumference was  $9 \pm 1.3$ cm, and for X axis and Y axis were  $3.8 \pm 0.5$  cm and  $1.2 \pm 0.7$ cm respectively, and finally, mean (SD) for adipose tissue was  $0.6 \pm 0.3$ cm.

According to the abdominal ultrasound, the total adipose tissue was  $1.5 \pm 0.8$ cm, superficial adipose tissue  $0.6 \pm 0.3$ cm, and preperitoneal adipose tissue  $0.6 \pm 0.4$ cm.

According to the dynamometry a mean (SD)  $34 \pm 8$  kg was obtained. Mean (SD) was  $7.4 \pm 1.2$  seconds for the Up and Go Test.

**Conclusion:** - Although the average weight was high, a loss of muscle mass was observed regarding the BCM and the muscular ultrasound scanning. - PA mean suggested a relation between mortality and developmental pathology, but the correlation was not observed.

- PA could be a valuable tool to complement the IPF patient's nutritional assessment, presenting itself as an excellent prognostic marker. However, further studies with a larger sample size should be done.

- The assessment of malnutrition, muscle strength and physical performance in IPF patients should be considered in clinical setting.

**Disclosure of Interest:** None declared

## P239

### PHARMACOKINETICS AND PHARMACODYNAMICS OF LONG-ACTING GLP-2 ANALOGUE GLEPAGLUTIDE AFTER ONCE-WEEKLY DOSING IN ADULT HEALTHY SUBJECTS

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**Rationale:** Glepaglutide is a potent long-acting GLP-2 analogue currently in phase 3 development for the treatment of short bowel syndrome.

Following s.c. injection, 2 active metabolites (M1 and M2) are formed. As such, the clinical efficacy should be understood as the composite effect of the 3 compounds.

A clinical phase 1 trial was conducted to characterize the pharmacokinetics and pharmacodynamic profile of glepaglutide.

**Methods:** Fifteen healthy subjects (10 males), aged 25-58 yrs and with BMI of 20-30 kg/m<sup>2</sup> received 10 mg glepaglutide s.c. once-weekly for 6 weeks. Blood samples were collected throughout the 6-week period. PK samples were analyzed for parent, M1 and M2. The levels of citrulline was monitored.

Compound exposure is expressed as AUC and by the T1/2 (both within the dosing interval). Values were computed for M2 and the constructed analyte "glepaglutide (total)" = parent + M1 + M2, using a NCA approach. As such "glepaglutide (total)" represents the combined efficacy of the parent and 2 metabolites.

Safety and tolerability was assessed.

**Results:** Parent, M1 and M2 were detected in plasma. All 3 compounds are potent GLP-2R agonists. M2 was the main compound in plasma, accounting for 91% of "glepaglutide (total)". The mean effective T1/2 was  $53 \pm 21$  hours for "glepaglutide (total)".

Citrulline mean levels increased by  $20 \pm 16$  μM above baseline levels after 6 weeks.

Glepaglutide was well tolerated and no serious adverse events were reported.

**Conclusion:** Following once-weekly s.c. dosing of 10 mg glepaglutide, the parent compound and 2 functionally active metabolites were detected. All 3 are potent agonists at the GLP-2R. Thus, the overall efficacy of

glepaglutide is a composite of the 3 compounds with a T1/2 of 53 hours. Together these data suggest that 10 mg glepaglutide once-weekly could be an efficacious intestinotrophic therapy option.

**Disclosure of Interest:** K. Sonne Other: Salary - Zealand Pharma, K. M. Knudsen Other: Salary - Zealand Pharma, J. Mosolff Mathiesen Other: Salary - Zealand Pharma, G. Koefoed Rasmussen Other: Salary - Zealand Pharma, M. Berner-Hansen Other: Salary - Zealand Pharma

## P240

### ADHERENCE TO THE MEDITERRANEAN DIET IS ASSOCIATED WITH PATIENT-REPORTED FUNCTIONAL STATUS IN RHEUMATOID ARTHRITIS

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**Rationale:** Rheumatoid arthritis (RA) is a chronic inflammatory disease that leads to functional disability. Dietary interventions have been proposed to minimize the consequences of the disease in patients with RA. This study aims to assess the relationship between Adherence to the Mediterranean Diet (AdhMD), functional status and impact of disease in RA.

**Methods:** Observational, prospective and cross-sectional study including RA patients. AdhMD was assessed using the PREDIMED 14-item questionnaire. Functional status and impact of disease were assessed using the Health Assessment Questionnaire (HAQ) and the Rheumatoid Arthritis Impact of Disease (RAID) scores, respectively. For statistical analysis groups were formed based on patient's AdhMD, considering a score  $\geq 10$  as high AdhMD and a score  $< 10$  as low to moderate AdhMD. Student's T and Mann-Whitney tests were performed for comparisons between groups.

**Results:** A total of 102 patients with RA (74.5% women) with a mean age of  $62 \pm 10$  years were included and a high AdhMD was recorded in 31 patients. An inverse association was found between the PREDIMED score and HAQ ( $n=102$ ,  $p=0.014$ ). HAQ scores of patients with low to moderate AdhMD were higher than those in the high AdhMD group, and this difference was statistically significant ( $n=102$ ,  $p=0.038$ ). Mean RAID score was higher in the group with low to moderate AdhMD ( $4.59 \pm 2.15$ ) than those in the group with high AdhMD ( $3.82 \pm 2.21$ ), but this was not statistically significant ( $n=100$ ,  $p=0.108$ ).

**Conclusion:** A higher PREDIMED score was significantly associated with lower HAQ scores, indicating lower disability in RA patients with a high adherence to the Mediterranean diet. These Results suggest that the Mediterranean diet may be investigated as a possible adjuvant therapy for RA.

**Disclosure of Interest:** None declared

## P241

### DISTURBANCES IN LARGE NEUTRAL AMINO ACID PROFILE AND POOR DAILY FUNCTIONING IN MILDLY DEPRESSED CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS

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**Rationale:** Depression is one of the most common and untreated comorbidities in Chronic Obstructive Pulmonary Disease (COPD), and is associated with poor health outcomes (e.g. increased hospitalization/exacerbation rates). Although metabolic disturbances have been suggested in depressed non-diseased conditions, comprehensive metabolic phenotyping has never been conducted in those with COPD. We examined

whether depressed COPD patients have certain clinical/functional features and exhibit specific disturbances in amino acid kinetics.

**Methods:** Seventy-eight outpatients with moderate to severe COPD (GOLD II-IV) were stratified based on presence of depression (HADS score  $\geq 8$ ,  $n=27$ ). Lung function, disease history, habitual physical activity and protein intake, body composition, cognitive and physical performance, and quality of life were measured. Comprehensive metabolic flux analysis was conducted by pulse stable amino acid isotope administration. We obtained blood samples to measure postabsorptive kinetics (production and clearance rates) and plasma concentrations of amino acids by LC-MS/MS. Data are expressed as mean [95%CI]. Stats were done by graphpad Prism 9.1.0.  $\alpha < 0.05$ .

**Results:** The COPD depressed (CD) patients on average had mild depression (HADS score:  $9.2 [8.5, 9.8]$ ), were obese (BMI:  $31.7 [28.4, 34.9]$ ), and were characterized by shorter 6 minute walk distance ( $p=0.055$ ), physical inactivity ( $p=0.03$ ), and poor quality of life ( $p=0.01$ ) compared to the non-depressed COPD (CN) group. Lung function, disease history, body composition, cognitive performance, and daily protein intake were not different between the groups. In the CD group, plasma branched chain amino acid concentration (BCAA) was lower ( $p=0.02$ ) whereas leucine ( $p=0.01$ ) and phenylalanine ( $p=0.003$ ) clearance rates were higher. Reduced values were found for tyrosine plasma concentration ( $p=0.005$ ) even after adjustment for the large neutral amino acid concentration (=sum BCAA, tyrosine, phenylalanine and tryptophan) as a marker of dopamine synthesis ( $p=0.048$ ).

**Conclusion:** Mild depression in COPD is associated with poor daily performance and quality of life, and a specific amino acid signature.

**Disclosure of Interest:** None declared

## P242

### DETERMINE THE EFFECT OF DIETARY APPROACHES TO STOP HYPERTENSION (DASH) AND SALT-FREE DIET ON BLOOD PRESSURE IN PATIENTS WITH HYPERTENSION

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**Rationale:** Hypertension is a serious medical condition. This study, which was planned as a randomized controlled intervention study, was conducted to compare the effects of the DASH and salt-free diet on blood pressure in patients with hypertension.

**Methods:** The study was conducted on 60 patients (46 females, 14 males), between ages of 20-65 who were applied to 'Yılmaz Mehmet Öztaşkın Heart Hospital' between July 2019 and March 2020 and diagnosed with hypertension. Patients with a chronic disease in addition to hypertension and a change in their medications in the last 4 weeks were not included. One group ( $n=30$ ) received the individual-specific modified DASH diet and the other group received a salt-free diet ( $n=30$ ) and was followed for 2 months. The research data was collected by face-to-face interview through a questionnaire containing questions about the socio-demographic characteristics, nutritional habits and daily blood pressure measurements.

**Results:** At the end of the second month, the mean value of systolic blood pressure ( $121.03 \pm 9.73$  mmHg) in the salt-free diet group was statistically significantly lower than the DASH diet group ( $126.81 \pm 8.91$  mmHg) ( $p=0.021$ ). The mean systolic and diastolic blood pressure values ( $119.77 \pm 5.63$  mmHg,  $75.07 \pm 11.86$  mmHg, respectively) of males in the salt-free diet group at the end of the second month were significantly lower ( $p < 0.05$ ) than those in the DASH diet group ( $132.71 \pm 8.88$  mmHg,  $84.45 \pm 9.49$  mmHg, respectively). In all patients; body weight, BMI, body fat (kg), and lean mass (kg) were found to decrease over time ( $p < 0.05$ ). But there was no significant difference between the groups ( $p > 0.05$ ). Energy, protein, water, total fiber, soluble and insoluble fiber, vitamin E, magnesium, phosphorus, vitamin B1 and niacin intakes were higher in the DASH diet group when compared to the salt-free diet group at the end of the first month ( $p < 0.05$ ). Insoluble fiber and sodium intakes of the DASH diet group were significantly higher than the salt-free diet group at the end of the second month ( $p < 0.05$ ).

**Conclusion:** In conclusion, the salt-free diet has a greater effect in lowering systolic blood pressure than the DASH diet. However, the DASH diet group was found to be rich in nutrients such as fiber and magnesium

than the salt-free diet group. According to this; It is thought that restricting the amount of salt in the DASH diet may have more positive effects on blood pressure in the management of hypertension.

**Disclosure of Interest:** None declared

## P243

### PREVALENCE AND BURDEN OF MALNUTRITION DIAGNOSIS AMONG US HEART FAILURE INPATIENTS

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**Rationale:** Heart failure (HF) affects about 6.2 million adults in the United States and is responsible for over 13% of annual deaths. Annual economic burden of HF is estimated as \$30.7 billion. Risk factors such as malnutrition, diabetes and obesity increase such burden and result in additional healthcare costs. Malnutrition in particular, continues to be under-diagnosed and undertreated and little is known about the burden it poses on HF patients. We assessed the prevalence and burden of malnutrition on United States HF inpatients diagnosed with diabetes and obesity by examining length of stay (LOS), inpatient charges, and the proportion of high cost outlier payments.

**Methods:** Hospital inpatient HF claims from the Centers for Medicare & Medicaid Services (CMS) Inpatient Prospective Payment System (IPPS) between October 1, 2018-September 30, 2019 were analyzed. International Classification of Diseases, Tenth Revision (ICD-10) diagnosis codes for malnutrition were used. Clinical and economic burden was estimated by calculating the mean LOS, inpatient charges, and the proportion of high cost outlier payments between patients with and without a malnutrition diagnosis.

**Results:** Of 103,792 HF inpatient hospital claims, only 8.4% were diagnosed with malnutrition. HF patients with malnutrition had significantly longer LOS (4.9 vs 9.0 days), increased charges (\$11,559 vs \$24,718) and greater proportion receiving high cost outlier payments (2.0% vs 8.7%) compared to their well-nourished counterparts. Malnourished HF patients with either diabetes or obesity had a longer LOS (5.0 vs 9.7 days; 5.8 vs 12.1 days), increased charges (\$48,683 vs \$129,392; \$54,292 vs \$160,107) and greater proportion receiving high cost outlier payments as well (2.2% vs 10.6%; 3.1% vs 15.1%; all p-values <0.05).

**Conclusion:** Malnourished hospitalized HF patients pose a significant burden to healthcare systems due to high healthcare use and costs. Results highlight the importance of comprehensive nutrition care programs and specialized nutrition interventions for older adults with HF to further optimize their health outcomes and reduce healthcare costs.

**Disclosure of Interest:** C. Brunton Shareholder of: Abbott Laboratories, S. Sulo Shareholder of: Abbott Laboratories, S. Drawert Shareholder of: Abbott Laboratories

## P244

### MUSCLE STRENGTH IN CHRONIC MAINTENANCE HAEMODIALYSIS PATIENTS

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**Rationale:** End-stage kidney damage causes toxic metabolic wastes to build up in the body; with associated malnutrition muscles get damage and leading to poor function of muscles.

**Methods:** A descriptive study was conducted in National Hospital Kandy, Sri Lanka by using 114 patients on chronic maintenance haemodialysis. (87-males, 52±12.2 years of age, 2±1.7 years on dialysis). Handgrip strength (HGS) was assessed by a digital hand dynamometer before dialysis on the non-fistula hand. Highest value after three measurements

taken for analysis. According to EWGSOP2 criteria, HGS lower than 27kg for men and 16kg for women were considered as low muscle strength. The correlation between HGS and age, duration of dialysis, body mass index, mid-upper arm circumference (MUAC), skeletal muscle mass percentage via bioelectrical impedance analysis, serum albumin, serum creatinine, serum sodium, haemoglobin and vitamin D level was analyzed.

**Results:** The mean handgrip strength in males is 23.7±6.9Kg and in females it's 15.5±6.0Kg. A high prevalence of low muscle strength noted in both males and females, 56 (64.4%) and 14 (51.9%) respectively. Handgrip strength in males had a significant negative correlation with the age of the patient (P <0.001), also males had a significant positive correlation with MUAC (P <0.016) and serum creatinine level (P <0.003). Other parameters had no significant correlation in both males and females.

**Conclusion:** Patients on maintenance haemodialysis are having a high prevalence of low muscle strength. Even though males had a significantly high mean value of grip strength their prevalence of low muscle strength is high compare to females. Skeletal muscle mass percentage in the body had no significant influence on HGS in these patients. Attention should be given early in the disease to maintain muscle strength and to reduce sarcopenia risk.

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**Disclosure of Interest:** None declared

## P245

### MILD COGNITIVE IMPAIRMENT IN COPD IS ASSOCIATED WITH REDUCED FUNCTIONAL PERFORMANCE, INDEPENDENT OF DISEASE CHARACTERISTICS, NUTRITIONAL STATUS, OR PLASMA AMINO ACID CHANGES

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**Rationale:** Previously we observed reduced cognitive performance in Chronic Obstructive Lung Disease (COPD) patients with skeletal muscle weakness. To better understand the potential link between brain and muscle dysfunction in COPD, we examined whether daily functional performance is impaired in COPD patients with mild cognitive impairment, and if disease severity/history, nutritional status, and amino acid modulators of brain serotonergic and dopaminergic function play a role.

**Methods:** We studied COPD patients: 42 with MCI (Moca: 23.66 [23.25, 24.06]) and 44 without MCI (Moca: 27.46 [27.18, 27.73]) and assessed skeletal muscle strength by handgrip dynamometry, and daily functional performance by 6 minute walk distance and 4 meter gait speed tests. We measured lung function, disease history, physical activity (by PASE questionnaire), body composition (by DXA). Blood samples were obtained to measure plasma amino acid profile (by LC-MS/MS) to assess the amino acid modulators of serotonergic and dopaminergic function (tryptophan, tyrosine, and large neutral amino acids), and concentrations of C-reactive protein (CRP), glucose, and insulin. HOMA index was subsequently calculated. Stats by ANCOVA and graphpad Prism 9.1.0,  $\alpha < 0.05$ .

**Results:** The MCI group was characterized by lower muscle strength (p=0.0342) and gait speed (p=0.0689) compared to the non-MCI COPD group. Lung function, O2 saturation, CRP, HOMA index, body composition, and daily protein intake were not different between the groups. Increased values were found for plasma tyrosine concentration after adjustment for the large neutral amino acid concentration (p=0.002), but no changes were found for tryptophan. Six minute walk distance was lower in the MCI group even after adjustment for the lower physical activity level (p=0.0412) and plasma tyrosine (p=0.0403).

**Conclusion:** Although reduced functional performance is present in COPD patients with MCI, this cannot be explained by disease characteristics, nutritional status, or altered amino acid profile.

**Disclosure of Interest:** None declared

## P246

**IMPACT OF TEDUGLUTIDE, A GLP-2 AGONIST, ON INFLAMMATORY BOWEL DISEASE-ASSOCIATED SHORT BOWEL SYNDROME: A TERTIARY SINGLE-CENTER STUDY**

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**Rationale:** Teduglutide (TED), a GLP2 agonist, have been shown to exert anti-inflammatory effects on the intestinal mucosa in murine preclinical models and evaluated with a positive trend in a phase 2a randomized controlled trial in non-short bowel syndrome (SBS) Crohn's disease (CD) patients.

TED showed efficacy in reducing parenteral nutrition and or intravenous (PN/IV) dependence in SBS with intestinal failure (SBS-IF). However, limited data exists on its specific effect on the natural history of IBD in SBS patients treated with TED.

Therefore, we aimed to assess the efficacy and safety of TED in patients with IBD-associated SBS as well as the effect of TED on the course of IBD.

**Methods:** We conducted an observational retrospective study. Adult patients SBS-IF due to IBD and who were treated with TED were enrolled. Response was defined as a decrease of at least 20% in total volume of PN. Active IBD was defined based on morphologic and histologic data (CT-scan, colonoscopy and/or enteromRI). Patients were followed until last news or TED discontinuation.

**Results:** We enrolled 14 IBD patients, including 2 patients with ulcerative colitis, with a median follow-up of  $4.2 \pm 4$  years. Of the 12 CD patients, 11 had ileocolonic involvement and 1 had only small bowel involvement. 11 patients had type-1 SBS and 3 had type-2 SBS. 7 patients were only receiving intravenous fluid and 7 were on PN/IV. Patients were in average receiving PN/IV for 9.1 years at TED initiation.

Regarding IBD, 4 patients had active disease at inclusion, 3 with a structuring behavior and 1 with a fistulizing behavior. 5 patients were on biologic treatment (antiTNF or ustekinumab) at inclusion.

At month 3 (M3), 9 of 14 patients were responders. 3 were weaned from any iv supplementation. 3 of 7 patients initially on TPN were weaned from caloric input, including one still receiving iv fluids. Caloric input was in average at 7,330 kcal/week at baseline versus 4,615 at M3. Mean total parenteral volume went from 11,849 ml/week at M0 to 82,23 at M3.

2 of 4 patients with active disease at baseline showed improvement in disease activity while on TED. The latter 2 patients were totally weaned off PN/IV.

Six patients withdrew TED during follow-up. 2 patients stopped after a diagnosis of cancer (1 melanoma and 1 chronic myeloid leukemia). Survival without TED discontinuation was estimated at 85.7% IC95(69.2-100) at 1 year, 78.6% IC95(59.8-100) at 2 years and at 64.3% IC95(43.5-95) at 5 years.

**Conclusion:** TED appears effective and safe in IBD-associated SBS-IF patients. In specific cases, it may impact positively the inflammatory course of the disease. Further prospective studies are warranted to specifically evaluate TED in IBD-associated SBS, including patients with active IBD.

**Disclosure of Interest:** None declared

## P247

**ASSOCIATION BETWEEN TRIGLYCERIDE-GLUCOSE INDEX AND TYPE-2 DIABETES MELLITUS IN INDIVIDUALS WITH HYPERTENSION**

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**Rationale:** Triglyceride-glucose (TyG) index has been related to insulin resistance in general population, but its relationship with type-2 diabetes mellitus (T2DM) in individuals at risk for cardiovascular

disease is poorly understood. The aim of this study was to evaluate the association between TyG index and T2DM in individuals with hypertension.

**Methods:** This was a cross-sectional analysis conducted with baseline data from a multicenter randomized clinical trial (NUPRESS study, NCT03793881), in which individuals with hypertension aged  $\geq 21$  years who consented to participate were included. A standardized protocol was used for demographic, clinical, anthropometric, and biochemical data collection. Systolic and diastolic blood pressure (SBP/DBP) were obtained from an automated oscillometric monitoring device. TyG index was calculated according to  $\ln$  [fasting triglycerides (mg/dL) x fasting glucose (mg/dL)/2]. ANCOVA model and area under the receiver operating characteristic (AU-ROC) curve were used to evaluate possible associations.

**Results:** In total, 350 individuals were evaluated with mean age  $52.2 \pm 10.5$  years and BMI  $31.3 \pm 4.7$  kg/m<sup>2</sup>; 41.4% were men and 19.1% had T2DM. Regarding metabolic features, means of triglycerides, glucose, glycated hemoglobin (HbA1c), SBP, DBP, and TyG were, respectively:  $158.8 \pm 113.3$  mg/dL,  $106.1 \pm 41.9$  mg/dL,  $6 \pm 1.4\%$ ,  $138.4 \pm 19$  mmHg,  $90.1 \pm 12.6$  mmHg, and  $8.9 \pm 0.6$ . After adjustment for sex, age, BMI and HbA1c, means of TyG index were higher in individuals with T2DM in comparison to those without T2DM ( $9.3 \pm 0.8$  vs.  $8.8 \pm 0.5$ ;  $P < 0.0001$ ). The AU-ROC curve was 0.72 (CI 95% 0.65 – 0.79;  $P < 0.0001$ ), indicating a good discriminatory power of TyG in predicting T2DM; a cut-off point of 8.6 showed 85% of sensitivity and 39% of specificity.

**Conclusion:** In individuals with hypertension, TyG index was associated with diagnosis of T2DM.

**Disclosure of Interest:** None declared

## P248

**EARLY DEVELOPMENT OF SMALL-INTESTINAL POLYPS IN PATIENTS WITH SHORT BOWEL SYNDROME TREATED WITH TEDUGLUTIDE**

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**Rationale:** Short bowel syndrome with intestinal failure (SBS-IF) requires use of parenteral support (PS) and highly impacts patients quality of life. Teduglutide (TED), a GLP-2-analog, has proven efficacy reducing the need for PS. After the publication of two case reports describing the development of duodenal and jejunal polyps in patients with SBS treated with TED (1,2), we aimed to verify this risk in a cohort of SBS patients treated with TED in an expert center of chronic intestinal failure.

**Methods:** This study is a single-center observational retrospective study. We analyzed the Results of upper and lower gastro-intestinal endoscopies of patients treated with TED. The lesions observed were described.

**Results:** Overall, 57 patients initiated the treatment with TED since 2015. We analyzed data in February 2021. At the data analysis, 35 patients were still treated with TED. Twenty-six out of these 35 patients had at least a monitoring endoscopy performed on average after 36 months of treatment. Eight patients presented with visible polypoid-lesion not observed at endoscopies done at inclusion in 7 patients. Three quarters of patients ( $n = 6$ ) had a lesion in small-bowel (5 in the bulb, 1 in the jejunum), 3 corresponded to adenoma (traditional in 2, serrated in 1) and 3 to hyperplastic polyps developed on gastric heterotopia. The two patients left developed traditional colonic adenomas. All lesions displayed low-grade dysplasia and proficient MMR phenotype. The clinical characteristics of these patients are summarized in the table below.

**Conclusion:** This observational study alerts to the importance of regular upper and lower gastro-intestinal endoscopies for early detection of induced-neoplasia in patients treated with TED. Most *de novo* polypoid-lesions described in our center presented unusual histology and location, needing to raise urgent scientific awareness of the issue of long term TED use.



Patients	1	2	3	4	5	6	7	8
Age (years)	20	60	54	63	53	54	39	47
Male	No	Yes	No	Yes	Yes	Yes	No	Yes
Etiology of SB	CIPO	Crohn	Crohn	AMI	AMI	CIPO	Post-surgical	AMI
Remnant small bowel (cm)	Unknown	130	150	20	40	140	30	17
Remnant colon (%)	0	0	7	80	50	0	100	80
Mounting	Ileostomy	Ileostomy	JCA	JCA	JCA	Jejunostomy	JCA	JCA
GLP2 duration (mo)	13	48	46	48	57	37	26	11
Lesion location	Jejunum	Bulb	Bulb	Bulb	Bulb	Bulb	Colon	Colon
Lesion size (cm)	3	1	3	1	0.3	1	0.3	1
Histological type	HP / GH	HP / GH	HP / GH	SA LGD	TA LGD	TA LGD	TA LGD	TA LGD

SB: short bowel; CIPO: chronic intestinal pseudo-obstruction (Hirschsprung disease); AMI: arterial mesenteric ischaemia; JCA: jejunocolic anastomosis; HP: hyperplastic polyp; GH: Gastric heterotopia; SA: serrated adenoma KRAS mutated; TA: traditional adenoma; LGD: low grade dysplasia.

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**Disclosure of Interest:** None declared.

## P249

### INTESTINOTROPHIC EFFECT OF A NOVEL LONG-ACTING GLP-2 ANALOG, HM15912, IN ANIMAL MODEL OF SHORT BOWEL SYNDROME AND POTENTIAL AS MONTHLY ADMINISTRATION

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**Rationale:** Teduglutide, the only approved GLP-2 drug for short bowel syndrome (SBS), may lead to significant burden due to frequent dosing with complicated reconstitution step and limited efficacy. Here, we developed a long-acting GLP-2 analog, HM15912, to provide a benefit of a less SC dosing with read-to-use, and investigated its efficacy in animal models.

**Methods:** In jejuno-ileal rats after 80% resection, teduglutide or HM15912 were SC administered, and jejunum weight, villus height, crypt depth, and mucosal area was measured after 2 weeks treatment. For absorption capacity, D-xylose test was performed. To further investigate monthly potential, C57BL/6 mice were treated with teduglutide or weekly GLP-2 analogs by their respective treatment regimen, or HM15912 by various treatment intervals to cover once a month in human. Small intestine (SI) mass and serum D-xylose were measured after 2 weeks treatment. Results were statistically evaluated by one-way ANOVA.

**Results:** In jejuno-ileal rats, HM15912 significantly increased jejunum weight than teduglutide. The result was well-correlated with histological analysis. Serum D-xylose was also significantly increased by HM15912 than teduglutide. In normal mice, all administration regimens of HM15912 significantly increased SI mass than teduglutide and weekly GLP-2 analogs. At equimolar dose with Q2D, HM15912 significantly increased SI mass than weekly GLP-2 analogs (112% vs 47% and 51% over vehicle). Weekly administration of HM15912 mimicking once a month in human also significantly increased SI mass (74% over vehicle) than weekly GLP-2 analogs.

**Conclusion:** Significant intestinotrophic efficacy than teduglutide and weekly GLP-2 analogs even with less dosing frequency supports that HM15912 will provide a better treatment option to SBS patients.

**Disclosure of Interest:** J. H. Choi Other: employee, J. B. Lee Other: employee, E. J. Park Other: employee, S. M. Bae Other: employee, D. J. Kim Other: employee, S. H. Lee Other: employee, I. Y. Choi Other: employee

## P250

### BIOELECTRICAL IMPEDANCE ANALYSIS AS A DIAGNOSTIC METHOD OF NUTRITIONAL STATUS IN CHILDREN WITH ULCERATIVE COLITIS AND CROHN'S DISEASE

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**Rationale:** In some cases, anthropometry and laboratory markers are not quite effective for nutritional assessment in children with ulcerative colitis (UC) and Crohn's disease (CD). Thus, the bioelectrical impedance analysis (BIA) for estimating body composition is actively introducing into clinical practice.

**Methods:** Body composition assessed in 51 children aged 6–17 years with UC and CD and made a comparative analysis according to the disease activity. CD group included 10 children at the active stage of the disease, 8 in remission. UC group included 18 patients with active stage, 15 in remission. For nutritional status assessment, the WHO standards and BIA parameters (active cell mass (ACM), fat mass (FM), musculoskeletal body mass (MBM), lean mass (LM), phase angle (PA) were used.

**Results:** Among children with the active stage of CD, mild malnutrition was in 3 (17%) patients, moderate and severe – in 2 (11%) and 3 (17%), respectively. Based on the results of the BIA, deficiency of LM and ACM was in 8 (44%) children. FM deficiency and FM excess were in 4 (22%) and 1 (5%) patients, respectively. PA values was <4.4° in 3 (17%) cases indicates a high probability of catabolic shifts. In the CD remission group according to BMI mild malnutrition was in 4 (22%), moderate – in 3 (17%) patients. 1 (5%) patient was overweight. LM deficiency was in 6 (33%), ACM - in 7 (39%) cases. FM decrease was in 1 (5%) patient. PA indices <4.4° was in 1 (5%) child. Mild malnutrition was in 4 (12%) children, moderate – in 6 (18%), severe – in 2 (6%) children with UC active stage. LM and ACM deficiency was in 13 (40%) patients. FM deficiency and FM excess were in 3 (9%) and 5 (15%) cases, respectively. PA values <4.4° was in 3 (9%) patients. In the UC remission group according to BMI mild malnutrition was in 4 (12%), moderate and severe – in 1 (3%) patient each. 4 (12%) patients were overweight. LM and ACM deficiency was in 8 (24%) cases. 4 (12%) children had a FM excess. PA value <5.4° was determined in 7 children.

**Conclusion:** Nutritional status (NS) disorders were in both UC and CD regardless of disease activity. The most significant markers – LM and ACM deficiency, catabolic pathway (PA < 4.4°) – were more often at the disease active stage. FM excess can hide the LM and ACM deficiency in children with UC and CD. It further confirms the requirement of a comprehensive assessment of NS using the BIA.

**Disclosure of Interest:** None declared

## P251

**LOSS OF APPETITE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A DESCRIPTIVE AND QUALITATIVE STUDY WITH A MIXED METHOD APPROACH**

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**Rationale:** Loss of appetite in patients with Chronic Obstructive Pulmonary Disease (COPD) can lead to malnutrition and unintentional weight loss, which is associated with an increased risk of morbidity and mortality. Factors associated with loss of appetite and eating problems in patients with COPD are not well-described.

**Aims: 1)** To identify COPD-related factors associated with loss of appetite and **2)** to explore COPD patients' experience of appetite and eating problems through individual qualitative interviews.

**Methods:** Council on Nutrition Appetite Questionnaire (CNAQ) is validated to examine loss of appetite in older adults and in patients with chronic disease. A CNAQ-score  $\leq 28$  is defined as loss of appetite.

A questionnaire was posted in a COPD-specific online forum including questions on demographics, height, weight, smoking, civil status, number of homemade meals, FEV1% predicted, history of exacerbations, COPD Assessment Test (CAT) and CNAQ.

10 patients were randomly recruited for semi-structured phone interviews to explore the patient's own experience regarding appetite and eating.

**Results:** 87 patients (65 females) responded to the questionnaire; mean age  $64.6 \pm 7.5$ , median BMI 26.3 (range 16.4–45.4), 17% current smokers and 69% former smokers. The mean CAT-score was  $20.5 \pm 6.5$  and the mean CNAQ-score was  $26.5 \pm 4.9$ .

53 patients had loss of appetite. A higher CAT-score (23 vs. 17.5,  $p < 0.001$ ), lower FEV1% predicted (30.5 vs. 42.0,  $p = 0.03$ ), living alone (68% vs. 32%,  $p = 0.02$ ) and getting all meals delivered (19% vs. 0%,  $p < 0.01$ ) were associated with a loss of appetite.

10 phone interviews were conducted, where factors such as social contact, severity of disease, physical activity, daily routine, support, and knowledge about nutrition were identified as influencing the patients' appetite and eating patterns.

**Conclusion:** Severity of disease (high CAT-score and low FEV1 %), living alone and a need for meal delivery were associated with loss of appetite. Through interviews it was found that a lack of physical activity, social contact, daily routine, support, and knowledge about nutrition lead to appetite and eating problems.

**Disclosure of Interest:** None declared.

## P252

**NUTRITION PROGRAM FOR OUTPATIENT COLOMBIAN OLDER ADULTS AT MALNUTRITION RISK IMPROVED NUTRITIONAL AND FUNCTIONAL OUTCOMES**

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**Rationale:** Malnutrition leads to multiple adverse outcomes and poses a significant economic burden among older adults residing in the community. Addressing malnutrition through nutrition care programs can improve overall patient health and reduce healthcare costs. We assessed the impact of comprehensive, nutrition-focused quality improvement program (QIP) on nutritional and functional outcomes of Colombian older adults presenting for outpatient care post a recent hospitalization and/or for chronic disease management.

**Methods:** QIP patients classified as at-risk/malnourished based on the Mini Nutritional Assessment-Short Form (MNA-SF) were recruited between September 2019–March 2020 from the outpatient clinical service of Hospital Universitario San Ignacio in Bogotá, Colombia. Functional status was assessed using the Barthel Index. Patients were followed for up to 12 weeks after baseline visit; received a 60-day supply of oral nutritional supplements (ONS; Ensure or Glucerna, Abbott, USA); and were educated on the importance of nutrition and exercise.

**Results:** 618 patients were included in the analysis and were mainly female (69.4%), with mean age of  $74.1 (\pm 8.7)$ , and  $2.6 (\pm 1.5)$  comorbid conditions. Significant improvements over 90-days in nutritional status (MNA-SF scores: 9.3 vs. 11.4), calf circumference (30.3 vs. 32.0 cm), and functionality (96.1 vs. 96.7) were observed post QIP intervention ( $p$ -values  $< 0.001$ ).

**Conclusion:** Comprehensive nutrition-focused QIP for at-risk/malnourished older outpatient adults resulted in improved nutritional and functional outcomes. Results highlight the importance of malnutrition screening and intervention with optimized nutrition care and ONS for older adults that require medical care post a recent hospitalization and/or due to multiple chronic conditions.

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## P253

**COMMUNITY OPTIMIZED MANAGEMENT FOR BETTER EATING AFTER HOSPITAL STAY-COM EAT**

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**Rationale:** Many malnourished hospital patients remain after discharge. We aimed to enhance the meal experience after discharge by delivering meals together with physical support at the home and tested if this increased food intake affected survival and quality of life.

**Methods:** 60 discharged patients suffering from nutritional (MUST  $> 2$ ) and financial frailty were included. Control group (C) took their regular nutrition at home for 6 months and study group (S) received a daily dinner tray sponsored by the municipality. Hazalla philanthropic organization encouraged the patients at lunch for 6 months. Body composition (Quadstat 4000, Bodystat, UK), energy requirements (Fitmate- COSMED, Italy) were measured at recruitment. Primary outcome was 180 days survival. In addition, in the recruitment stage and after a period of 3 and 6 months, depression and anxiety questionnaire (HADS), quality of Life Questionnaire-SF36 and FIM questionnaire - designed to examine the level of independence of patients with disability were performed at days 0, 90 and 180. Statistical analysis used T- Test and ANOVA Repeated Measures. The study was approved by local IRB.

**Results:** 29 patients in the control group and 31 patients in the study group were included. Mean age was  $77 \pm 10$  years, mean BMI was  $24 \pm 6.3$  kg/m<sup>2</sup>. Body composition and energy requirements were not different between groups. Six months survival was significantly improved in S (27/31- 87%) compared to C (19/29- 65%,  $p < 0.05$ ). HADS showed significant improvement in the study group ( $P < 0.04$ ). The Quality of Life and FIM questionnaire were not significantly improved between the groups.

**Conclusion:** In patients at hospital nutritional risk, lunch home delivery and supported by physical company after hospital discharge was associated with significant lower mortality and improved depression and anxiety scores. These findings should encourage large prospective studies.

**Disclosure of Interest:** None declared.

## P255

**A CROSS SECTIONAL STUDY TO EVALUATE ASSOCIATED FACTORS FOR CHRONIC ANAL FISSURE**

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**Rationale:** Anal fissure is a common benign anorectal disorder, characterized by painful longitudinal tear in the distal anal canal, causes significant morbidity among otherwise healthy individuals. Despite having number of studies, the etiology and pathogenesis of anal fissure have never been fully understood. Main objective of this study is to assess the relationship of obesity, constipation, type of food consumption and time spent in the toilet to chronic anal fissure (CAF).

**Methods:** This is a cross sectional study involving 30 patients with CAF presented to the surgical clinic and undergone surgery, within one year. An interviewer administered questionnaire was used to assess the etiological factors. The WHO categories of BMI (1) were used to assess the obesity and Rome III criteria (2) was used to assess the constipation. Results were presented as percentages and frequencies.

**Results:** Out of the 30 patients, 23 (76.7%) were females. The mean age was 38.9 (SD 14.279) years. Majority were over-weight or obese 18(60%). Only 3(10%) had constipation. Twenty (66.7%) were eating 3 servings of vegetable and 2 servings of fruits daily and only 5(16.7%) patients found to eat fast foods daily. Among them 19(63.3%) of the patients spent more than 5 minutes in the toilet.

**Conclusion:** Even though it is believed that constipation was main etiological factor for CAF, this study shows only few has constipation. Majority of this sample did not have the usual dietary risk factors for the CAF. Obesity and prolonged time spending at the toilet were main associated factors with CAF. Therefore further evaluation of etiological factors of CAF is needed with a larger scale study.

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**Disclosure of Interest:** None declared

## P256

**THE EFFECT OF A SIMPLIFIED DIETARY INFOGRAPHIC ON THE NUTRITIONAL STATUS AND URAEMIC TOXINS IN PRE-DIALYSIS PARTICIPANTS**

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**Rationale:** Nutritional status in chronic kidney disease (CKD) patients is negatively affected by the metabolic complications of the disease and low adherence to the traditional CKD diet. This diet is challenging due to many dietary restrictions, however there is little evidence to support their benefits. The study aimed to investigate the effect of simplified dietary guidelines using an infographic on nutritional outcomes and intestinally derived uraemic toxins

**Methods:** This study formed part of a trial investigating the effect of a prebiotic on kidney function outcomes, uremic toxins and the gut microbiome in CKD stage three to five participants attending a pre-dialysis clinic in Cape Town, South Africa. It reports only on the effect of the dietary education advised before participants were randomized. Sociodemographic, clinical and biochemical information were collected and anthropometric measurements were performed. Uraemic toxins were quantified by UPLC/fluorescence detection. Participants were advised by the study dietitian on simplified CKD dietary guidelines using an infographic. Dietary intake was assessed using a quantified food frequency questionnaire. Dietary adherence scores were used to monitor adherence. The study assessed changes from baseline (visit one) to visit two at four weeks. Statistical Package for the Social Sciences (SPSS) version 26 was used for

descriptive and analytical statistical analysis. Ethical approval was obtained from the Human Research Ethics Committee of Stellenbosch University.

**Results:** Fifty-nine participants, mean age 41.0±11.6 years, 58% females and 42% males were enrolled. Significant improvements were found in anthropometrical, biochemical and dietary intake variables. There was a significant reduction in body mass index (p<0.006), waist circumference (p<0.001), serum total cholesterol (p<0.045), serum triglycerides (p<0.017) and nearly all dietary intake variables. Uraemic toxin concentrations remained stable. Dietary adherence was 88.6 ± 10.6 %. Patients reported that they understood the infographic and were able to make dietary changes.

**Conclusion:** The simplified dietary infographic guidelines advised by the dietitian resulted in improved nutritional outcomes in CKD patients. This study highlights the important role of the dietitian in assisting CKD patients to make dietary changes using practical, simplified guidelines.

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## P257

**NUTRITIONAL AND ENVIRONMENTAL TRIGGERS IN WOMEN WITH MIGRAINE**

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**Rationale:** Migraine is a chronic recurrent disorder with episodic headache. Environmental and nutritional factors can influence migraine as neurovascular disorder. This study was designed to identify and investigate the influence of environmental and nutritional factors as triggers of migraine.

**Methods:** 130 women aged 18-50 years old (mean age was 33.6 ± 7.29) with migraine, voluntarily participated in this study in Tabriz, Iran. All participants had migraine confirmed by a neurologist according to The International Classification of Headache Disorders (ICHD) criteria. The patients' history of migraine was at least one year and they had episodic migraine headache with or without aura with at least two migraine attacks per month.

**Results:** In the current study, migraine triggers were divided into two groups of environmental and dietary factors. From the environmental factors group, sleep disturbance, stress, fatigue, and noise exposure (all about 90% of the study population), sun exposure or menstruation (about 75%) played the most important role, then exposure to severe odors (about 70%), exposure to heat or cold (both about 65%), exposure to smoke (about 60%), physical activity (about 45%), and finally light exposure (about 40%). In the dietary factors group, hunger (about 80% of subjects) and with a large difference were cold drinks (about 30%) and finally thirst and processed foods (about 27%). The most common foods mentioned by the patients as triggers of the attacks were: Pickles, saltiness and vinegar in 18%, onions in 11%, garlic, nuts, Tabriz cheese and cured meats in 9%.

**Conclusion:** In conclusion, food components are only the triggering factors for migraine attacks and only in combination with other factors such as stress, physical activity, hormonal changes, hunger and climate change lead to the occurrence of headache.

**Disclosure of Interest:** None declared

## P258

**ATTITUDES AND EXPECTATIONS OF PATIENTS ON HOME PARENTERAL NUTRITION TOWARDS EHEALTH**

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**Rationale:** eHealth denotes the use of electronic tools in healthcare to improve processes and connect patients with health care personnel. We are developing an eHealth platform for home parenteral nutrition (HPN) patients, including video consultations, instructions (e.g. for patient education), and interaction with patient support groups. In addition, this platform will serve as a central repository for treatment- and care-related data for patients and medical staff. For the creation and implementation of such an eHealth platform, we need to know the attitudes and expectations of HPN patients towards eHealth.

**Methods:** We conducted an anonymous survey on the attitudes and expectations of HPN patients towards eHealth. We interacted with patients in person or by phone. The questionnaire consisted of 18 questions on HPN care, familiarity and experience with digital devices, attitudes and expectations towards video consultations and other components of the intended platform.

**Results:** We included 25 HPN patients (60% females) looked after by two different HPN centers. Mean (SD) age was 55 (14) years and median (range) duration of HPN was 305 (29–4528) days. A majority of participants (n = 21, 84%) reported using a smartphone, tablet or computer and 16 (64%) rated their digital skills as proficient. Almost half of the participants (n = 11, 44%) found it cumbersome to go to the hospital for follow-up visits and 19 (76%) were open to video follow-up visits. Easy operation of the platform was important to 16 participants (64%). The table shows the number of participants who rated the proposed components and data to be stored and collected on the platform as important.

Component	Rated as important by n (%)	Data collection and storage	Rated as important by n (%)
Videoconferencing with physicians	20 (80%)	Weight	24 (96%)
Videoconferencing with dietitians	19 (76%)	Blood pressure	20 (80%)
Videoconferencing with nurses	11 (44%)	Body temperature	18 (72%)
Videoconferencing with homecare	7 (28%)	Blood glucose	18 (72%)
Checklists for PN, catheter and pump handling	20 (80%)	Infusion plan and administration details	23 (92%)
Data collection and storage	20 (80%)	Medication plan and intake	22 (88%)
Data protection	20 (80%)	Laboratory parameters	21 (84%)
Video instructions	18 (72%)	Catheter photos	20 (80%)
Automatic ordering of PN material	17 (68%)	Pain	20 (80%)
Automatic dietary records	16 (64%)	Nausea	20 (80%)
		Other test Results (e.g. bone mineral density)	20 (80%)
		Stool frequency and consistency	19 (76%)
		Reports from different hospitals/practices	19 (76%)
		Dietary records	17 (68%)
		Stoma loss	16 (64%)
		Urine volume	12 (48%)

**Conclusion:** HPN patients are open towards an eHealth platform for care support, including video follow-up visits. This is especially useful in a pandemic. Important criteria for the design of the eHealth platform were identified and confirmed by HPN patients. We plan a validation study to evaluate the benefits of follow-up visits via videoconferencing versus in person usual care in those patients.

**Disclosure of Interest:** None declared

## P259

### MALNUTRITION PREVALENCE AND BURDEN AMONG MEDICAL AND SURGICAL VIETNAMESE PATIENTS: OPPORTUNITY FOR COMPREHENSIVE NUTRITION CARE

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**Rationale:** Malnutrition or its risk often goes unrecognized or inadequately treated among hospitalized patients worldwide. Evidence from studies in Asian hospitals has shown that even when undernutrition is

detected, there is a gap in delivery of care. We assessed the prevalence and economic burden of undernutrition among different diagnoses groups in a large Vietnamese hospital as a first step toward improving hospital nutrition care with added potential for lowering associated costs of hospital care.

**Methods:** A retrospective analysis of 1600 patients admitted to the University Medical Center hospital in Ho Chi Minh City, Vietnam over a 2.5-year interval was conducted. Undernutrition or its risk was identified as (1) a diagnosis of malnutrition by a physician, and/or (2) a body mass index (BMI)  $\leq 18.5$  kg/m<sup>2</sup>, and/or (3) a score  $\geq 3$  on the Nutritional Risk Screening (NRS)-2002, and/or oral nutritional supplements (ONS) recorded in the medical chart during patient's hospital stay. ONS utilization and hospital costs were also analyzed.

**Results:** Over 60% of patients were under-nourished or at risk based primarily on BMI or NRS-2002 score. The highest prevalence of malnutrition risk occurred in digestive surgery (84.8%) followed by general internal medicine (73.9%), gastroenterology (70.1%), respiratory (70.1%) and cardiology patients (48.9%). No ONS use was recorded in the medical chart during the hospital stay among all groups except gastroenterology (0.4%). Hospitalization costs ranged from 24.4x106 ( $\pm 18.8$ x106) VND for gastroenterology patients to 37.7x106 ( $\pm 27.5$ x106) VND for digestive surgery patients.

**Conclusion:** Despite malnutrition or its risk being highly prevalent and costly among hospitalized patients with different diagnoses, ONS utilization remains severely low. Gaps in delivery of nutrition care can be

addressed with simple but comprehensive nutrition-focused quality improvement programs which have been found to enhance nutritional interventions utilization including disease-specific ONS in hospitals to improve health outcomes and lower hospitalization costs.

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## P260

### PREVALENCE OF PARTIAL REMISSION OF EATING DISORDERS AT 6, 12, 18 AND 24 MONTHS IN PATIENTS OF A DAY HOSPITAL PROGRAM: ASSOCIATION WITH QUALITY OF LIFE OF PATIENTS AND CARERS

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**Rationale:** Eating Disorders (ED) present a high prevalence. This study evaluates the possible remission of ED in a holistic treatment based on systemic therapy with a humanizing focus and its correlation with quality of life (QoL) of patients and their carers. The objective was to establish a correlation between partial remission and QoL of patients and their carers.

**Methods:** It is an observational, analytic, transversal study which evaluates 102 ED patients treated at an outpatient clinic. The prevalence of partial remission was studied by means of symptom questionnaires and weight evolution. QoL was studied by means of Eating Disorder Quality of Life Scale (EDQLS) in patients -a higher score indicates a higher quality of life and mean reference score was 110 (SD=26.6)- and Eating Disorder Symptom Impact Scale (EDSIS) in their carers -a lower score indicates a higher quality of life and mean reference values were 34.4 (SD=15.5)-.

**Results:** Partial remission was found in 43.7% of the patients. Mean QoL score measured in patients by EDQLS was found to be 130.33 (SD=26.6) in patients without partial remission and 153.14 (SD=19.99) in those which presented partial remission - $p=0.003$ -. Mean QoL score measured in carers by EDSIS was found to be 29.68 (SD=14.94) in those without remission and 25.26 (SD=12.5) in those who presented remission - $p=0.287$ -. When studying the different domains of each scale, most mean values were higher than those of the reference sample, except for the domains of "physical appearance" in patients; and "guilt" and "social isolation" in carers.

**Conclusion:** ED remission is possible in this treatment. QoL in patients presents a positive association with remission. Disease remission is associated with QoL; therefore it is an important aspect to assess during its treatment.

**Disclosure of Interest:** None declared

## P261

### PREVALENCE OF PARTIAL REMISSION OF EATING DISORDERS AT 6, 12, 18 AND 24 MONTHS IN A DAY HOSPITAL PROGRAM. ASSOCIATED FACTORS

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**Rationale:** Eating Disorders (ED) present a high prevalence. This study evaluates the remission of ED in a Day Hospital Program (DHP) based on systemic therapy. Objective: to assess the partial remission of ED after 6, 12, 18 and 24 months of treatment and its related factors

**Methods:** Observational, analytic, transversal study evaluating 102 ED patients treated at an DHP. Partial remission was defined as: weight recovery and absence of altered eating behaviors (caloric restriction, binge, induced vomiting, laxative use, diuretic use, hyperactivity) with persistence of fear of gaining weight, body image distortion and recurring body-food thoughts

**Results:** Partial remission was found in 43,7% of the patients, with a higher prevalence (46,9%) in the group treated for 24 months (46,7% at 6 months). The type of ED which showed highest remission rates was Atypical Bulimia Nervosa (BN) (57,1%). Applying univariate analysis to analyze the relationship with remission: Type of ED (BN vs. others) (OR=2.148,  $p=0.078$ ); age (OR=0.890,  $p=0.171$ ); ED duration (OR=1.002,  $p=0.979$ ); psychiatric comorbidity (OR=1.990,  $p=0.145$ ); basal BMI (OR=1.025,  $p=0.426$ ); previous psychiatric treatment[1] (OR=1.113,  $p=0.801$ ); and satisfaction with treatment[2] (OR=1.005,  $p=0.523$ ). In multivariate analysis: age (OR=0.896,  $p=0.216$ ); psychiatric comorbidity [3] (OR=2.587,  $p=0.061$ ) and BN (OR=2.515;  $p=0.048$ )

**Conclusion:** ED remission is possible in this context of treatment in a short period of time (6 months). Among the different factors studied in our series, BN diagnostic was independently associated with remission probability.

**Disclosure of Interest:** None declared

## P262

### SARCOPENIA IN CHRONIC KIDNEY DISEASE: PREVALENCE AND RELATIONSHIP WITH ADIPOSITY AND FATIGUE

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**Rationale:** The diagnosis of sarcopenia can be evaluated by several methods. Skeletal muscle metabolism changes also occur in obesity. Fatigue is present in chronic kidney disease (CKD). So, we evaluate the prevalence of sarcopenia using the revised guideline by The European Working Group on Sarcopenia in Older People (EWGSOP2) and by the Foundation of the National Institutes of Health (FNIH) in CKD; and analyze the relationship between sarcopenia, body adiposity and fatigue.

**Methods:** Evaluation of adults with CKD under non-dialysis-dependent (NDD), hemodialysis (HD) and kidney transplant (KTx) treatment. Body composition assessed by dual energy X-ray absorptiometry (DXA) (Hologic, GE) and anthropometry. Measurements collected consecutively, after 8 h fasting, emptying of the urinary bladder and just after the midweek hemodialysis session. Fatigue pictogram applied to evaluate fatigue. Body mass index (BMI)  $\geq 25$  kg/m<sup>2</sup> and % of total body fat (%BF) by DXA analysis applied as excess total body adiposity. Abdominal obesity defined as waist circumference (WC)  $>90$  cm in men and  $>80$  cm in women or as waist-to-height ratio (WHtR)  $>0.52$  in men and  $>0.53$  in women. Hand grip strength (HGS) (Charder®, MG4800), appendicular skeletal muscle index (ASMI) and appendicular-skeletal-muscle-to-BMI ratio (ASM/BMI) were applied for EWGSOP2 and FNIH diagnosis of dynapenia, low muscle mass and sarcopenia, respectively. Prevalence was estimated. Multiple logistic regressions were performed to assess the association of diagnosis with the presence of excess body adiposity. Kappa test was used to evaluate agreement. Differences between groups were evaluated by unpaired Student t test ( $p \leq 0.05$ ).

**Results:** We evaluated 244 patients (NDD=83, HD=80, KTx=81), 48±10 years old, 53% men. The prevalence of sarcopenia in total sample was 7% (FNIH) and 5% (EWGSOP2); in NDD was 11% (FNIH) and 5% (EWGSOP2); in HD was 9% (FNIH and EWGSOP2); in KTx was 2% (FNIH and EWGSOP2). Low muscle mass in total sample was present in 39% (FNIH) and 36% (EWGSOP2); in 23% (EWGSOP2) and 34% (FNIH) in NDD; in 50% (EWGSOP2) and 36% (FNIH) in HD; in 36% (EWGSOP2) and 46% (FNIH) in KTx. Dynapenia affected 10% of the participants; 14, 13 e 4% of NDD, HD and KTx groups by both criteria. The coefficient of agreement among EWGSOP2 and FNIH was 0.55±0.11 for sarcopenia; poor and not significant for low muscle mass ( $p > 0.05$ ); and 1.00±0.00 for dynapenia. Body adiposity parameters evaluated by anthropometry (BMI: 23±2.73 vs 27±5.07; WC: 90.7±5.9 vs 99.8±12.6; WHtR: 0.58±0.1 vs 0.61±0.1) were lower in sarcopenia group by EWGSOP2 compared to control. Sarcopenic patients by FNIH presented higher values for WHtR (0.65±0.1 vs 0.60±0.1), %BF (36.5±7.2 vs 31.8±8.8), fat mass index (8.7±3.4 vs 10.3±3.5) and % of trunk body fat (19.9±4.1 vs 17.2±5.0) compared to controls. Frequency of low muscle mass by EWGSOP2 was lower in individuals with excess adiposity by BMI (16 vs 68%) and %BF (31 vs 46%), and with abdominal obesity by WC (31 vs 64%) and WHtR (31 vs 62%), compared to individuals without excess adiposity. For EWGSOP2 criteria, the odds ratio for low muscle mass was lower in individuals presenting excess for total (0.52 for BMI and %BF) and central adiposity (0.25 for WC; 0.27 for WHtR). Whereas, for FNIH criteria, the odds ratio for low muscle mass was higher in individuals presenting excess for total (12.13 for BMI and %BF) and central adiposity (3.61 for WC; 7.70 for WHtR). For both criteria, sarcopenia patients compared to control had higher pontuation for total fatigue (EWGSOP2: 6.2±2.6 vs 4.1±1.8; FNIH: 5.2±2.6 vs 4.1±1.8) and for the impact of fatigue in daily activities (EWGSOP2: 3.2±1.8 vs 1.7±1.1; FNIH: 2.6±1.7 vs 1.7±1.1).

**Conclusion:** In CKD, sarcopenia and low muscle mass prevalence and association with body adiposity varies according to the diagnostic criteria. Fatigue pictogram could be applied for screening patients at risk of decreased functional capacity.

**Disclosure of Interest:** None declared

## P263

**PERSONALIZED TEXTURE MODIFIED DIET AS THE MAIN THERAPEUTIC INTERVENTION IN OLDER PATIENTS WITH DYSPHAGIA**

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**Rationale:** Personalized modified diets are the pillar of compensatory intervention for the management of older subjects with dysphagia. They are used mostly to prevent the aspiration pneumonia but their importance for the improvement of nutritional status should be valorized. The aim of the study was to evaluate the Results of a personalized nutritional Intervention (Prescription of Personalized Texture Modified Diets) in Dysphagic patients treated by the interdisciplinary team of Clinical Nutritional Unit (CNU) of IRCCS- INRCA Geriatric Hospital (Ancona, Italy) and look for the key elements that determine its success or failure.

**Methods:** Data on nutritional status and dysphagia of 63 older (62% F, 38% M, 77,9 ± 12,2 years) visited for the first time and reassessed at least once from January 2019 to April 2021, were gathered and analyzed. Dysphagia was assessed using the Volume-Viscosity Swallow Test and classified according to American Speech-Language-Hearing Association (ASHA). Texture Modified Diets were prescribed and classified following International Dysphagia Diet Standardization Initiative (IDDSI-Framework-and-Descriptors-Template 2019). Informal caregivers were trained to prepare and administer Personalized Texture Modified Diets. Baseline social, demographic, clinical and nutrition related characteristics were analysed in subjects with different nutritional outcomes.

**Results:** Subjects enrolled were mostly neurological patients (70%), 84% had comorbidities, all had self-feeding difficulties. Polypharmacy (≥ 5 drugs) was found in 84%, excessive polypharmacy (≥ 10 drugs) in 27%. On the first visit 66% were assuming self-made Texture modified diets, 55% were undernourished (BMI ≤ 22kg/m<sup>2</sup>), all with secondary pre-biphagia. Swallowing difficulties were to be treated mostly by texture modification of diets (44% of subjects had ASHA 4, 35% ASHA 5). Only 8% had ASHA ≤ 2 and needed Artificial Nutrition). Median number of follow up visits was 1. Texture Modified Diets (68% of diets were IDDSF 4 (pureed) and 5 (minced and moist), liquids 3 (moderately thick), caregivers' training and regular follow up were the foundation of dysphagia management. Nutritional status was improved in 70% of dysphagic older. While its improvement was not influenced by age and BMI at baseline, the correlation was found between the improvement of nutritional status and place of living (64% of patients living at home vs. 35% patients living in at nursing home, p<0,05).

**Conclusion:** Timely nutritional intervention, regular follow up and, most of all, compliance with prescribed diets which is guaranteed by trained informal caregivers, are the main elements which contribute to the success of nutritional therapy in subjects with swallowing difficulties.

**Disclosure of Interest:** None declared

## P264

**ATLAS OF VARIANCE: EVALUATION OF CARE DELIVERY TO PATIENTS WITH CHRONIC INTESTINAL FAILURE IN EUROPE; A FOCUS ON HOME PARENTERAL NUTRITION**

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**Rationale:** Chronic intestinal failure (IF) is a rare, but life-altering condition, care delivery of which is complex. We report Results on home parenteral nutrition (HPN) provision from a non-interventional study characterising chronic IF patient-centred care across Europe.

**Methods:** Data were collected from 12 countries (Belgium, Croatia, Denmark, France, Italy, Norway, Poland, Portugal, Romania, Spain, Switzerland, UK) by online quantitative survey of healthcare professionals (HCPs) involved in adult chronic IF care delivery (September–December 2020). Survey data were anonymised and pooled for analysis. Responses were summarised as frequencies and percentages.

**Results:** 119 HCPs completed the survey. 87% responded that adult patients with chronic IF routinely receive HPN in their country and that training on administration (98%) was available and home nursing care (HNC) (82%) was provided (N=104). National healthcare systems mostly paid for HPN (97%) and HNC (96%) (N=85). Education and training, new lifestyle adaptation (both 52%) and HNC quality (33%) were the most common challenges for patient transfer to a HPN setting (N=104). HCPs indicated that HPN was delivered mostly by the hospital (39%), and homecare companies were the main providers of HPN-related consumables (40%), ancillary (46%) and larger equipment (46%) (N=104). Of those patients not routinely receiving HPN, most frequent reasons were patient non-compliance (53%), inability to perform HPN tasks (44%), inappropriate social/housing situation (43%) and HPN unavailable (33%).

**Conclusion:** Most patients with chronic IF can receive HPN, training on administration, or HNC in their country. Although available, training and HNC were identified as key challenges in patient transfer to a HPN setting and might be addressed through improvements in patient-centred care.

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## P265

**THE AGARICUS BISPORUS MUSHROOM EXTRACT MODULATES LIVER FIBROSIS PROGRESSION, OXIDATIVE STRESS AND INFLAMMATION IN VITRO AND IN LDLR-KO MICE MODELS**

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**Rationale:** Liver fibrosis can be caused by non-alcoholic steatohepatitis, among other conditions, being considered a growing problem for public health worldwide. In order to investigate new strategies to attenuate liver fibrosis progression, we analyzed the effects of a nontoxic water-soluble extract of the edible mushroom *Agaricus bisporus* (AB) as a potential inhibitor of fibrosis progression.

**Methods:** Hepatic stellate cell (LX2) cultures were treated with different concentrations of AB extract, and *Ldlr*-KO mice were randomly divided into four groups fed different diets for 12 weeks: two groups were fed a standard low-fat diet without AB extract (LFD) or with AB extract (LFD + AB). The two other groups were fed a high-fat diet based on lard without AB

extract (HFD-L45) and with AB extract (HFD-L60 + AB). Liver damage and fibrosis markers (COL-1 $\alpha$ -1, TPM2 $\beta$ , ACTIN-2 $\alpha$ , GATA4, TLR4), oxidative stress markers (SOD1, iNOS), and inflammation markers (MOMA-2, NLRP3 inflammasome) were analyzed.

**Results:** AB extract-treated LX2 cells reduced fibrotic and oxidative stress markers levels, and GATA4 gene and protein expression levels were increased. In *Ldlr*-KO mice with HFD-induced liver fibrosis and inflammation, were reduced the oxidative stress, inflammation and liver fibrosis markers levels when were fed the AB extract.

**Conclusion:** These Results suggest that AB mushroom extract exerts pro-ctor effects by alleviating inflammation and oxidative stress processes during the liver fibrosis progression, possibly due to the reduction of *Tlr4* gene expression levels, and a reduction of NLRP3 inflammasome activation.

**Disclosure of Interest:** None declared

## P266

### TOP 3 ULTRA-PROCESSED FOODS WITH HIGHEST INTAKE AMONG ADULTS WITH PREVIOUS MYOCARDIAL INFARCTION: A SUB ANALYSIS FROM THE DICA-NUTS TRIAL

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**Rationale:** Higher intakes of ultra-processed foods (UP foods) are known to increase the risk of cardiovascular incidence and mortality and should be avoided by patients with established coronary artery disease. Our aim was to identify the most consumed types of UP foods and frequency intake patterns among Brazilian adults with previous myocardial infarction (MI).

**Methods:** This is a sub analysis from the multicenter DICA-NUTS clinical trial (NCT03728127), which assesses the impact of the Brazilian Cardioprotective Diet supplemented or not with mixed nuts on cardiometabolic features in individuals with MI in the previous 60-180 days. 348 participants (>40y, 73% males; mean age 59,2y  $\pm$ 9.5) with complete baseline assessment (demographics, anthropometry, food frequency questionnaire [FFQ] and a 24h dietary recall) were included. Frequencies of intake were descriptively categorized. The % contribution of UP food intake to total energy intake (%; median and quartiles) was compared with age group, sex and body mass index (BMI) by Student T-test.

**Results:** Eleven types of UP foods were identified as consumed in any frequency in the FFQ analysis. More than 50% of the sample referred intakes of at least once a week for 73% of the items listed (8/11). The top 3 most consumed UP foods were cold cuts & sausages (59% overall intake; 70% at least once/week), soft drinks (50% overall intake; 70% at least once/week), and chocolate & treats (45% overall intake; 38% at least once/week). Median energy contribution of regular UP food intake to total energy intake was 17.2% (P25 9% - P75 24%) and did not vary according to age, sex, or BMI ( $p > 0.05$ ).

**Conclusion:** UP food intake is high among patients with previous MI. The top 3 UP foods are consumed at least once a week and include cold cuts, sugar-sweetened beverages, and sugary treats.

**Disclosure of Interest:** None declared

## P267

### ADULTS WITH SEVERE VISUAL IMPAIRMENTS: CHALLENGES IN PURCHASING AND PROCESSING FOOD

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**Rationale:** There are hardly any studies, both nationally and internationally, on how severe visual impairment affects nutrition. The aim of this study was, therefore, to evaluate food shopping, food preparation, diet quality and quality of life in people with visual impairment.

**Methods:** Between 12/10/2020-12/11/2020, 26 people with severe visual impairment (visual acuity less than 0.30, 17 (65%) female, 51 $\pm$ 17 y, 26.0 $\pm$ 4.0 kg/m<sup>2</sup>) were interviewed using standardized telephone queries. Recruitment was done via the local Association of visually impaired people (Neubrandenburg, Germany) and via social media. Dietary quality (HEI-EPIC) was calculated based on a 24-h recall. Quality of life was assessed by Personal Wellbeing Index (PWI-A).

**Results:** Most participants had a visual acuity of 2-10% (n=12) or were blind with a visual acuity <2% (n=11); only 3 had a lesser impairment of 10-30% acuity. Most of them shopped on their own (n=12, 46%) or accompanied by another person (n=13, 50%); only 1 person was totally dependent on help. Nearly all (n=25, 96%) suggested improvements of shopping places. 68% (n=17) wished for a specialized staff service, 52% (n=13) for better accessibility, and 31% (n=8) for blind-friendly product design or pricing. Nearly all (n=25, 96%) prepared food on their own or with others, although 73% (n=19) perceived challenges in doing so, such as processing, determining the cooking point, weighing and tasting food. At 43 $\pm$ 8 points, the nutritional quality was lower than the average of the German population. Personal well-being was normal with 76.3 $\pm$ 13.6 points. However, personal well-being and severity of visual impairment related negatively ( $r = -0.609, p = 0.001$ ).

**Conclusion:** Despite challenges in shopping and food preparation, the participants showed a high level of independence in these fields. A better understanding of the specific challenges could increase nutrition quality in severe visual impairment.

**Disclosure of Interest:** None declared

## P268

### ATLAS OF VARIANCE: AWARENESS OF CHRONIC INTESTINAL FAILURE VERSUS CHRONIC KIDNEY FAILURE AND KEY AREAS FOR IMPROVING CARE DELIVERY TO PATIENTS WITH CHRONIC INTESTINAL FAILURE

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**Rationale:** Chronic intestinal failure (IF) is a rare but life-altering condition, care delivery of which is complex with little alignment between countries. We report Results on awareness of chronic IF versus chronic kidney failure (CKF), and areas for improving chronic IF care from a non-interventional study characterising care delivery to patients with chronic IF across Europe

**Methods:** Data were collected from 12 countries (Belgium, Croatia, Denmark, France, Italy, Norway, Poland, Portugal, Romania, Spain, Switzerland, UK) by online quantitative survey of healthcare professionals (HCPs) involved in adult chronic IF care delivery (September–December 2020). Survey data were anonymised and pooled for analysis. Responses were summarised as frequencies and percentages.

**Results:** 119 HCPs completed the survey. 76% perceived that patients with CKF have better access to dialysis than patients with chronic IF have to parenteral nutrition; 13% noted they compared similarly (N=114). Four key improvements to care of patients with chronic IF (by % responses ranked most important) were: better disease awareness for general HCPs (42%), better access to optimal treatment (41%), more accredited referral centres (38%), more funding (33%) (N=114). On a scale of 0-10 (not aware–extremely aware), mean awareness of chronic IF was perceived to be 5.2 (gastroenterologist), 3.4 (other HCP), and 2.3 (primary care physician), and awareness of CKF among all HCPs across all countries was 7.1 (N=116).

**Conclusion:** Patient access to treatment for chronic IF is perceived by HCPs to be inferior than for CKF. Disease awareness of chronic IF was also

perceived to be inferior to CKF. Both access and awareness were identified as important areas for improvement.

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## P269

### CHARACTERISTICS OF PATIENTS WHO ARE REFERRED FOR DYSPHAGIA TO AN OUTPATIENT NUTRITION CLINIC

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**Rationale:** The association between dysphagia and malnutrition is known, but patients continue to come to outpatient nutrition consultations for dysphagia assessment in the event of coughing with water intake, but without suspicion of risk of malnutrition. The objective of this study is to determine the prevalence of malnutrition among patients referred for dysphagia and its effect on mobility-mortality.

**Methods:** Material and methods: Observational, longitudinal, retrospective and single-center study. We perform a nutritional assessment by MNA to all patients who come to our nutrition consultation for a year. We differentiate two groups: sudden onset dysphagia due to cerebrovascular accident and chronic course dysphagia due to dementia, Parkinson's or amyotrophic lateral sclerosis. As morbidity indicators, the number of hospital admissions and visits to the emergency room in the year prior to attending our consultation are collected. Mortality is collected after our visit at one year of follow-up. Statistical tests: Chi square, Student's T and Kaplan Meier survival test.

**Results:** Results: 1-We evaluated 222 patients (66.7% women), mean age 87 (10), 71% with CD (58.6% dementia, 7.2% Parkinson, 5.4% ALS) and 28.8% with AD due to stroke. 2- 21.4% of the patients who remitted due to dysphagia also presented malnutrition and 42.2% were at risk. 3- We did not find significant differences between the number of hospital admissions and visits to the emergency room between the two types of dysphagia. 4- One-year mortality was much higher in chronic dysphagia (52.7%) compared to acute dysphagia (31.8%) (p; 0.005).

**Conclusion:** Malnutrition in patients with dysphagia is very frequent and must be actively sought. Chronic dysphagia is associated with higher mortality than acute stroke dysphagia.

**Disclosure of Interest:** None declared

## P270

### NUTRITIONAL STATUS AND ANXIETY AND DEPRESSION IN HOSPITALIZED DIABETIC PATIENTS

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**Rationale:** Anxiety and depression are frequently associated with chronic diseases. Considering this situation, in this study it was aimed to evaluate the nutritional status and its relationship with anxiety and depression in hospitalized diabetic patients.

**Methods:** The data of the study were collected by face-to-face interview by the researchers through a questionnaire form. Demographic and diabetic [disease duration (year), treatment (medication/insulin), hospitalization (day)] information and anthropometric measurements (weight, height, waist and hip circumference) were recorded. Based on the anthropometric measurements, body mass index (BMI), waist/hip ratio and waist/height ratio were calculated. Anxiety and depression status were evaluated with the Hospital Anxiety and Depression Scale (HADS). According to the HADS, those who scored 11 and above in the anxiety subscale were evaluated as "anxiety", and those who scored 8 and above in the depression subscale were evaluated as "depression". A 1-day food consumption record was also taken. This study was approved by the Erciyes University Clinical Research Ethics Committee (Decision Number: 2019/788).

**Results:** The rates of anxiety, depression and 'anxiety+depression' were % 23.8, %21.6 and %12.2, respectively among the patients (n=222). Anxiety and depression scores were significantly higher in those who missed medication/insulin doses and did not exercise regularly, and they were also positively associated with diabetes duration, waist circumference, waist/hip ratio and waist/height ratio (p<0.05). According to the food consumption records; anxiety and depression scores were positively associated with the ratio of dietary energy from carbohydrates and negatively associated with total energy, protein, fat (total fat and fatty acids including monounsaturated, polyunsaturated and DHA), some vitamins (retinol, D, group B and C) and some mineral (K, Mg, P, Fe, Zn, Cu) intake levels in the diet (p<0.05).

	Anxiety score	Depression score		
<b>Missing drug dose</b>				
Yes	7.91±4.33	5.34±3.93		
No	6.40±3.85	4.02±3.37		
	p=0.023	p=0.015		
<b>Missing insulin dose</b>				
Yes	8.45±4.68	5.28±3.76		
No	6.95±4.13	4.02±3.91		
	p=0.030	p=0.003		
<b>Regular exercise</b>				
Yes	6.28±3.92	3.87±3.22		
No	8.71±4.44	5.80±4.16		
	p=<0.001	p=<0.001		
	<b>r</b>	<b>p</b>	<b>r</b>	<b>p</b>
<b>Diabetes duration (year)</b>	0.133	0.049	0.170	0.011
<b>Waist circumference (cm)</b>	0.155	0.021	0.185	0.006
<b>Waist/hip ratio</b>	0.335	0.000	0.213	0.001
<b>Waist/height ratio</b>	0.195	0.004	0.183	0.006

**Conclusion:** In the light of these Results, it is recommended to maintain healthy body weight, exercise regularly, pay attention about carbohydrate consumption and not to miss drug/insulin dose to prevent of anxiety and depression in hospitalized diabetic patients.

**Disclosure of Interest:** None declared

## P271

### SARCOPENIC OBESITY IN CHRONIC KIDNEY DISEASE – CHALLENGES IN DIAGNOSIS USING DIFFERENT DIAGNOSTIC CRITERIA

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**Rationale:** Obesity, muscle impairment (low muscle mass or strength) and sarcopenic obesity are present in chronic kidney disease (CKD) and are



associated to worse clinical prognosis. However, the various existing definitions for these conditions make the diagnosis variable. Our aim was to evaluate the agreement between diagnostic criteria for sarcopenic obesity and its components in CKD.

**Methods:** Adult CKD patients under non-dialysis-dependent (NDD), hemodialysis (HD), peritoneal dialysis (PD) and kidney transplant (KTx) treatment were evaluated. We assessed muscle mass by dual energy X-ray absorptiometry (DXA) and muscle strength by handgrip strength (HGS); adiposity by body mass index (BMI), waist circumference (WC), fat mass index (FMI), and percentage of fat mass (%FM). Measurements were performed consecutively, after an 8-hour fasting, drainage of the peritoneal dialysate and just after the mid-week hemodialysis session. Diagnosis of muscle impairment was evaluated according to: appendicular lean mass <20kg for men and <15kg for women; appendicular lean mass index <7kg/m<sup>2</sup> for men and <5.5kg/m<sup>2</sup> for women; or HGS<27kg for men and <16kg for women. Diagnosis of obesity was: BMI ≥30kg/m<sup>2</sup> for men and women; WC >102cm for men and >88cm for women; or FMI>9kg/m<sup>2</sup> for men and >13kg/m<sup>2</sup> for women. Sarcopenic obesity was diagnosed by concomitant presence of muscle impairment and obesity. Prevalence was evaluated. The agreement between the different diagnostic criteria was calculated with kappa coefficient. Pearson's correlation was applied to assess association (p<0.05).

**Results:** 267 patients were evaluated (NDD=83, HD=80, PD=23 and KTx=81), 47±10 years old, 49% men. Prevalence of muscle impairment was 50% for ALM, 45% for ALMI and 11% for HGS. Prevalence of obesity was 26% for BMI, 28% for FMI and 62% for WC. Prevalence of sarcopenic obesity varied from 2 to 23%. Women were more affected by sarcopenic obesity (women, from 5 to 40%; men, from 5 to 23%). Muscle impairment (NDD, from 14 to 28%; HD, from 14 to 69%; PD, from 13 to 52%; KTx, from 5 to 52%) and sarcopenic obesity (NDD, from 0 to 8%; HD, from 2 to 37%; PD, from 0 to 22%; KTx, from 0 to 26%) were more prevalent among HD and obesity (NDD, from 39 to 63%; HD, from 19 to 58%; PD, from 9 to 52%; KTx, from 21 to 67%) among NDD and KTx groups. Agreement varied from poor to almost perfect among muscle impairment criteria: ALM with HGS = 0.06±0.06; ALMI with HGS = 0.06±0.07; ALM with ALMI = 0.80±0.04. Agreement varied from fair to substantial among obesity criteria: BMI with WC = 0.36±0.05, BMI with FMI = 0.74±0.05, FMI with WC = 0.35±0.05. Agreement varied from poor to almost perfect for sarcopenic obesity. Correlation coefficients with BMI were: 0.90 for WC and 0.82 for FMI. Correlation coefficient between WC and FMI was 0.73. For HGS, the correlations coefficients were: 0.74 for ALM and 0.60 for ALMI. Correlation between ALM and ALMI was 0.92.

**Conclusion:** The prevalence of sarcopenic obesity in CKD patients varied widely depending on the diagnostic criteria applied, especially among criteria for low muscle mass vs low muscle strength and for high total body fat vs high visceral fat. Our Results highlight the need for standardization in the diagnosis of sarcopenic obesity.

**Disclosure of Interest:** None declared

## P272

### USING AMBULATORY GLUCOSE PROFILE IN DIABETIC PATIENT TO MAKE PERSONALISED DIETARY RECOMMENDATIONS

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**Rationale:** To assess the feasibility of using AGP in planning personalized diets and achieving glycemic control while minimizing glycemic variability and hypoglycemic episodes

**Methods:** The study included 57 diabetic patients. For AGP, the “Free-Style Libre Pro Flash Glucose Monitoring System (Abott)” was used. The system consists of a small, round sensor—slightly larger than a 10 rupee coin (applied to the back of the patient's upper arm) and a reader to scan the sensor. The sensor continuously measures glucose in interstitial fluid through a small (5mm long, 0.4mm wide) filament that is inserted just under the skin. It records glucose levels every 15 minutes, giving comprehensive data of glycemic profile of the patient. To assess the reliability of the system, the glucose values obtained on this system were compared with simultaneous glucose values obtained with glucometer and in the laboratory. Correlation coefficient between sensor values and glucometer values was determined. Similarly correlation

coefficient between sensor values and laboratory values was determined.

**Results:** Of the 57 patients, 45 were males and 12 females. The mean age (SD) was 59 (11) years. There were 68 readings obtained with glucometer for comparison with simultaneous AGP readings. There was an excellent correlation (r = 0.95). There were 23 laboratory reading for comparison with simultaneous AGP readings. The correlation here too was very good (r = 0.97). AGP monitoring also provided better information about glycemic variability and hypoglycemic episodes. Personal dietary recommendations with use of AGP data resulted in significant minimization of glycemic variability.

**Conclusion:** AGP provides continuous information about blood glucose and glycemic variability. This helps dieticians in making personal dietary recommendations. It also works as a bio feedback for the patient for better dietary compliance. This in turn can help in better diabetes control

**Disclosure of Interest:** None declared

## P273

### THE IMPACT OF VITAMIN D LEVEL ON NUTRITIONAL STATUS AND QUALITY OF LIFE IN DIABETIC AND NON-DIABETIC PATIENTS UNDERGOING HEMODIALYSIS

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**Rationale:** Hypovitaminosis D is a frequent condition in chronic kidney disease (CKD). In addition to nutritional deficits due to dietary restrictions, vitamin D metabolism is impaired, and its deficiency is associated with DM and protein-energy wasting syndrome and it can result in a poor nutritional status and a worsened quality of life (QoL). The purpose of the present research is to establish the impact of vitamin D on nutritional status and QoL in diabetic and non-diabetic patients undergoing hemodialysis (HD).

**Methods:** This cross-sectional study included 57 patients (age 76 ± 12.2 years) of whom 29 presented DM. These patients were first divided, according to 25-hydroxyvitamin-D [25(OH)D] levels into three groups: sufficiency, insufficiency, and deficiency, and then into two subgroups according to DM. The Malnutrition-Inflammation score (MIS) was used to detect nutritional risk (NR). QoL was evaluated by the Kidney Disease Quality of Life™ version 1.2 (KDQOL-SF™). The level of statistical significance was set at p < 0.05. Data were analyzed using the SPSS statistical software package, version 15.0 (SPSS Inc., Chicago, Ill., USA)

**Results:** In the total population, 25(OH)D concentrations were 16ng/ml. Hypovitaminosis D was detected in 75% of the patients studied. The diabetic patients presented a greater incidence of vitamin D deficiency than the non-diabetic patients (62% vs. 36%). Among the population at NR, 54% had hypovitaminosis D. 25(OH)D deficiency was present in 100% of the participants with severe protein-energy malnutrition. Although most aspects of QoL worsened as 25(OH)D levels fell, the physical component summary was particularly affected. DM was not significantly associated with the results obtained.

**Conclusion:** 25(OH)D deficiency is very common among HD patients and is highly prevalent those with diabetes. Our study shows that, irrespective of DM comorbidity, there is a significant correlation between 25(OH)D deficiency and NR, poorer nutritional status and worse QoL.

**Disclosure of Interest:** None declared

## P274

### SERUM CHOLINE IN RELATION TO CANCER RISK IN THE CHINA STROKE PRIMARY PREVENTION TRIAL (CSPT)

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**Rationale:** Few studies have been designed to investigate the effect of serum choline on the risk of incident cancer. This study aims to explore the association between serum choline and the risk of new-onset cancers as

well as the risk of two subtypes cancers: digestive system cancers and non-digestive system cancers.

**Methods:** We conducted a case-control study, including 114 patients with incident cancer and 114 matched controls during a median 3.9 years follow-up, nested within the China Stroke Primary Prevention Trial (CSPPT). The conditional logistic regression analysis was used to assess the association of serum choline and the incident cancer risk.

**Results:** Compared with quartile 1 group (choline <2.83 ug/mL), the odds ratios (95% CI) for participants in quartile 2 group (2.83≤choline<5.39 ug/mL), and quartile 4 group (choline≥25.39 ug/mL) were 2.69 (95% CI: 1.19-6.10), and 2.46 (95% CI: 1.08-5.60), respectively. Consistently, higher choline concentrations were associated with a 2.4-fold increased risk of cancer (OR=2.48; 95% CI: 1.34-4.60) compared to lower concentrations. These associations were consistent across subtypes of cancer (digestive system cancers and non-digestive system cancers). Several potential effect modifiers were identified, including age, sex, BMI, treatment, MTHFR C677T, folic acid levels, smoking and drinking status.

**Conclusion:** We have found a positive association between elevated levels of serum choline with increased risk of incident cancer. And the significant positive dose-response associations were also observed in digestive system cancers and non-digestive system cancers.

**Disclosure of Interest:** None declared

## P275

### THE EFFECT OF BETA-HYDROXY-BETA-METHYL BUTYRATE (HMB) SUPPLEMENTATION ON PATIENTS ON LIVER TRANSPLANTATION WAITING LIST: A PILOT STUDY

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**Rationale:** Patients on liver transplantation (LTx) waiting list are often malnourished and usually lose muscle mass. Nutritional supplementation can be an alternative to ameliorate the nutritional status/muscle mass, but the effect of beta-hydroxy-beta-methylbutyrate (HMB) on anthropometry and muscle strength in patients on LTx waiting list are unknown.

**Methods:** Triple-blind randomized study with supplementation of 3.0g of HMB or placebo for 12wks in patients over 18y waiting for LTx. All patients received nutritional counseling. Anthropometric data was collected by calf circumference (CC), arm muscle area (AMA) and adductor pollicis muscle thickness (APMT). Muscle strength was assessed through dynamometry. Data were evaluated using SPSS 22.0. The two groups were compared by repeated measures ANOVA test. The level of significance was 5%.

**Results:** 28 patients were evaluated [55.0 (49.0-62.0)y, 71.4% men]. The data found are described in table 1.

**Table 1.**

Anthropometric measures and muscle mass of patients on LTx waiting list according to the HMB or placebo supplement (n=28).

Variables	Supplement 1 (n=13)		Supplement 2 (n=15)	
	T0	T12	T0	T12
<b>Anthropometric</b>				
AMA (cm)	35.4±8.1	38.9±9.2	35.8±9.3	34.3±9.0
CC (cm)	37.5±5.3	37.7±5.1	35.9±3.9	36.4±3.8
APMT (mm)	20.3±3.0	<b>18.6±4.4*</b>	16.7±4.4	16.2±4.3
<b>Muscle strength</b>				
Dynamometry (kg)	28.0±9.8	28.8±8.0	24.4±10.1	23.8±8.4

The data in bold correspond to statistically significant variations. \* p < 0.05 within groups.

**Conclusion:** HMB supplementation did not impact the analyzed variables.

**Disclosure of Interest:** None declared

## P276

### PROTEIN-ENERGY WASTING AND INFLAMMATION INTERVENES IN CONTROL DE ANEMIA IN HEMODIALYSIS PATIENTS TREATED WITH DARBEPOETIN ALPHA AS AN ERYTHROPOIESIS-STIMULATING AGENT

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**Rationale:** Anemia is a multifactorial disorder that can be partially modified by eritropoyesis stimulating agents (ESA) and iron supplementation in hemodialysis patients (HD). The study aimed to analyse the relationship between protein-energy wasting (PEW), inflammation and anaemia and to assess whether the response to darbepoetin alpha (DA) was influenced by either of these two factors.

**Methods:** Cross-sectional study in 38 HD patients (men: 65.8%; aged: 66.6±17.1 yr) time on HD: 47.5±40.3 mo. Clinical and anemia control data were collected by using hemoglobin concentration (Hb), serum iron and weekly dose of darbepoetin resistance index (DARI). Inflammation was measured by C-reactive protein (s-CRP) and malnutrition-inflammation score (MIS). Anthropometric measures and labs markers (s-albumin, s-prealbumin) were also registered. Hydration status and body composition was measured by bioelectrical impedance. The sample was classified into two groups: well-nourished non-inflamed (group 1), and PEW+ inflamed HD patients (group 2) and the differences between the two groups were analysed.

**Results:** Prevalence of PEW+inflamed was 51.8%. Significant differences between group 1 vs. group 2, were found with number of units of DA and DARI (both, p<0,001), as well as systolic blood pressure, extracellular water (%), phase angle (PA) and charlson comorbidity index (at least, p<0,05). Multivariate analysis showed significant association with anemia control data (DA, DARI), exchange Na/K, PA, s-albumin and s-prealbumin (at least, p<0,01).

**Conclusion:** Anemia was also modulated by the nutritional-inflammatory status in HD patients. Comprehensive treatment of iron deficiency, inflammation and PEW together with DA dosing could improve the response to ESA and reduce healthcare costs in HD patients.

**Disclosure of Interest:** None declared

## P277

### PHYSICAL DEVELOPMENT AND NUTRITION STATUS OF CHILDREN WITH ATOPIC DERMATITIS

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**Rationale:** Atopic dermatitis (AD) is chronic inflammatory skin disorder, resulting from genetic predisposition, dysfunction of immune and epidermal barrier. A long lasting elimination diet affects physical development (PD) of children.

**Methods:** The objective is to evaluate physical development of children with atopic dermatitis. 79 children (49% boys and 51% girls), from 3 months to 17.11 years of age (with average age 7.9) are assessed. All children are grouped according to their age. Physical development (height, weight, BMI) is assessed by WHO Anthro and WHO AnthroPlus. Body composition was determined in children over 5 years old (n = 26). Atopic dermatitis (AD) is chronic inflammatory skin disorder, resulting from genetic predisposition, dysfunction of immune and epidermal barrier. A long lasting elimination diet affects physical development (PD) of children

**Results:** In infancy the height index was very low in 27.3%; low in 18.2%, average in 36.3%, and higher than average in 9.1%; and > +2.0 in 9.1%.

Weight index was very low in 27.3%, Z-score was from -2.0 to -1.35 in 18.2%; from -1.34 to -0.68 in 18.2%; average in 27.3%; > +2.0 in 9%. BMI Z-score was < -2.0 in 27.3%; low (from -2.0 to -1.35) – 27.3%; within the norm in 36.3%; overweight in 9.1%.

Height indices in children of **early childhood** were very low in 20%; low (from -2.0 to -1.35) – 13.3%; Z-score from -1.34 to -0.68 – 26.7%; average –13.3%; from +0.68 to +1.34 – 13.3%; high (from +1.35 to +2.0) – 6.7%; > +2.0 – 6.7%. Weight was Z-score < -2.0 in 13.3%; low (from -2.0 to -1.35) – 13.3%; from -1.34 to -0.68 – 33.4%; within the norm – 40%. BMI deficiency was in 20% (< -2.0); Z-score from -2.0 to -1.35 – 6.7%; lower than average – 13.3%; within the norm – 40%; from +0.68 to +1.34 – 20%.

Height of children in **toddlerhood** was very low (< -2.0) – 10%; Z-score from -1.34 to -0.68 – 40%; average –20%; from +0.68 to +1.34 – 20%; high in (from +1.35 to +2.0) – 10%. Weight Z-score was -2.0 to -1.35 in 40%; lower than average – 10%; average in 30%; Z-score > +2.0 – 20%. BMI Z-score was < -2.0 in 10%; low (from -2.0 to -1.35) – 20%; from -1.34 to -0.68 – 20%; within the norm –10%; higher than average (from +0.68 to +1.34) – 20%; > +2.0 – 20%.

Height in children of **middle childhood**: Z-score was low (from -2.0 to -1.35) – 9.1%; from -1.34 to -0.68 – 18.2%; average –18.2%; from +0.68 to +1.34 – 9.1%; high (from +1.35 to +2.0) – 36.3%; > +2.0 – 9.1%. Weight Z-score was < -2.0 in 33.5%; low (from -2.0 to -1.35) – 50%; Z-score > +2.0 – 16.5%. BMI Z-score was < -2.0 – 18.2%; low (from -2.0 to -1.35) – 18.2%; high (from +1.35 to +2.0) – 18.2%; Z-score > +2.0 – 45.4%.

**Adolescence**: Height Z-score was < -2.0 – 8.6%; from -2.0 to -1.35 – 4.3%; average –35%; from +0.68 to +1.34 – 8.6%; high – 13%; > +2.0 – 30.5%. BMI Z-score was < -2.0 – 17.7%; from -2.0 to -1.35 – 8.6%; from -1.34 to -0.68 – 4.3%; average –13%; high (from +1.35 to +2.0) – 8.6%; > +2.0 – 47.8%.

In **late adolescence**: height Z-score was lower than average (from -1.34 to -0.68) – 25%; average –25%; higher than average (from +0.68 to +1.34) – 25%; from +1.35 to +2.0 – 25%. BMI Z-score was average – 25%; higher than average (from +0.68 to +1.34) – 50%; > +2.0 – 25%.

Body composition:

Deficiency of active cell mass was detected in 37% of children, deficiency of fat mass - 27% of children, deficiency of lean mass - 31% of children.

The most severe malnutrition is presented in the age group of the middle childhood

**Conclusion**: A physical development delay is characteristic to infancy and early childhood. The physical development approaches to normal indices in toddlerhood. High level of indices prevails in middle childhood, adolescence and late adolescence. Assessment of diet or food diaries is required in these groups.

According to impedance measurements, nutritional deficiency was detected in 37% of children, while BMI was low in only 20% of cases.

Correct assessment of the nutritional status of children with atopic dermatitis should include necessary bioimpedance measurements.

**Disclosure of Interest**: None declared

## P278

### CAN THE LEVEL OF ADHERENCE TO THE MEDITERRANEAN DIET AFFECT BLOOD PRESSURE? A SYSTEMATIC REVIEW AND META-ANALYSIS OF OBSERVATIONAL STUDIES

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**Rationale**: High Blood Pressure (BP) constitutes a common and serious medical condition which is rising globally, despite the fact high BP is among the easily preventable factors for cardiovascular, renal, brain and other diseases. Modifiable risk factors of high BP include unhealthy dietary patterns, presence of obesity, excess alcohol consumption and lack of physical activity. Data in regard to the different types of diets show that Mediterranean diet (MD) is associated with healthy levels of BP. In this study we aimed to investigate the impact of the level of adherence to MD in BP.

**Methods**: A systematic literature search (up to 04.05.2021) in PubMed, Scopus, Embase, Web of Science, Cochrane and Google Scholar databases was conducted and 51 observational studies were included

**Results**: Systolic Blood Pressure (SBP) was found to be lower in the high adherence to MD group SMD: -0.08, (95%CI: -0.15, -0.01) whereas no differences regarding the diastolic blood pressure (DBP) were observed between the high and low adherence to MD groups. [SMD: -0.06, (95%CI: -0.13, 0.00)]. Mean DBP of all studies included for both high and low adherence group were in healthy levels (<90 mmHg).

**Conclusion**: Adherence to MD can have a positive impact on BP. Higher adherence to MD seems to positively influence SBP, but further research needed in this field due to the heterogeneous definitions of low/high adherence.

**Disclosure of Interest**: None declared

## P279

### THE EFFECT OF ANTI-INFLAMMATORY DIETS ON PAIN IN RHEUMATOID ARTHRITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Rationale**: Various dietary therapies have been proposed in rheumatoid arthritis, particularly diets rich in ω-3 fatty acids, which may lead to a reduction in arachidonic acid metabolites and cytokines. Our primary objective was to investigate if anti-inflammatory diets (Mediterranean, vegetarian, vegan, ketogenic) have an effect on pain in rheumatoid arthritis.

**Methods**: We searched MEDLINE via OVID and Embase via Elsevier for studies published from database inception to 10 May 2021. Search terms included subject headings and keywords for rheumatoid arthritis, pain, and Mediterranean, vegetarian, vegan, or ketogenic diet. We included studies on the effect of these diets on pain in adults with rheumatoid arthritis. We excluded studies with non-whole diet interventions and animal studies. The primary outcome was visual analogue scale (VAS) pain score. Secondary outcomes were C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), health assessment questionnaire (HAQ), tender joint count (TJC), swollen joint count (SJC), weight, and body mass index (BMI). We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Two authors independently assessed studies for inclusion, extracted study data, and assessed the risk of bias with the RoB 2 and the ROBINS-I tool. We performed a meta-analysis with all included randomized trials using RevMan 5. We used mean differences or standardized mean differences and the inverse variance method of pooling using a random-effects model.

**Results**: The search retrieved 85 unique publications, of which we included 11 in the systematic review and 6 in the meta-analysis. No study investigated the effect of a ketogenic diet. Studies in the meta-analysis included mostly female patients (92%) with a mean age between 47 and 58 years. Compared with patients on their usual Western diets, patients on anti-inflammatory diets had significantly lower VAS pain scores (-9.32, 95% CI -15.07 to -3.56; p=0.002; 6 studies, 271 participants), improved HAQ (-0.22, 95% CI -0.40 to -0.03; p=0.02; 3 studies; 147 participants), lower SJC (-0.60, 95% CI -1.08 to -0.11; p=0.02; 4 studies; 214 participants), and greater weight loss (-4.00, 95% CI -6.40 to -1.59; p=0.001; 4 studies; 208 participants). There were no significant differences in CRP, ESR, TJC and BMI. All studies were rated to have a high risk of bias overall. Because of the impossibility of blinding the intervention received, it is very likely that the assessment of the patient-reported outcome pain was highly influenced by the knowledge of the intervention. A transparent assessment and grading of the quality of evidence by using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach is ongoing.

**Conclusion**: The decreased subjective pain rating of patients on anti-inflammatory diets compared with patients on omnivorous Western diets

was clinically relevant. Vegetarian, vegan, and Mediterranean diets might be beneficial for some rheumatoid arthritis patients. However, due to lack of blinding, effects on the patient-reported outcome pain might be biased.

**Disclosure of Interest:** None declared

## P280

### COULD DIETARY HABITS PREDICT ALBUMINURIA LEVELS IN DALMATIAN HYPERTENSIVE DIABETIC PATIENTS?

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**Table 5.**

Percentage of the values of biochemical parameters of pre-dialysis CKD FUP and NFUP

Variable	FUP		NFUP	
	First visit(In the range)	After one year %(In the range)	First visit %(In the range)	After one year %(In the range)
Total Cholesterol	70.32%	87.10%	62.69%	56.72%
HDL	93.55%	94.84%	95.52%	83.58%
LDL	73.55%	98.06%	70.15%	80.60%

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**Rationale:** Diabetic patients are at high risk of developing chronic kidney disease. The aim of our study was to determine if dietary habits are predictors of albuminuria as a measurement of renal function and parameter of cardiometabolic risk in Dalmatian hypertensive diabetic patients (DHDP).

**Methods:** 220 DHDP patients, aged 68 (range 35–86) years, 128 (58.2%) men and 92 (41.8%) women were included in the study. Tanita MC 780 Multi Frequency segmental body composition analyzer was used to measure content of body fat, muscle mass and visceral fat. Food frequency questionnaire was used to assess dietary habits by dietitian. Waist circumference was measured by measuring tape and waist to height ratio (WHtR) was calculated.

**Results:** Frequency of consumption of rolled oats ( $p=0.04$ ) and cheese ( $p=0.02$ ) was shown as statistically significant predictor of albuminuria level. No other food item was found as significant predictor of albuminuria. WHtR ( $p=0.004$ ) was found as a predictor of albuminuria level. No other body composition parameter or anthropometric measure showed significance in prediction of albuminuria in DHDP.

**Conclusion:** Our Results suggest that dietary habits might play a role in diabetic kidney disease progression in this population of patients. Further research in a prospective model is needed to evaluate this thesis more thoroughly.

**Disclosure of Interest:** None declared

## P281

### EFFECT OF FAT ON CHRONIC KIDNEY DISEASE (CKD) PATIENTS; A RETROSPECTIVE COHORT STUDY

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**Rationale:** Dyslipidemia is one of the main problems in chronic kidney disease (CKD) and risk factor for cardiovascular disease (CVD). Proper management will slow kidney failure and CVD. regularly monitor the patient's fat profile. Much concern was given to the quality and purity of coconut oil and use of physically refined coconut oil.

**Methods:** Retrospective cohort study was performed ( $N=292$ ). non-dialysis CKD patients were given diet plans with RDN. Diet plans of CKD patients were followed up. Inclusion and exclusion criteria were adopted. The follow-up period was one year. nutritional care plan were evaluated by the RD. Enrolled patients were divided as Non follow-ups (NFUPS) and follow-ups (FUPS). Kidney function was judged as eGFR, along with S. Creatinine. Lipid parameters were routinely recorded in the Monitoring chart and the data were retrieved from the monitoring charts (retrospectively) for analysis. Statistical analyses were performed using STATA (bit-64) version 2003. To identify differences between FUP and NFUP patients, for categorical data and independent sample for parametric continuous data,  $\chi^2$  test and  $t$ -test were used, respectively.  $P < 0.05$  t 95% CI.

**Results:**

**Conclusion:** Physically refined coconut oil as a source of fat with the well-balanced diet seems to have a favorable effect on LDL. Considerable percentage of the mean values of TCHL LDL and HDL of both FUP and NFUP were remained in normal ranges. the CVD mortality was not observed. Management of CKD and delaying the progress to subsequent levels of kidney function as well as reducing the cardiovascular mortality.

**Disclosure of Interest:** None declared

## P282

### THE EFFECT OF NANO CURCUMIN ON OXIDATIVE STRESS IN CYSTIC FIBROSIS PATIENTS

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**Rationale:** Oxidative stress has an important role in the pathophysiology of cystic fibrosis. Primary CFTR Protein dysfunction, excessive accumulation of neutrophils in the lung, impaired glutathione transport and its deficiency in the air way epithelium, malabsorption of antioxidant particularly vitamin E and finally, an increasing need for antioxidants due to recurrent lung infections leads to pro-oxidant-antioxidant imbalances in cystic fibrosis patients. Since Nano curcumin has an antioxidant and anti-inflammatory effects and also has high bioavailability, the aim of this study was to evaluate the effects of Nano curcumin on oxidative stress in these patients.

**Methods:** In this clinical trial, double-blind, controlled study, fifty known CF patients were enrolled. The subjects were randomly assigned to intervention ( $n=30$ ) and placebo groups ( $n=20$ ). Nano curcumin and placebo drops was given at a dose of 80 mg/m<sup>2</sup> for 3 months. Pro-oxidant-antioxidant balance was measured in blood samples by PAB assay before and after 3 months.

**Results:** The mean age of participants was 12.31±5.59 years. About 56.3% of patients were male. The median (IQR) of serum PAB value in Nano curcumin group was 195.285(185.83–196.42 HK), which was higher than placebo group, 193.76(175.67–195.28 HK) median (IQR). After three months of intervention, median difference (IQR) of PAB serum value in Nano

curcumin group decreased significantly about 48.89 (66.19–9.73HK), *P* (0.001), but in placebo group decreased about 1.79(55.97–4.32 HK). No Significant difference was found between two groups.

**Conclusion:** Nano curcumin could be suggested to improve oxidative stress in cystic fibrosis patients.

**Disclosure of Interest:** None declared

## P283

### HYPOCALCEMIA, HYPOPHOSPHATEMIA AND NON-SPECIFIC ARTHRALGIA IN CHRONIC KIDNEY DISEASE UNKNOWN ORIGIN IN SRI LANKA

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**Rationale:** The kidneys play major role in maintaining the proper level of phosphorus and calcium in the blood which mainly helps to sustain healthy bones. The aim of this study was to evaluate the association between serum calcium and phosphorus levels with unexplained arthralgia among chronic kidney disease unknown origin (CKDu) which is not well-described yet.

**Methods:** The present descriptive cross sectional study was carried-out among 201 CKDu patients from Wilgamuwa endemic region in Sri Lanka from March 2021 to April 2021. Blood samples were obtained for serum creatinine, calcium, phosphorus, urea and uric acid. Moreover, interviewer administered questionnaire was used to collect the data regarding demographic factors and the presence of arthralgia. Data analysis was done by SPSS version 20.

**Results:** The mean age of the study participants was 57.79 (SD=8.094) years and males were made up the majority of the study group (77.1%; n=155). Mean serum calcium and the phosphorus levels were 2.17 mmol/L (SD=0.224) and 1.13 mmol/L (SD=0.256). Among them, hypocalcaemia [2.15 mmol/L], hypophosphatemia [ $<1.12$  mmol/L] and arthralgia were presented with 47.8% (n=96) 48.3% (n=97) and 48.8% (n=98) respectively. Although, serum calcium level had significant associations with arthralgia ( $p=0.002$ ;  $r=-0.215$ ), association with low serum phosphorus level was not statistically significant ( $p=0.494$ ;  $r=0.049$ ). However, 26.9% (n=54), 25.4% (n=51) of the patients complained arthralgia with low serum calcium and phosphorus level. Moreover, statistically significant difference was not shown between CKD stages and the aimed biochemical parameters.

**Conclusion:** Hypocalcaemia is associated with increased risk of having arthralgia in CKDu patients while hypophosphatemia was not associated. But, nearly, 25% of the patients complained arthralgia with above low mineral levels. Otherwise, unexplained arthralgia is common in CKDu and significantly associated with hypocalcemia. Further studies are required to identify the link between two parameters.

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## P284

### ATLAS OF VARIANCE: HEALTHCARE PROFESSIONALS' PERCEPTION OF KEY CARE DELIVERY GOALS IN PATIENTS WITH CHRONIC INTESTINAL FAILURE IN EUROPE

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**Rationale:** Chronic intestinal failure (IF) is a rare but life-altering condition, care delivery of which is complex with little alignment on treatment goals between countries. We report Results covering healthcare professionals' (HCPs) main treatment goals, and their perception of patient treatment goals, for adults with chronic IF across Europe.

**Methods:** Data were collected from 12 countries (Belgium, Croatia, Denmark, France, Italy, Norway, Poland, Portugal, Romania, Spain, Switzerland, UK) by online quantitative survey of HCPs involved in adult chronic IF care delivery (September–December 2020). Survey data were anonymised and pooled for analysis. Responses were summarised as frequencies, ranks and percentages.

**Results:** 119 HCPs completed the survey. 38.7% agreed the main treatment goal in adults with stable chronic IF was enhanced patient quality of life (QoL), with 25.2% and 20.2% prioritising reduced mortality and intestinal rehabilitation, respectively. HCPs' view of patient goals suggest 63.1% consider good QoL as the most important treatment aspect, only 5.8% consider it as least important. Avoidance of adverse events (16.2%) and reduced hospital visits (10.7%) were least often considered by HCPs as key patient goals. Overall, only 33.6% of HCPs measured QoL in chronic IF with validated questionnaires (N=116), of which 35% were used systematically in clinical practice; 53% measured QoL in research studies only (N=40).

**Conclusion:** Main treatment goals for adult patients with chronic IF are perceived by HCPs to include enhancement of QoL, followed by reduced mortality and intestinal rehabilitation. Although QoL was considered important, utilisation of validated questionnaires was low, particularly across clinical practice.

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## P285

## EVALUATION OF QUALITY OF LIFE RELATED TO DYSPHAGIA IN ALZHEIMER DEMENTIA

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**Rationale:** Alzheimer's Disease (AD) is related to loss of independence, low quality of life and death<sup>1</sup>. It is started to loss of functions in cognition and physiological abilities like swallowing. Dysphagia causes many complications, such as malnutrition, infection and sarcopenia, and decreased quality of life.<sup>2</sup> The effect of swallowing disorder on quality of life by using Swallowing Quality of Life Questionnaire (SWAL-QOL)<sup>3</sup>.

**Methods:** Sixty patients with AD were included and divided into two groups as mild and moderate stage according to the Clinical Dementia Rating scale. SWAL-QOL was completed by the patients themselves or their caregivers. Categorical and continuous variables were given as number/percentages and mean/standard deviation or median/interquartile range. Student-t test or Mann-Whitney U test was used for analysis of relations between groups, where it is appropriate.

**Results:** mild AD, 30 patients, and moderate AD, 30 patients, were enrolled. Two groups were different by age (76.9±5.8 vs 80.6±6.3), but similar by gender (female 16.7% vs 41.6%). In moderate stage AD, it was observed that all areas in the swallowing quality of life questionnaire had worse results than mild stage AD. These differences were statistically significant in the areas of burden of swallowing disorder, eating desire, food selection and social functioning (p<0.05). Eating duration, symptom frequency, communication, fear of feeding, mental health sleep and fatigue scores were higher in mild AD, but not significant. Total scores of Swalqol were lower in moderate-AD (P<0.05).

**Conclusion:** The effect of dysphagia on quality of life rises as the disease stage increases. Dysphagia develops from the early stages, and the effect of quality of life increases as the AD progresses. Every dementia patient is a candidate for malnutrition and swallowing functions should be questioned by clinicians.

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- Disclosure of Interest:** None declared

## P286

## FOOD-DRUG INTERACTIONS OF NOVEL DRUGS USED IN CARDIOLOGIC AND DIABETIC PATIENTS – LITERATURE REVIEW

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**Rationale:** The rate and extent of absorption are crucial for therapeutic effects of orally applied drugs.<sup>1</sup> Special attention must be paid to the novel drugs since the rules regarding their administration under fasted and fed conditions are not commonly known.

The aim of the study was to analyze the food effect on the oral bioavailability of the novel cardiovascular and antidiabetic drugs such as: an angiotensin receptor neprilysin inhibitor: sacubitril/valsartan, direct oral anticoagulants: rivaroxaban, apixaban, edoxaban and dabigatran, sodium-glucose cotransporter 2 inhibitors: empagliflozin, canagliflozin and dapagliflozin.

**Methods:** A search of relevant literature within the PubMed and SCOPUS database was performed. The search terms were: 'food-drug interactions',

'bioequivalence' and 'bioavailability'. Only randomized controlled trials and controlled trials written in English were taken into consideration.

**Results:** 27 publications fulfilled the search criteria for the following drugs: sacubitril/valsartan (2), rivaroxaban (3), apixaban (3), edoxaban (3), dabigatran (2), empagliflozin (4), dapagliflozin (7) and canagliflozin (3). In general, food may reduce the C<sub>max</sub> and delay the rate of absorption of the active substance (t<sub>max</sub>), however the total absorption of the drugs (AUC) is not significantly affected. Therefore, the drugs can be administered with or without regard to food. For patients with difficulty in swallowing, rivaroxaban, apixaban, edoxaban can be crushed and administered either via a nasogastric tube or orally mixed in apple sauce.

**Conclusion:** Food has no clinically relevant impact on absorption of novel cardiovascular and diabetic drugs.

**References:**

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**Disclosure of Interest:** None declared

## P287

## THROMBOTIC AND HAEMORRHAGIC COMPLICATIONS OF HOME PARENTERAL NUTRITION

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**Rationale:** Home parenteral nutrition (HPN) is a safe and effective treatment for chronic intestinal failure but includes vascular thrombosis amongst its risks. The associated literature has not been sufficiently robust to generate authoritative guidance on prophylactic anticoagulation, other than for those with another continuing prothrombotic condition (additional to HPN). Use of oral agents can then be challenging because of variable absorption of dietary vitamin K and of the drugs themselves, and injectable heparins may be needed to provide reliable protection. Haemorrhagic events in those on HPN have received less attention.

**Methods:** Prompted by an HPN patient who presented with bleeding associated with major and spontaneous coagulopathy (INR>10) we are conducting a thorough review of both haemorrhagic and thrombotic events associated with HPN in our 4 centres.

**Results:** Preliminary data from 142 British and French patients established on HPN for at least 6 months and surveyed over 5 years indicate 64 events in 51 patients (excluding the index case) across 327 catheter years. Adjusting for the length of time patients were in the programmes, this represents an event rate of 0.54 per 1000 catheter days.

Most (49) events were thrombotic (0.41 per 1000 catheter days) and most were catheter vein-related or "simple" calf vein thrombosis. The commonest other pathologies were pulmonary embolism and myocardial infarction (5 cases each). Of 15 haemorrhagic events requiring transfusion (0.13 per 1000 catheter days), 3 were peri-operative, but 9 were in patients on anticoagulants/antiplatelets, despite the fact that only 55 of the 142 patients were ever managed with these agents.

**Conclusion:** Any moves to reduce the risk of thrombotic complications in HPN patients must take into account the apparently four-fold higher risk of bleeding (16.4% vs 3.4%) in patients using anticoagulants or antiplatelet therapy.

**Disclosure of Interest:** None declared

## P288

## HOW CAN THE ASSOCIATION BETWEEN PRM AND NUTRITIONAL THERAPY PROTOCOL IMPROVE HEALTH OUTCOMES AND WHAT IS THE IMPACT ON REDUCING EXPENDITURE IN A PUBLIC HOSPITAL?

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**Rationale:** To minimise T2DM noncompliance, Patient Relationship Management (PRM) is the goal, enhancing decision making, as well as delegation and control of tasks. Many hospitals have already recognised the use of the best practice in PRM practices, which has enabled them to deal more effectively and efficiently with the entire healthcare process by responding directly to patients' needs and experiences throughout the assistance process. Our goals were find strategies that support the Win-Win model (patient, institution) to understand the importance of PRM with a nutritional protocol in adherence to therapy, and health gains.

**Methods:** Epidemiological and interventional study with T2DM outpatients from external diabetes consultation between April and June 2019 in Garcia de Orta hospital. Patients were randomly divided into two groups using the envelope method: intervention group (IG) and control group (CG). For statistical treatment we used the Statistical Package for Social Sciences (IBM SPSS Statistics), version 21 IBM. The Results are considered significant at a 5% significance level. Descriptive statistics were used to describe nutritional behaviours questionnaires, HbA1c, weight and BMI. To compare between groups we used the Mann-Whitney U test. To compare weight and BMI into two groups, the independent samples test was used, since the assumption of normality of data in BMI categories is not verified. To compare the parameters between two moments, we used the Wilcoxon test.

**Results:** 62 T2DM outpatients admitted (39 men), ages ranging 32-82 years ( $51 \geq 50$  years, mean- $59 \pm 11.18$ ). BMI ( $21.17-48.56 \text{ kg/m}^2$ , mean  $32 \text{ kg/m}^2$ ). Weight ( $52-143 \text{ kg}$ ), HbA1c ( $5.6-13.9 \text{ g/L}$ , mean  $9 \pm 0.4 \text{ g/L}$ ). After six weeks, the CG had a variation between 3-6% of their BMI, variation between a 9% loss in body weight and a 6% increase of their weight and a variation between a 3.2g/L decrease and a 2g/L increase in HbA1c. For the IG, the BMI between T0 and T2 had a variation between 1-9%, all patients lost a total of weight ranging from 1-9% and none of the patients had an increase in HbA1c value. The decrease in this value ranged from 0-7 g/L.

**Conclusion:** Nutritional protocol with nutritional therapy plus digital tool, boosted health gains in the group of diabetics who had this follow-up.

**Disclosure of Interest:** None declared

## P290

### VECTOR ANALYSIS OF CLASSICAL (BIVAC) AND SPECIFIC (BIVAE) BIOELECTRICAL IMPEDANCE IN PATIENTS WITH CHRONIC KIDNEY DISEASE (CKD)

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**Rationale:** The identification of sarcopenia, and especially sarcopenic obesity, in chronic kidney disease is a challenge that requires assessments of body composition, which can be done using the BIVA method. Thus, this study aims to assess the concordances between the body composition classifications obtained by BIVAc and by BIVAE in patients with CKD.

**Methods:** cross-sectional study, carried out in patients with CKD, with clinical information and assessment of body composition by total body protocol by BIVA. Sarcopenia and sarcopenic obesity were diagnosed with variables generated by BIVAc and BIVAE, respectively: low muscle mass and cachectic; low muscle mass and lean; high muscle and athletic mass; low percentage of fat and cachectic; low percentage of fat and thin; high percentage of fat and obese. The Kappa coefficient was used to analyze the concordances between the classifications by the methods, the data were presented in mean and standard deviation.

**Results:** 266 patients were evaluated, in the subgroups: 83-conservative, 79-hemodialysis, 23-peritoneal dialysis-DP, 81- Kidney transplantation-TxR. There was a predominance of males (51.5%), with a mean age of  $47 \pm 10$  years and most of them with hypertension. Of these, 178 were classified as cachectic by BIVAc and 73 sarcopenic obese by BIVAE. In the subgroups, cachectic were more prevalent in PD in both sexes by BIVAc. Sarcopenic obesity was more prevalent in women on HD by BIVAE. The concordances of the classifications were mild to weak, with the best agreement between a high percentage of fat from BIVAc and obese by BIVAE ( $0.65 \pm 0.35$ ), in the PD treatment subgroup.

**Conclusion:** BIVAc proved to be a reasonable method for assessing sarcopenia in these patients, but sarcopenic obesity was better observed by BIVAE.

**Disclosure of Interest:** None declared

## P290

### A CROSS-SECTIONAL STUDY ON HEALTH PERCEPTIONS, DIETARY HABITS, SUPPLEMENTS AND QUALITY OF LIFE IN PATIENTS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS

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**Rationale:** Multiple Sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system. Increasing evidence has implicated physiological impairments in the increased risk of malnutrition. Emerging evidence supports the use of dietary supplements to counteract common deficiencies seen in MS patients, such as Vitamin D, B12, Omega 3 and CoenzymeQ10(Q10). The aim of this study was to gain insights into behaviours relating to dietary modifications, supplement use and quality of life (QOL) impact in patients with Relapsing-Remitting MS (RRMS).

**Methods:** The study used the self-reported MSQOL-54 questionnaire, plus additional health perceptions questions posted on Facebook MS Groups. Consent was implied through anonymous survey completion. Pearson's, Spearman's Rho correlations and independent t-tests were conducted to identify relationships between diets, supplements and QOL. Descriptive statistics were employed to explore trends in behaviour and attitudes. The study was approved by the University of Hertfordshire LMS/UG/UH/04343.

**Results:** 84 respondents (90.5% female) were included for data analysis. A statistically significant positive correlation between mental health (MHCS) and physical health composite scores (PHCS) was observed ( $r=.765$ ,  $p=.001$ ). Significant negative correlations were found between living circumstances and QOL ( $p<.01$ ). Vegetarian diets ( $n=16$ ) had significant lower scores in PHCS ( $p=.021$ ) and MHCS ( $p=.001$ ). 60 participants took daily supplements with overall improved QOL. Of those, common supplements included Vitamin D (95%), Multivitamin (31.7%), Vitamin B12 (28.3%), Omega 3,6 (26.7%), Magnesium (21.7%), Vitamin B Complex (18.3%), Biotin (18.3%) and Zinc (18.3%). Q10 (8.3%) was associated with superior outcomes in PHCS ( $p=.016$ ) and MHCS ( $p=.011$ ).

**Conclusion:** The study revealed negative correlations between living environment and QOL in patients with MS may impact diet quality and are interrelated with vegetarian diets and poor QOL. Daily supplements and improved outcomes may be rectifying diet-induced deficiencies feasibly caused by functional deficits.

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**Disclosure of Interest:** None declared

## P291

### COCOA FLAVONOIDS: A PROMISING INGREDIENT THAT POTENTIATES VITAMIN D ACTION IN SKELETAL MUSCLE CELLS

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**Rationale:** Vitamin D (VitD) effects take place by binding to its receptor (VDR) which is a classical nuclear receptor responsible for genomic effects, but there is also a fraction of the VDR located in the muscle plasma membrane that is responsible for its non-genomic effects. In addition to the established effect of VitD in bone and mineral homeostasis, VitD insufficiency/deficiency is linked to a range of muscle disorders including frailty and muscle loss/dysfunction. Flavonoids decrease insulin resistance and have antioxidant and anti-

inflammatory properties by activating Akt signaling pathways. Our study has aimed to evaluate, in VitD deficient conditions, if cocoa flavonoids (CF) are able to mediate the interaction between VitD and skeletal muscle glucose uptake by triggering the modulation of its genomic and non-genomic signaling pathways. This could be useful in pathological deficient VitD situations, such as diabetes or sarcopenia where muscle function is compromised due to the onset of insulin resistance.

**Methods:** L6 cells were differentiated into myotubes and then incubated with vitD or CF alone or in combination to determine their effects on cell proliferation, the activation of signaling pathways involved in the VitD and CF effects, and the expression and subcellular location of VDR and its coreceptors (RXR and PGC1 $\alpha$ ) that mediate the genomic effects of VitD. Data were analyzed by two-way ANOVA.

**Results:** CF potentiates VitD effects on VDR dependent transcriptional activity as well as increases nuclear expression of the VDR, RXR, and PGC1 $\alpha$  proteins. Moreover, CF also increases synergistically non-genomic effects of vitD through the activation of ERK1/2 and Akt signaling pathways. This translated into a synergistic effect of CF combined with VitD on enhancing muscle glucose uptake.

**Conclusion:** Our data reveal that CF, in VitD deficient conditions, may play a role on the regulation of VitD action. CF might ameliorate muscle dysfunction by restoring VDR activity and its so-called genomic and non-genomic mediated effects involved in muscle glucose uptake and performance. CF dietary supplementation could be a useful therapy in pathological conditions involving insulin resistance tied to loss of muscle functionality.

**Disclosure of Interest:** None declared

## P292

### EFFECTS OF THE EXTENSIVELY HYDROLYZED PROTEIN AND AMINO ACID-BASED FORMULAS ON GROWTH PARAMETERS IN CHILDREN WITH CHRONIC DISEASES

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**Rationale:** Malnutrition is common in children with chronic diseases. Extensively hydrolyzed protein-based formula (EHF) and amino acid-based formula (AAF) are formulated to meet the all needs of infants with food allergy and different types of GI disorders. In our study, the clinical features of children were treated with EHF and/or AAF the effects of this intervention on their nutritional status were analyzed.

**Methods:** This retrospective database study was conducted at Dokuz Eylül University School of Medicine Department of Pediatric Gastroenterology, Hepatology and Nutrition. All medical records of children with chronic diseases using EHF and AAF were reviewed concerning demographic variables, anthropometric measurements, duration of the formula use and gastrointestinal symptoms.

**Results:** Ninety children out of 137 were enrolled in the study. The mean age was 9.9  $\pm$  11.2 months (1-59 months). The indications of using EHF/AAF were food allergy in 23 (25.6%), malabsorption in 21 (23.3%), cystic fibrosis in 20 (22.2%), cholestasis in 20 (22.2%), short bowel syndrome in 6 (6.7%) patients. In 10% of the children, all nutritional needs were met with these formulas. The mean duration of use of EHF/AAF was 18.4  $\pm$  21 months. After the formula was initiated, body weight SDS increased at 1., 3., 6., 15., and 18. months of their follow-up ( $p < 0.05$ ), body mass index SDS increased at the 6th, 15th and 18th months of their follow-up ( $p < 0.05$ ). Children with malnutrition at the beginning, 43% of them improved in the 3., 64% in the 6., 67% in the 15., and 80% in the 18. month of the follow-up period. We did not observe any significant gastrointestinal complaints with the formula use. ( $p < 0.05$ ).

**Conclusion:** AAF and EHF were used as a part of medical nutritional therapy in children with food allergy, cystic fibrosis, cholestasis, malabsorption and short bowel syndrome in our center. This intervention provided increasing mean body weight, height, body mass index percentile and SDS during 18-month follow-up period and recovering 80% of children with malnutrition.

**Disclosure of Interest:** None declared.

## P293

### QUALITY OF LIFE, MALNUTRITION-INFLAMMATION SCORE AND HANDGRIP STRENGTH IN HEMODIALYSIS PATIENTS

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**Rationale:** To investigate the relationship between anthropometric indices, such as handgrip strength (HS), midarm muscle circumference (MAMC) and body mass index (BMI), with malnutrition-inflammation score (MIS) and quality of life (KDQoL) in hemodialysis patients.

**Methods:** A total of 53 patients (mean age 58.8 $\pm$ 19, 40 males, BMI 25.5 $\pm$ 6.9 kg/m<sup>2</sup>) on maintenance hemodialysis were recruited from the dialysis unit of AHEPA Hospital of Thessaloniki, Greece. They were examined for HS, using the dominant hand or the one without fistula, and MAMC. MIS was used as a screening tool for risk of malnutrition ( $\geq 6$  indicating severe Inflammation). KDQoL questionnaire, which is validated in Greek, was used to assess quality of life.

**Results:** Patients with mild MIS ( $< 6$ ) had significantly higher score in KDQoL (physical functioning, energy fatigue, MAMC and BMI. Patients with low HS ( $< 30$ kg for men,  $< 20$ kg for women) presented statistically lower KDQoL, regarding work status, physical functioning, role limitation due to physical health, bodily pain, social functioning, energy fatigue and burden of kidney disease in ESRD. Those patients had significantly higher MIS compared to normal HS patients (6 $\pm$ 3 vs 2.9 $\pm$ 1.3). HS was significantly lower in patients with severe MIS compared to those with mild (11.7 $\pm$ 8.9 vs 24.4 $\pm$ 12.5). Among low HS patients work status, social function, burden of kidney disease, physical functioning, pain, energy fatigue and role physical differed significantly. HS was positively associated to BMI ( $r = 0.365$ ) and MAMC ( $r = 0.275$ ). MIS was negatively correlated to HS ( $r = -0.457$ ), certain variables of KDQoL (physical functioning  $r = -0.456$ , pain  $r = -0.375$ , general health  $r = -0.32$ , energy fatigue  $r = -0.331$ ) and BMI ( $r = -0.313$ ).

**Conclusion:** Handgrip strength can be incorporated as a reliable diagnostic tool for malnutrition, inflammation and lower KDQoL in hemodialysis patients.

**Disclosure of Interest:** None declared.

## P294

### NUTRITION PROGRAM FOR OUTPATIENTS AT MALNUTRITION RISK IMPROVED HEALTH-RELATED QUALITY OF LIFE OUTCOMES

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**Rationale:** Malnutrition is associated with increased morbidity, mortality, and need for higher healthcare. Little is known about the impact of nutrition interventions on health-related quality of life (QoL) domains (eg, physical, mental, emotional). We assessed the effectiveness of a nutrition-focused quality improvement program (QIP) on health and mental health/well-being and QoL of Colombian older adults presenting for outpatient care post a recent hospitalization and/or for chronic disease management.

**Methods:** QIP patients (n=618) classified as at-risk/malnourished per Mini Nutritional Assessment-Short Form were recruited from an outpatient clinic in Bogota, Colombia (September 2019-March 2020) and were followed for 90-days either in-person or via telehealth mechanisms (during COVID-19-imposed lockdown period). QIP interventions included 60-day supply of oral nutritional supplements (ONS; Ensure or Glucerna, Abbott, USA) and continuous nutrition and exercise education. QoL was assessed via EuroQoL-5D-3L; health status via EuroQoL-VAS; mental health/well-being via Geriatric Depression Scale.

**Results:** QIP patients were mainly female (69.4%), older adults (74.1 $\pm$ 8.7 years), and with 2.6 $\pm$ 1.5 comorbidities. Significant improvements over 90-days in health status (74.78 vs. 77.41 points) and QoL (6.81 vs. 6.61 points)



were observed post-QIP intervention. Improvement or maintenance of good mental health/well-being was also reported in 86% of QIP patients ( $p$ -values < 0.05).

**Conclusion:** Nutrition-focused QIP for at-risk/malnourished older outpatient adults resulted in improved health-related quality of life measures; thus, highlighting the importance of nutrition QIPs with ONS for older adults during their recovery phase and especially during a time when COVID-19 pandemic poses a significant burden on the overall health and well-being of older adults in Colombia.

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## P295

### ASSOCIATION BETWEEN FRAILTY AND ALL-CAUSE HOSPITALIZATION AND MORTALITY DURING 6 MONTHS IN HEMODIALYSIS PATIENTS

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**Rationale:** Approximately 26 million people were diagnosed with chronic kidney disease (CKD) only in the US. Frailty is a complex syndrome characterised by loss of physical and cognitive parameters. It's prevalence in CKD with hemodialysis is around 69%. In addition, frailty is associated with worse outcomes in this population. The aim of this study was to evaluate the association of frailty, using the Clinical Frailty Score and the Frail Score, with combined outcome all-cause hospitalization and mortality during 6 months among patients with CKD.

**Methods:** This was a prospective study conducted in a reference centre in Brazil. Inclusion criteria were >18 years from both sexes and in hemodialysis for at least 3 months. Blood samples were collected according to the Dialysis Unit routine. CFS and FS were applied during the first interview. All-cause hospitalization and mortality were evaluated during 6 months period. For univariate analysis Student t-test, Mann-Whitney and Chi-Square tests were used. Multiple logistic regression was used to predict combined outcome. Significance level was set to 5%.

**Results:** We assessed 150 subjects, 58% male, with  $58.3 \pm 12.8$  years. Frailty was 13.3% and 35.3% according to CFS and FS respectively. Nonetheless, in uni and multivariate analysis frailty could not predict combined outcome in this population.

**Table 1.**

Logistic regression models for frailty and combined outcome (n= 150).

Variable	OR	CI 95%	p-value
FS	1.251	0.565-2.773	0.581
FS*	1.295	0.573-2.926	0.534
FS#	1.462	0.626-3.417	0.380
CFS	0.871	0.270-0.434	0.817
CFS*	0.879	0.264-2.922	0.833
CFS#	0.853	0.248-2.932	0.800

FS: Frail Scale; CFS: Clinical Frailty Score; \*adjusted by age and gender; #adjusted by age, gender and Kt/v; OR: odds ratio; CI: confidence interval

**Conclusion:** There was no association between frailty, evaluated by CFS and FS, and combined outcome in patients with CKD in hemodialysis.

**Disclosure of Interest:** None declared.

## P296

### LOW-GLYCEMIC-LOAD, OMEGA-3 PUFA-ENRICHED SEMI-VEGETARIAN DIET DECREASES SERUM APOLIPOPROTEIN B AND REDUCES THE APOB/APOA-I RATIO IN FAMILIAL HYPERCHOLESTEROLEMIA

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**Rationale:** Patients with familial hypercholesterolemia (FH) are at high risk of premature atherosclerotic cardiovascular disease (ASCVD) due to the cumulative LDL-cholesterol (LDL-C) exposure. Apolipoprotein (apo) B has been recently shown to be a more accurate marker of ASCVD risk in statin-treated patients than LDL-C [1]. We aimed to evaluate the efficacy of a low-glycemic, semi-vegetarian diet enriched in omega-3 polyunsaturated fatty acids (PUFA) in reducing blood levels of apoB and in lowering the ratio of apoB to apoA-I in FH patients.

**Methods:** Study population consisted of 20 unrelated adult patients with established FH; 12 of them were treated with statins (rosuvastatin/atorvastatin: 10/2). The experimental diet was individually prescribed for each patient based on estimated energy requirement and reported intake during the baseline. Serum apoB and apoA-I levels were measured with ELISA at baseline and after 11-16 weeks of dietary intervention. The data were analyzed using the Wilcoxon matched-pairs test.

**Results:** At the end of the dietary intervention, FH patients showed a reduction in both apoB serum levels and the apoB/apoA-I ratio: apoB decreased from  $1.33 \pm 0.10$  to  $1.18 \pm 0.13$  mg/ml ( $p=0.01963$ ) and the apoB/apoA-I ratio from  $0.56 \pm 0.06$  to  $0.48 \pm 0.06$  ( $p=0.02168$ ); BMI and WHR were not affected.

**Conclusion:** A low-glycemic, omega-3 PUFA-enriched semi-vegetarian diet significantly lowers serum apoB and the apoB/apoA-I ratio and can reduce cardiovascular risk in FH patients, thus increasing the efficacy of pharmacological lipid-lowering therapies.

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**Disclosure of Interest:** None declared.

## P297

### NUTRITION RELATED COMPLAINTS, POOR NUTRITIONAL STATUS AND RISK OF SARCOPENIA ARE PREVALENT IN COVID-19 PATIENTS DURING HOSPITAL ADMISSION

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**Rationale:** Hospitalized patients with COVID-19 infection present with a broad clinical spectrum of symptoms. Nutritional complaints may contribute to inadequate nutritional intake, weight- and muscle loss, and malnutrition. This study aims to map nutritional complaints, nutritional status and risk of sarcopenia of COVID-19 patients during hospitalisation.

**Methods:** A prospective observational study in hospital admitted COVID-19 patients in four Dutch hospitals. Data were collected during dietetic consultations: 1) nutritional complaints (presence of anorexia, ageusia, changed taste, anosmia, chewing and swallowing problems, nausea, vomiting, feeling of being full, stool frequency/consistency, gastric retention, need for help with food intake and shortness of breath), 2) nutritional status by weight change prior to and during hospitalisation, where malnutrition is defined by >5% weight loss/week or >10% weight loss/month and 3) risk of sarcopenia (by SARC-F  $\geq 4$ ).

**Results:** Included were 409 patients (65 $\pm$ 12 yr, 69% male, 60% ICU, 21% in-hospital dead). The most commonly reported nutritional complaints were

anorexia (58%), feeling of being full (49%) and shortness of breath (43%), besides 1/3 of patients experienced changed taste, ageusia and/or anosmia. Only 7% experienced no nutrition related complaints. At admission 67% of the patients were obese, 35% of the patients were malnourished. During hospitalisation 22% of the patients showed serious acute weight loss (>5 kg) of whom 85% were admitted to the ICU at any point in time. A high risk of sarcopenia was scored in 73% of the patients.

**Conclusion:** Clinicians should consider the high risks of acute malnutrition (1 in 5 patients) and sarcopenia (3 in 4 patients) in hospital admitted COVID-19 patients. The high prevalence and duration of nutrition related complaints has serious repercussions for the nutritional status of COVID-19 patients. Multidisciplinary treatment, including dietetic treatment, is strongly recommended during hospital stay and beyond.

**Disclosure of Interest:** None declared.

## P298

### COMPARATIVE FEATURES OF PHYSICAL DEVELOPMENT IN CHILDREN WITH CHRONIC KIDNEY DISEASE ASSOCIATED WITH UROLOGICAL DISORDERS

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**Rationale:** The issue of dietary management in children with chronic kidney disease (CKD) is not well studied. Children with urologic pathology after surgical treatment have decreased motor activity and energy expenditure changes.

**Methods:** Anthropometric data of 20 boys and 22 girls (aged from 3 to 17) examined at urological department at multidisciplinary hospital of SPbSPMU were given in centile tables. 2 groups of children: group 1 with CKD C1-C2-20 children and group 2 with CKD C3-C5-22 ones were further divided into age subgroups.

**Results:** Group 1 has 15% in early childhood (EC), 55% in middle childhood (MC), 20% in adolescence (Ad) and 10% in late adolescence (LAd). The height within the centile corridors (CC) 6,7 was in 27.3% of EC, and within the CC 1,2 in 66.7% of EC, 9.1% of MC, 25% of Ad and 50% of LAd. The body mass (BM) within the CC 6,7 was in 36.6% of MC and 50% of Ad; CC 1,2: 66.7%-EC, 36.6%-MC, 25%-Ad and 100%-LAd. Insufficient BMI (CC 1,2):66.7%-EC, 36.6%-MC. Its excess: 36.6%-MC, 50%-Ad. Group 2 has 36.7%-EC, 27.3%-MC, 22%-Ad, 14%-LAd. The height within the CC 1,2: 25%-EC, 33.3%-MC, 100%-Ad, 33.3%-LAd. The height value (CC 6,7):33.3% in MC and LAd. The deficiency of BM (CC 1,2):50%-EC, 33.3%-MC, 80%-Ad. Excessive BM (CC 6,7): 33.3%-LAd. BMI within the CC 6,7:12.5%-EC, 40%-Ad, and 33.3%-LAd, while its low values (CC 1,2) were in 37.5% of EC, 50% of MC, and 33.3% of LAd.

**Conclusion:** The greatest height delay in group 1 was in MC and Ad, with insignificant difference in others. The greatest BM deficiency was in all ages while an excess of BM was only in Ad. 50% of Ad had excessive BMI and more than 50% of EC had marked BMI deficiency. Extremely low height in group 2 was in all age groups and well-marked in Ad. Extremely tall height was in MC and Ad. The deficiency of BM was marked in EC and Ad, its excess was in

LAd. 50% of MC had insufficient BMI 40% of Ad had it in excess. Thus, the group of adolescents with urological diseases demonstrates an excessive nutritional status, just like children without urological pathology.

**Disclosure of Interest:** None declared.

## P299

### ABDOMINAL CATASTROPHE: RESOURCEFUL METHOD FOR ENTERAL NUTRITIONAL SUPPORT IN A HOSPITAL IN CHILE

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**Rationale:** Achieving oral and enteral refeeding of a patient with an abdominal catastrophe is a great challenge for nutritional assistance teams, especially in places where we do not have all the tools and where many times it is necessary to improvise and innovate to achieve the necessary enteral feeding. **Methods:** We present the case of a 20-year-old man with an abdominal catastrophe secondary to a gun shot in curfew, during first pandemic wave. The patient was initially treated in a center in Chilean Patagonia, where he underwent multiple surgical interventions: total pancreatoduodenectomy, distal subtotal gastrectomy, decompressive gastrostomy, terminal hepaticostomy, right nephrectomy, splenectomy, feeding jejunostomy, discharge ileostomy, right colectomy and transverse mucous fistula

**Results:** He was transferred to our reference hospital in Santiago, for nutrition support and intestinal reconstitution surgery. We start nutrition support with parenteral nutrition and enteral nutrition by joining the decompressive gastrostomy with the jejunostomy with a tube, which allows us to feed orally and enterally with a magisterial formula to prove tolerance after 3 months with no enteral feeding. Progress was made, achieving weaning from parenteral nutrition after 2 months. Patient is transferred to a surgery unit where a transit reconstitution surgery is performed after 4 months. The patient evolves satisfactorily, so he was transferred to his base hospital in southern Patagonia, where he was discharged promptly. After 3 months of final surgery, he is currently at home with oral feeding, and regaining his weight.

**Conclusion:** In a case of abdominal catastrophe like the one we present here, enteral and parenteral nutritional management, together with innovation in ways to achieve this support, were of great help for the intestinal rehabilitation of our patient.

**Disclosure of Interest:** None declared.

## P300

### HYPOPHOSPHATEMIA IN PATIENT WITH CROHN'S DISEASE ON PARENTERAL NUTRITION DUE TO UNEXPECTED CAUSES: CASE REPORT

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**Rationale:** Hypophosphatemia, whether it's due to nutritional intervention in malnourished patients or as a side effect of iron replacement therapy, often goes without any particular clinical sign (in its mild to moderate form). We present a case of a patient with persistent hypophosphatemia due to IV iron treatment and possible refeeding syndrome.

**Methods:** A 25 year old woman with Crohn's disease was hospitalized due to disease exacerbation. In the last 5 months she had significant weight loss (BMI 16.5) owing to decreased food intake and diarrhea because of which parenteral nutrition (PN) was gradually introduced. Seven days before hospitalization she received IV iron (ferric carboxymaltose). Upon admission, blood work revealed hypophosphatemia 0.58mmol/L and deficiency of vitamin D (<20nmol/L).

**Results:** She was treated with potassium phosphate IV for the next 25 days due to fluctuating levels of serum phosphate (mean 0.51±0.16) and vitamin D supplementation therapy. Strong correlation between

phosphate levels and caloric intake provided by parenteral nutrition found that PN was not the cause of hypophosphatemia ( $r=0.71$ ,  $p=0.0014$ ).

**Conclusion:** We believe that the IV iron therapy in combination with untreated vitamin D deficiency was a major cause of hypophosphatemia in our patient, while nutritional intervention might have prolonged the correction of hypophosphatemia. Ferric carboxymaltose in comparison with iron isomaltoside has been previously found to have a higher incidence of hypophosphatemia<sup>1</sup>. Malnutrition, low levels of vitamin D and serum phosphate in patients with Crohn's disease should be considered as risk factors for developing hypophosphatemia in iron IV replacement therapy.

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**Disclosure of Interest:** None declared.

**P301**

**DESIGN OF GOURMET MENUS HIGH IN FIBER FOR DIABETIC PATIENTS OF THE FRENCH SANATORIUM: EVALUATION OF THE NUTRITIONAL CONTENT, ACCEPTABILITY, ORGANOLEPTIC CHARACTERISTICS AND GLYCEMIC CONTROL**

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**Rationale:** The first WHO global report on diabetes, shows that the number of adults with diabetes has quadrupled since 1980 to 422 million. However, there is scientific evidence that diabetes can be treated with diet, physical activity and medications. Therefore, given the increase in diabetic patients admitted to hospitals, the higher economic costs generated by their treatment and the growing demand for gourmet gastronomy in hospital settings for susceptible populations.

**Methods:** The objective of this research was to evaluate the organoleptic characteristics, the nutritional content and the level of acceptability of gourmet menus designed with a high fiber content (20g). It was investigated on the history of hospital gastronomy, diabetes, fiber and its effect on glycemic control. A satisfaction survey was directly applied to 14 adult patients; pre and post prandial blood glucose was taken, recorded in the medical records. The fiber content of the menus provided was calculated.

**Results:** As a result, it was determined that the gourmet menus designed high in fiber are acceptable by 82% of diabetic patients, organoleptically well valued by 71.4% and whose fiber content managed to maintain post-prandial blood glucose levels within acceptable limits. of normality.

**Conclusion:** In this way, it is concluded that the information obtained serves to improve the menus provided to diabetic patients, and, in addition, be the basis for future research in hospital gastronomy.

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**Disclosure of Interest:** None declared.

**P302**

**EVALUATION OF POST-DELIVERY DISCHARGE PLAN ON POSTPARTUM SCREENING OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS FOR TYPE II DIABETES MELLITUS – A CLINICAL AUDIT**

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**Rationale:** Gestational diabetes mellitus (GDM) is rising with parallel to the pandemic of Type II Diabetes Mellitus (DM). Approximately 40%-50% of mothers with GDM develop DM in their later life. The objective of this audit was to assess the post-delivery discharge plan of mothers diagnosed with GDM to prevent Type II DM by adhering to proper postpartum care.

**Methods:** An audit was conducted in a post natal ward of an Obstetric unit of National Hospital - Kandy including 60 mothers with GDM. The current practice was compared with standard indicators on the National Institute for Health and Care Excellence (NICE) Guidelines 2015. Data was collected through an interviewer-administered questionnaire and secondary data from bed head tickets.

**Results:** In 80% (n=48) of mothers, blood sugar assessment was performed before discharge. Blood sugar assessment in 6 weeks during the follow-up period was arranged in 65% (n=39) of mothers. Advice on annual blood sugar screening and lifestyle modifications was provided only to 15% (n=9) and 10% (n=6) of mothers respectively. An action plan was developed and discussed with the medical staff. The action plan included blood sugar assessment in 6 weeks postpartum, educating mothers before discharge on importance of annual blood sugar screening and lifestyle modifications to prevent DM, and introducing a checklist to house-officers in the ward. Since the checklist is attached to the pregnancy record, field public health midwives get involved in follow up care during post partum period. Re-audit was planned in 3 months.

**Conclusion:** The audit showed that there were gaps between the current practice and the standard post partum care. These gaps could be addressed through well designed interventions involving both curative and preventive sectors.

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**Disclosure of Interest:** None declared.

**P303**

**A MULTICENTRE PILOT STUDY ASSESSING THE OUTCOMES OF THE GUT SYMPTOMS IN NEUROLOGICAL DISEASE MANAGEMENT (GUSTO) TOOL**

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	LUNCH		DINNER	
	Glu Pre	Glu post	Glu pre	Glu post
Average	160,35	180,42	193,35	182

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**Rationale:** Intolerance in enterally fed patients with neurological conditions is common and there are currently various approaches to management<sup>1</sup>. The Gut Symptoms in Neurological Disease Management Tool (GUSTO) was developed by a multi-disciplinary team (MDT). This pragmatic tool is being used to provide guidance on the management of enteral feeding intolerance in multicentre acute and community sites. As part of a larger service evaluation, this pilot aimed to assess the outcomes of the GUSTO tool in clinical practice.

**Methods:** This study was completed retrospectively between August and September 2019 across three UK sites. The questionnaire was designed by an MDT and Nestlé Health Science. The analysis focused on how the application of the GUSTO tool may influence outcomes for patients and users. Data was collected using multiple-choice questions, rating scales and free text. Approval for this service evaluation was gained from all three sites.

**Results:** Cross-sectional data was collected on tool users and patients (n=16). Tool users were health professionals working across acute (n=6), rehabilitation (n=5) and community (n=3) services. Patients included in this study had been diagnosed with stroke (n=8), traumatic brain injury (n=4), non-traumatic brain injury (n=1) and other conditions (n=3). Vomiting (n=10) and diarrhoea (n=9) were the most commonly reported symptoms. Twenty five per cent of patients experienced two symptoms of which vomiting and diarrhoea was the most predominant combination. Following use of the tool over 50% of patients reported a reduction in discomfort, diarrhoea and vomiting episodes and over 60% of tool users reported a saving of nursing and dietetic time.

**Conclusion:** The application of the GUSTO tool in patients with neurological conditions indicated an improvement in patient reported symptoms and potential saving of MDT time.

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#### P304

##### HIGH-FIBER PERSONALIZED DIETARY ADVICE REDUCES CONSTIPATION COMPLAINTS

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**Rationale:** Constipation is characterized by hard stools and infrequent bowel movements, and greatly impacts quality of life (QoL). A high fiber intake can help relieve constipation, however sustainably increasing fiber intake remains a challenge. Therefore, we investigated the effects of a personalized dietary advice (PDA) on constipation complaints and fiber intake in adults with constipation.

**Methods:** This study had a single arm of n=25 adults with constipation, and consisted of a 4-week observation period and a 4-week intervention

period. The PDA was personalized based on habitual diet, and provided high-fiber alternatives via a website. Dietary intake, constipation complaints and physical activity were assessed at week 1, 4 and 8 using 24hr recalls and validated questionnaires. Participants completed daily questions for 8 weeks regarding abdominal complaints, stool frequency and stool consistency (Bristol stool chart).

**Results:** Fiber intake after 4 weeks of intervention was significantly higher compared to week 1 ( $\Delta=5.7\pm 6.7g$ ,  $p<.001$ ) and week 4 of the observation period ( $\Delta=5.2\pm 6.4g$ ,  $p<.001$ ). Macronutrient intake and physical activity remained stable throughout the study. Constipation severity and QoL significantly improved at week 8 compared to the observation period ( $p<.001$ ). Mixed model analysis showed that fiber intake had a significant effect over time on constipation severity ( $\beta=-0.031$  (-0.05; -0.01),  $p=.001$ ) and QoL ( $\beta=-0.022$  (-0.04; -0.01),  $p=.009$ ), which remained when corrected for physical activity and water intake. Stool consistency improved significantly during the intervention ( $p=.04$ ), but stool frequency did not. Abdominal pain reduced significantly during the intervention period ( $p=.030$ ), but no changes were observed for abdominal cramps or bloating.

**Conclusion:** A high-fiber PDA was effective in increasing dietary fiber intake and consequently reduced constipation complaints.

**Disclosure of Interest:** None declared.

#### P305

##### STAKEHOLDERS PERSPECTIVES AND INFLUENCES ON FRUITS AND VEGETABLES CONSUMPTION AMONG ADOLESCENTS WITH HEARING IMPAIRMENT IN SELECTED SECONDARY SCHOOLS IN NIGERIA

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**Rationale:** Consumption of fruit and vegetables (FV) is one of the most important strategies for prevention and control of Non-communicable diseases (NCD). Although adolescence is a very important stage in life evidences show inadequate FV intake among this age group and those with hearing impairment are disproportionately vulnerable. Therefore, understanding the perspectives of stakeholders in the care of adolescents with hearing impairment in selected secondary schools in Nigeria would contribute to finding appropriate strategy to improving FV consumption among them

**Methods:** This qualitative study was carried out among selected stakeholder in public special schools with matching characteristics in Oyo and Lagos state. There data collection methods (i.e. key informant interviews(KIIs), In-depth interviews(IDIs) and focus group discussions(FGDs)) were used. Six KIIs were held with the head of the schools, eight FGDs with the students, four IDIs with food vendors, eight IDIs with teachers in the special schools, 4 KIIs with parents and 2 KIIs with Directors of special education units in the two states. The data collected was thematically analysed.

**Results:** The analyses of the data revealed eight subthemes which were linked to the Frameworks for student's fruits and vegetable consumption to identify factors related to the cultural, physical, social, personal environment. These included nutritional needs, problems and concerns; healthy diets and making healthy food choices; sources of nutritional information; concept and importance of healthy diets; factors, circumstances and behaviours influencing choices and factors that could motivate choices for FV in relation to choices and how stakeholders influences fruit and vegetable consumption among the target population.

**Conclusion:** Stakeholders play significant role in enhancing positive immediate output and outcomes related to healthy eating including futuristic impact of FV consumption in the control and prevention of Non-communicable diseases for our weak health systems in Nigeria. Advocacy and efforts towards appropriate policy review and implementation should target; parents, teachers, head of schools, food vendors/ food suppliers in the schools, school health and nutrition directorate of the ministry of health and special education directorate at the ministry of education.

**Disclosure of Interest:** None declared.

## P306

### ANTHROPOMETRIC CHANGES IN CHRONIC KIDNEY DISEASE OF UNKNOWN ETIOLOGY (CKDU) PATIENTS: A SINGLE-CENTER LONGITUDINAL STUDY IN SRI LANKA

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**Rationale:** Chronic kidney disease of unknown etiology (CKDu) has become a major public health problem in Sri Lanka. This study aimed to describe longitudinal changes in anthropometric parameters of CKDu patients and the influence of age (younger; <60 and older; ≥60 years of age) and sex on those changes.

**Methods:** This was a prospective, longitudinal study that included 120 non-dialysis-dependent CKDu patients attending the renal clinic in an endemic area in Sri Lanka. Each participant underwent weight, waist circumference (WC), hip circumference (HC), body fat% (BF%), and body muscle% (BM%) measurements at each 2-month interval for a period of one year. The linear mixed-effects analysis was performed using SPSS version 23 software.

**Results:** The mean age of patients was 61.86 (11.31), while 69.2% was male. Mean (SD) glomerular filtration rate and hemoglobin value were 28.17 (14.03) ml/min/1.73m<sup>2</sup> and 11.95 (1.67) g/dl. Among the patients, 37.5%, 40.8%, and 20% were in stage III, IV, and V of CKDu, respectively. Among younger women, there was a significant gain in weight (0.408, 95% CI=0.358, *p*=0.030), WC (1.107, 95% CI=0.492, *p*<0.001), HC (0.757, 95% CI=0.419, *p*=0.001), and BMI (0.173, 95% CI=0.155, *p*=0.032) in younger women, however, there were no significant changes in BF% and BM%. There was a significant increase in WC (0.784, 95% CI=0.380, *p*<0.001) and HC (0.621, 95% CI=0.395, *p*=0.004) among elderly women while there were no significant changes in other parameters. There was a higher BM% loss (-0.286, 95% CI=-0.333, *p*=0.089) in younger men than BF% gain (0.252, 95% CI=0.305, *p*=0.104), though those changes were not statistically significant. A prominent gain in BF% (0.432, 95% CI=0.323, *p*=0.010) and loss in BM% (-0.327, 95% CI=0.258, *p*=0.013) were observed among elderly men with no significant effect on weight or body mass index (BMI), which is referred to as masked obesity (Agrawal, 2020). A significant loss in WC was observed among both younger men (-0.343, 95% CI=0.342, *p*=0.049) and elderly men (-0.573, 95% CI=0.284, *p*<0.001).

**Conclusion:** There were diverse changes in anthropometric measures in non-dialysis-dependent CKDu patients while some measures appear to be more sensitive to change than others. Detection of masked obesity among men with CKDu emphasizes the importance of body composition measures (BF% and BM%) in addition to conventional nutritional status measures (weight, BMI, WC, HC). Bioelectrical impedance analysis can be easily performed in rural clinical settings in Sri Lanka and provides an inexpensive, objective assessment of body composition. Future studies to analyze the prognostic implications of these findings are recommended.

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**Disclosure of Interest:** None declared.

## Obesity and the metabolic syndrome

## P307

### ASSOCIATION BETWEEN 12 GENE POLYMORPHISMS WITH ENERGY AND MACRONUTRIENT INTAKE 1 YEAR AFTER ROUX-EN-Y GASTRIC BYPASS SURGERY

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**Rationale:** Despite a large number of obesity-related gene candidates, the topic of how gene polymorphisms can influence weight loss and food intake after bariatric surgery needs to be further explored. This study aimed to investigate the influence of food intake on body weight loss and the association of gene polymorphisms one year after Roux-en-Y gastric bypass (RYGB) surgery.

**Methods:** In total, ninety-five adult obese women (age ranged 20–50 years and BMI 36–73 kg/m<sup>2</sup>) in a Brazilian cohort underwent RYGB surgery and completed the study. Anthropometric measurements and self-reported food intake (24 h record from three non-consecutive days) were assessed before and one year after surgery. Twelve gene polymorphisms (*GHRL* rs26802; *GHSR* rs572169; *LEP* rs7799039; *LEPR* rs1137101; *5-HT2C* rs3813929; *UCP2* rs659366; *UCP2* rs660339; *UCP3* rs1800849; *SH2B1* rs7498665; *TAS1R2* rs35874116; *TAS1R2* rs9701796; and *FTO* rs9939609) were determined using a real-time PCR reaction and a TaqMan assay. The effect of genetic variants on energy and macronutrient intake was evaluated by simple logistic regression, followed by multiple logistic regression.

**Results:** The subjects were divided into quartiles regarding the percentage of excess weight loss (%EWL) and it was found that subjects in the first and second quartile showed a higher preoperative BMI. Before and one year after RYGB surgery, energy and macronutrient intake did not differ between the %EWL quartiles. None of the 12 gene polymorphisms investigated showed a significant association with estimated energy and macronutrient intake 1 year after surgery in the simple regression analysis.

**Conclusion:** In conclusion, the estimated energy and food intake did not predict a greater body weight loss one year after RYGB surgery. In addition, the 12 gene polymorphism investigated did not affect the energy intake among female patients.

**Disclosure of Interest:** None declared.

## P308

### EFFECT OF LOCKDOWN PERIOD DURING COVID-19 PANDEMIC ON WEIGHT REDUCING PATIENTS

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**Rationale:** Recent pandemic of COVID-19 affected health and daily life style of Sri Lankans in many ways. Aim of this audit was to assess the weight change of clinic patients before, during and after the lockdown period.

**Methods:** Clinic based observational study with a sample of 77 weight reducing adults followed up at medical nutrition clinic of Colombo North Teaching Hospital Sri Lanka, were randomly selected. The change in weight three months prior, during and after the lockdown period was assessed by measuring weight according to standard procedure. Reasons for the weight change was assessed through direct questioning from a checklist. Standard weight loss was considered as 2–4 kg/month as recommended by many weight management guidelines. Data was analyzed using Microsoft Excel.

**Results:** Age ranged from 18 to 65 years with majority being females (74%, *n*=57). Majority were obese patients (71.4%, *n*=55) with a median BMI of 31.5kg/m<sup>2</sup>. 51.9% had ≥2 non-communicable diseases. Average follow-up period was eleven months and follow up percentage for the post-lockdown period was 81%.

Percentage who reduced weight and achieved the recommended weight loss prior to, during and after lockdown respectively were 61%, 41.6%, 71.4% and 10.6%, 6.25%, 25.4%. Majority (55.8%) has gained weight during the lockdown period. Average weight gain was 0.5kg/month. Lack of physical activity, sedentary behaviour and disturbance in meal pattern were the main reasons identified.

There is a statistical significant difference (paired t test *P* value = 0.009) in the weight change during the routine clinic visits. There is no statistical difference (paired t test *P* value = 0.89) in the weight change during lockdown period.

**Conclusion:** Majority of obese and overweight participants achieved weight loss outside the lockdown period. Majority gained weight during the lockdown period. Patient motivation and regular clinic follow-up is essential for weight management and behavioral modification. To achieve this goal, special methods should be adopted during the pandemic.

**Disclosure of Interest:** None declared.

### P309

#### EFFECTIVENESS OF LIFESTYLE MODIFICATION INTERVENTION AMONG WOMEN TO REDUCE NON-COMMUNICABLE DISEASE RISK FACTORS

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**Rationale:** Research has clearly shown that Non-Communicable Diseases (NCD) have their roots in unhealthy lifestyles. With the extent known at present, the main question for NCD prevention is not "what should be done", but "how should it be done". The key question is, how can the existing knowledge best be applied for effective prevention in real life.

The objective of the research was to determine the effectiveness of lifestyle modification intervention in reducing NCD risk factors in females.

**Methods:** Forty-eight females (BMI = 24.5 to 31.4 kgm<sup>-2</sup>, age = 26 to 40 years) participated in the community-based intervention. Measurements including height, weight, waist circumference, estimated body fat percentage, fat free mass and visceral fat percentages were recorded prior to intervention. In addition, pre-intervention photographs of each subject and biological age by bioelectrical impedance analysis were recorded. During the first 2 months of the intervention, series of short lectures were given to the group. A 30 minutes moderate intensity exercise programme was introduced and subjects were provided with video guide to continue at home. Subjects were asked to monitor their status of health by monthly measurement of waist circumference, serial photographs and risk engagement charts. They were asked to share experiences via a social media group. Physical measurements were recorded after three months and six months of intervention and analyzed with repeated measures ANOVA.

**Results:** Waist circumference was significantly reduced during 6 months (Wilks' Lambda = 0.29, F = 47.29, p = 0.03,  $\eta^2=0.59$ ). Visceral fat percentage reduced significantly during the time period (Wilks' Lambda = 0.19, F = 27.21, p = 0.02,  $\eta^2=0.67$ ). Follow-up comparisons indicated that each pairwise difference was significant, (p=0.02). All the other physical parameters showed improvement during the measured intervals. 95% (n=46) followed the monthly waist circumference measurement and recording serial photographs. 71% (n=34) followed the exercises according to recommendations. Serial photographs, sharing experiences and expectation of improvement in estimated biological age motivated the subjects, improving adherence to the programme and minimizing the lost to follow-up.

**Conclusion:** Lifestyle modifications can be applied as a multicomponent intervention effectively to reduce NCD risk factors.

**Disclosure of Interest:** None declared.

### P310

#### RELATIONSHIP BETWEEN SPECIFIC FAECAL FATTY ACIDS AND SERUM PARAMETERS IN MORBIDLY OBESE SUBJECTS

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**Rationale:** Obesity is a high-mortality disease, therefore dietary options are sought to help with weight control even before bariatric surgery [1]. Special diet is recommended before and after bariatry. One of them may be the use of polyunsaturated fatty acids (PUFA) n3 and n6 in diet, which have

different effects on the development of obesity and low-grade inflammation [2]. **The aim of the study** was to correlate the marked PUFAs with selected biochemical parameters in the group of patients qualified for bariatric surgery (BS).

**Methods:** The study groups included 26 patients qualified for the BS in the Centre of Obesity and Metabolic Diseases at the Medical University of Gdansk and the lean control (LC) consisted of 25 subjects. The FAs were determined in the stool samples using the GC-MS method, while the selected biochemical markers in serum of research subjects.

**Results:** The analysis of the eating habits (by FFQ) of both study groups did not reveal any significant differences in the patients' diets. In a group of BS patients significantly higher serum concentrations of cholesterol fractions, glucose and insulin than in the LC subjects (p<0.001) was noticed. Albumin and C-reactive protein (CRP) were significantly higher in BS group (p<0.05). The analysis of the FA content showed statistically significant higher amounts of DHA, DPA and PUFA n3, similar to ARA, DGLA, 20:2 n6 and 22:4 n6 (p<0.05) in BS group. Additionally, a significant negative correlation between EPA (R=-0.507), DHA (R=-0.468) and DPA (R=-0.559) from PUFA n3 group and CRP was demonstrated in the BS group, and positive one between LA (R=0.676), PUFA n6 (R=0.679) and CRP in the same group.

**Conclusion:** Evidence suggests that obesity is accompanied by a low-grade inflammation which correlates with selected FAs. The improvement of the PUFAs profile using an appropriate diet, may be an important therapeutic factor in reducing inflammation in the group of obese patients.

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**Disclosure of Interest:** None declared.

### P311

#### ALTERED GUT MICROBIOTA AND ANTHROPOMETRY IN OBESE INDIVIDUALS

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**Rationale:** Elevated gut Firmicutes/Bacteroidetes ratio and poor bacteria richness might influence the pathogenesis of obesity, but heterogeneous data difficult to consider these changes as an obesity's hallmark. We evaluated alterations in the gut microbiota (GM) composition of Brazilian obese subjects and its correlation with anthropometric data.

**Methods:** Obese (n=20; Body mass index [BMI]: 49±7.5 kg/m<sup>2</sup>), and eutrophic (n=25; BMI: 22.3±2.1 kg/m<sup>2</sup>) subjects provided fecal samples. Percentages of their body fat (FM) and lean body (LM) mass were assessed by bioelectrical impedance. The GM profile was assessed by the 16S rRNA (V3-V4) gene sequencing, considering only high-quality/quantity reads (DADA2 [v1.8.0]). Statistical analyzes were performed using the JASP Team 2020 software (v0.14.1), and Student's t test or Mann Withney as appropriate.

**Results:** Comparing to eutrophic individuals, obese subjects exhibited an underrepresentation in the Verrucomicrobia phylum. At genera/species level, they also exhibited a comparative underrepresentation of several beneficial bacteria (i.e. Christensenellaceae R-7, Eubacterium eligens group, Lachnospiraceae NK4A136 and ND3007 groups, Odoribacter, Akkermansia muciniphila) and overrepresentation of pro inflammatory (Prevotella 2 and 9, Lachnospiraceae) and few beneficial (i.e. Eubacterium hallii group (P=0.038) bacteria; p≤0.050. GM richness (Chao1 Index) was comparatively poor in obese individuals and correlated inversely with

FM ( $r=-0.300$ ) and directly with LM ( $r=0.298$ );  $p\leq 0.050$ . The same correlations were observed for the Christensenellaceae R-7 ( $r=-0.365$  and  $r=0.366$ , respectively), which also correlated inversely with BMI ( $r=-0.368$ );  $p\leq 0.050$ .

**Conclusion:** Brazilian obese subjects presented several alterations in GM composition that may prone to inflammation. Among the classic GM alterations, poor richness was confirmed, and correlated with obesity anthropometric markers.

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### P312

#### TIME-RESTRICTED FEEDING PREVENTS THE DISRUPTION OF THE CIRCADIAN CLOCK AND THE RELATED BODY WEIGHT GAIN INDUCED BY CHRONIC JETLAG

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**Rationale:** Disruption of the circadian clock (chronodisruption) has been linked to a disturbed eating pattern and obesity. This study investigated whether time restricted feeding (TRF) during chronic jetlag in mice could prevent the disruption of the peripheral circadian clock and the effects on body weight gain.

**Methods:** Mice were divided into: a control group that was fed only during the night (Ctrl RF), a jetlag group that was fed *ad libitum* (JL AL) and a jetlag group that was only fed during the respective night of the control mice (JL RF) during 4 weeks. Short-chain fatty acids (SCFAs) were analysed in fecal samples. Total RNA was isolated from the hypothalamus and colonic mucosa for RT-qPCR. Ghrelin was measured in blood samples.

**Results:** Restoring the disrupted day/night food intake rhythm using TRF prevented body weight gain in JL RF mice. The disrupted food intake pattern in JL AL mice was not caused by changes in the rhythmicity of the hypothalamic neuropeptide *Agrp* mRNA. However, TRF prevented the phase-delay in hypothalamic clock gene expression of *Reverba* induced by chronic jetlag but not of *Bmal1*. SCFAs are important synchronizers of peripheral clock genes. TRF impeded the loss in rhythmicity in fecal SCFA levels in JL AL mice and partially prevented the phase-delay in clock gene expression in the colonic mucosa. The loss in rhythmicity in plasma levels of the hunger hormone ghrelin in JL AL mice was prevented by TRF.

**Conclusion:** TRF prevented body weight gain and changes in clock gene expression during chronic jetlag. The loss in rhythmicity in food intake was probably caused by the loss in rhythmicity of plasma ghrelin levels, but could be restored by TRF. Our findings suggest that TRF could be a good non-invasive treatment to prevent the metabolic consequences induced by chronodisruption.

**Disclosure of Interest:** None declared.

### P313

#### WEIGHT-LOSS ON LIRAGLUTIDE IN A REAL-LIFE SWISS OBESE COHORT

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**Rationale:** We aim to investigate the clinical effectiveness of liraglutide treatment in combination with diet counselling in a real-world setting of an academic obesity center in Switzerland with reimbursement of liraglutide by the Swiss National Health Insurance Service.

**Methods:** This is a prospective observational cohort of 42 patients. Biological and clinical data were collected at baseline and 4 months after initiation of liraglutide. Exclusion criteria were diabetes, previous treatment with liraglutide, and a history of bariatric surgery. Liraglutide dose was increased by 0.6 mg every week to reach a dose of 3 mg. Dietary

intervention was provided before and during treatment to achieve a daily energy deficit of 500 kcal/day. All patients were encouraged to exercise for 150 minutes/week. Primary outcome was the prevalence of weight loss at 4 months ( $\geq 5\%$  and  $\geq 10\%$ ).

**Results:** The population was mostly female (64%). Baseline BMI was 40.9 ( $SD=5.8$ )  $kg/m^2$ , mean age was 43 ( $SD=11$ ) yrs. Percentage change in body weight was  $-8.4\%$  at 4 months; 34/42 (80.9%) and 12/42 (28.6%) lost  $\geq 5\%$  and  $\geq 10\%$  body weight, respectively. We observed significant improvement in glucose profile (5.7 [ $SD=0.9$ ] vs 5.3 [ $SD=0.4$ ] mmol/L,  $p=0.01$ ; HbA1c 5.5% [ $SD=0.4$ ] vs 5.2% [ $SD=0.3$ ],  $p<0.001$ ) with no change in lipids. Interestingly, TSH decreased (2.6 [ $SD=1.3$ ] vs 2.1 [ $SD=0.4$ ] mU/L,  $p=0.05$ ). The following adverse events were reported: constipation (23.8%), nausea (19%), esophageal burning (9.5%), local skin reaction (4/42, 9.5%). Liraglutide was discontinued in one patient because of abdominal pain and increased lipase levels.

**Conclusion:** Weight loss after 4 months of liraglutide was better than observed in other real-life studies. Early diet counseling may be a powerful tool to improve liraglutide effect. Reimbursement of treatment does not affect the motivation of patients nor the outcomes and tolerance was excellent.

**Disclosure of Interest:** None declared.

### P314

#### EFFECTS OF CHRISTIAN ORTHODOX FASTING VERSUS TIME-RESTRICTED FEEDING ON PLASMA ADIPONECTIN CONCENTRATIONS AMONG OVERWEIGHT WOMEN

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**Rationale:** This prospective, parallel-arm study aimed to evaluate changes in plasma adiponectin concentrations in two groups of females who followed Orthodox fasting (OF) and 16/8 time-restricted feeding (TRF) and investigate potential correlations between adiponectin levels and glycemic and lipid markers.

**Methods:** Plasma adiponectin, biochemical and anthropometrical parameters were measured in 55 Orthodox fasters and 42 TRF controls (mean age 47.8 years and Body Mass Index 28.2  $kg/m^2$ ) at three time points: before the implementation of the diets (baseline), at the end of the dietary intervention (7 weeks) and 5 weeks after participants returned to their standard dietary habits (12 weeks from baseline).

**Results:** In the OF group, adiponectin increased at 12 weeks compared with baseline (9815.99 vs 8983.52 ng/mL,  $p=0.02$ ), whereas total body fat mass decreased between baseline and 12 weeks (35.44 vs 32.17%,  $p=0.004$ ) and between 7 and 12 weeks (35.33 vs 32.17%,  $p=0.003$ ). In the same group, an inverse correlation between adiponectin and waist circumference was evident over the entire study period (baseline:  $p=0.001$ ; 7 weeks:  $p=0.04$ ; 12 weeks:  $p=0.003$ ) and between adiponectin and homeostatic model for insulin resistance at 12 weeks ( $p=0.01$ ). A positive correlation between adiponectin and high-density lipoprotein cholesterol was observed in the TRF group at baseline ( $p=0.01$ ), which was no more significant at the end of the follow-up period ( $p=0.08$  at 12 weeks).

**Conclusion:** Our findings suggest that OF has favorable metabolic effects related to an increase in adiponectin concentrations of fasters.

**Disclosure of Interest:** None declared.

### P315

#### DIAGNOSIS OF OSTEOSARCOPENIC OBESITY IN PATIENTS WITH HIGH-RISK OBESITY

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**Rationale:** The coexistence of osteoporosis/osteopenia, sarcopenia and obesity has been described as osteosarcopenic obesity, resulting in reduced functionality and systemic metabolic dysregulation. Our objective was to determine the prevalence of sarcopenic obesity (SO), osteopenic obesity (OO) and osteosarcopenic obesity (OSO).

**Methods:** Descriptive cross-sectional study of patients with obesity under study prior to bariatric surgery between 2017–2021. The study was approved by Ethical Research Committee of the CAULE (n°2049). Body composition and muscle strength were studied using bioimpedance (MC-780A;TANITA) and hand grip strength(HGS) with dynamometry(Dynx®). Sarcopenia was diagnosed with an HGS and ALM/Weight value below <2SD extracted from another study with a normal volunteer population in our setting. Osteopenia/osteoporosis was defined as a bone mineral density T-score  $\leq$ 1SD in femur or lumbar spine in densitometry(Lunar iDXA, GE Healthcare).

**Results:** 120 patients with BMI>35 (mean 46.0 kg/m<sup>2</sup>, SD 5.2) were included, 72.5% were women, mean age 43.3(SD 8.8). 3.3% met the criteria for OSO, 12.5% for SO without osteopenia/osteoporosis, 21.7% for non sarcopenic obesity with osteopenia/osteoporosis (OO) and 62.5% for non sarcopenic obesity without osteopenia/osteoporosis.

120 patients			
Sarcopenic obesity (19)		No sarcopenic obesity (101)	
Osteopenia/osteoporosis	No osteopenia/osteoporosis	Osteopenia/osteoporosis	No osteopenia/osteoporosis
4	15	26	75
Osteosarcopenic obesity (3.3%)	Sarcopenic obesity (12.5%)	Osteopenic obesity (21.7%)	Obesity (62.5%)

**Conclusion:** Among patients with high-risk obesity, 3.3% met the criteria for osteosarcopenic obesity.

**Disclosure of Interest:** None declared.

### P316

#### THE ASSOCIATION BETWEEN COVID-19 AND OBESITY IN CHILDREN

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**Rationale:** Obesity is a state of chronic low-grade systemic inflammation by increased proinflammatory cytokine secretion from adipose tissue. The "cytokine storm syndrome", observed during COVID-19, is perhaps one of the critical hallmarks of COVID-19 disease severity. The aim of our study is to analyze the impact of obesity and pre-obesity on the disease severity of COVID-19 patients.

**Methods:** Our study includes 154 children aged 0-18 years (59% boys, 41% girls) with COVID-19 who were admitted between May-October 2020 after a mean hospitalized period of 10±4 days. 1/5 of children was overweight (pre-obesity in 17 subjects, obesity in 13 cases); 55% have normal nutritional balance; malnutrition was determined in 25% of patients (mild malnutrition in 26 patients, moderate in 4 subjects and severe in 10 cases). The severity of the disease was evaluated with CT visual quantitative evaluation.

**Results:** According to chest CT 44% of the children had none (CT0), 25% had minimal (CT1), 17% - mild (CT2), 13% - moderate (CT3), and 1% had severe disease (CT4). The lobar involvement in patients with pre-obesity was classified: CT0 - 35%, CT1 - 24%, CT2 - 35%, CT3 - 6%. Obese children were more likely to have more severe lung damage: CT0 - 38%, CT3 - 54%, CT4 - 8%. A predominance of CT signs of stages 0-1 was revealed among patients with normal nutritional balance and malnutrition: CT0 - 23%, CT1 - 18%, CT2 - 10%, CT3 - 4% and CT0 - 54%, CT1 - 21%, CT2 - 10%, CT3 - 15% respectively. Obesity and pre-obesity were associated with more severe disease (p=0.009), but the duration of hospitalization did not increase.

**Conclusion:** This study found evidence that children with obesity and pre-obesity are more vulnerable to severe COVID-19. Therefore, it has to be considered during treatment.

**Disclosure of Interest:** None declared.

### P317

#### EFFECTS OF SPECIFIC NUTRITIONAL COMPONENTS AND SUPPLEMENTING OBESOGENIC DIET WITH QUINOA ON BODY WEIGHT REGULATION IN RATS

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**Rationale:** The cafeteria diet is a robust model of diet induced obesity and consists of highly energetic and highly palatable human foods to trigger diet induced obesity in rats. Quinoa (*Chenopodium quinoa*) is a pseudo-cereal containing healthy nutritional constituents like indispensable amino acids, minerals and dietary fiber. This study aimed to evaluate the

potential preventive effect of quinoa on body weight and energy intake in rats consumed cafeteria diet supplemented with quinoa.

**Methods:** A total of twenty-four male Wistar rats (aged 3 weeks) were fed with one of the following dietary regimens for 15 weeks: control diet (CON, n=6), control diet with quinoa (QUI, n=6), cafeteria diet (CAF, n=6), cafeteria diet with quinoa (CAFQ, n=6). Food intake and body weight of each animal were recorded on a daily basis. The daily average intakes of energy, carbohydrate, protein, fat, saturated fatty acids (SFA), sugar, sodium and fiber were calculated from the manufacturers' data. Average weekly weight gain (WG), average weekly body weight, final body weight (FBW), Lee Index, body mass index (BMI) were considered as obesity indicators or variables related to body weight change. Statistical analyses were carried out using SPSS 23.0 and GraphPad Prism 8.0. Statistical significance was accepted as p<0.05.

**Results:** The average daily energy intake (kcal/day) was QUI>CON=CAF>CAFQ (106.8±1.18 kcal/day, 99.57±1.37kcal/day, 96.31±1.28 kcal/day, 88.20±1.17 kcal/day, respectively; p<0.01) after post hoc analyses. Irrespective of energy intake, QUI group had the lowest FBW and WG whereas CAF group had the highest (QUI:339.67±8.73 g vs. CAF:416.17±18.61 g, p<0.05; QUI:13.92±1.07 g vs. CAF:18.24±1.03 g, p<0.05). Further binary comparisons between CAF, QUI and CAFQ group did not indicate significant results in obesity indicators. Each of the average daily fat intake, saturated fatty acids (SFA) intake, sugar intake and sodium intake had significant positive correlation with all of the mentioned obesity indicators and variables (moderate to strong correlation). Nevertheless, mean daily intakes of energy, carbohydrate and protein were not associated with those (for each p>0.05). The Lee Index was only associated with SFA intake (r=0.412; p<0.05) whereas WG was the only variable correlated with fiber intake (r= -0.431; p<0.05).

**Conclusion:** In conclusion, the findings of the present study demonstrated that when cafeteria diet supplemented with quinoa, average daily energy intake and weight gain reduced in comparison to cafeteria diet alone. Further studies are required to elucidate the mechanisms related with quinoa consumption and its metabolic effects in laboratory models of diet induced obesity.

**Disclosure of Interest:** None declared.



## P319

### OUTCOMES OF BARIATRIC SURGERY: THE EXPERIENCE OF A CLINICAL NUTRITIONAL CENTER ON 665 PATIENTS WITH FOLLOW UP OF 36 MONTHS

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**Rationale:** Bariatric surgery remains the most effective weight loss treatment for morbidly obese patients, and surgical procedures has significantly improved in the last 10 years [1]. As a result of bariatric surgery, many obesity-related problems, like T2DM (type 2 diabetes), improve or recover. The aim of this study is to evaluate the outcomes of different bariatric procedures on weight loss and on the remission of T2DM in 665 patients treated in our Unit.

**Methods:** Setting: Clinical Nutrition and Bariatric Surgery Unit, Azienda Unità Sanitaria Locale Bologna, Bentivoglio Hospital, Public Health Service.

From October 2011 to February 2020, 665 patients, aged between 18 and 65 (women 494, mean BMI 44.46; men 171, mean BMI 44.47; mean weight 121 +/- 21kg, mean Excess Weight(EW) 109% ), underwent bariatric surgery in our Unit. Thirty-nine patients underwent RYGB (gastric bypass), 81 LAGB (gastric banding), 534 SG (sleeve gastrectomy) and 8 mini-RYGB (mini gastric-bypass). Retrospective analyses of a prospectively maintained database were carried out to evaluate weight loss, nutritional status and trend of comorbidities such as T2DM. Patients underwent nutritional follow-up rate at 3/6/12/24 and 36 months. We evaluated: anthropometric parameters, nutritional status through long term nutritional indices like serum albumin and proteins, and HbA1c. Data analysis was performed by comparing distributions with Wilcoxon.

**Results:** Weight: At 12 months a statistically significant weight loss has been proven (mean weight 85.5 +/- 22kg) with subsequent maintenance trend up to 36 months.

Table 1	Men(33)		Women(87)	
	Cut-off point	Prevalence	Cut-off point	Prevalence
Probable sarcopenic obesity	HGS<25.1Kg	6/33 18.2%	HGS<21.1Kg	13/87 14.9%
Confirmed sarcopenic obesity	ALM/Weight<0.36	6/33 18.2%	ALM/Weight<0.26	13/87 14.9%
	ALM/BMI<0.9	4/33 12.1%	ALM/BMI<0.64	12/87 13.8%

The mean excess weight loss (EWL): At 12 months was 42 % ( 44,1% in LAGB and 43,1% SG). These Results were maintained at 36 months.

After 3 years, 4.5% of patients regained about 15% of the lowest post-operative weight.

Other Results: Approximately 13% of our pre-operative population had T2DM (mean HbA1c 62 +/- 18 mmol/mol) and it showed a drop of HbA1c less than 48 mmol/mol (about 89% of diabetic sample) at 6 months after surgery. It was observed a further reduction at 12 months, this goal was maintained at 36 months. This highlights a remission of T2DM in a very high percentage of cases.

The pre-surgery nutritional indices were normal in the majority of cases (only 1,2% of samples had serum albumin levels <3,5 g/dl and 7,5% serum proteins < 6.5 g/dl) and remained unmodified or even improved with a close nutritional follow up at 12 and 36 month.

**Conclusion:** Bariatric surgery has proven to be effective towards the resolution of many obesity-related problems. In our experience, bariatric procedure is one of the most valid option for morbidly obese patients for

the Results obtained on weight loss, % EWL and improvement in metabolic parameters.

#### References:

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## P320

### PREVALENCE OF SARCOPENIC OBESITY IN PATIENTS WITH HIGH RISK OBESITY

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**Rationale:** Individuals with obesity who are associated with low muscle mass or quality are at special risk for adverse outcomes. However, there is no consensus on the diagnostic criteria for sarcopenia in patients with obesity. Our objective is to determine the prevalence of sarcopenic obesity (SO) in the pre-bariatric surgery study.

**Methods:** Descriptive cross-sectional study of patients with obesity under study prior to bariatric surgery between 2017-2021. The study was approved by Ethical Research Committee of the CAULE (n°2049). Body composition and muscle strength were studied using bio-impedance (MC-780A; TANITA) and hand grip strength (HGS) with dynamometry (Dyxn®). To diagnose probable sarcopenic obesity we used HGS value <2DS extracted from another study with a normal volunteer population in our context. Of these patients, those with ALM/weight or ALM/BMI <2DS of our controls were diagnosed as confirmed sarcopenic obesity.

**Results:** 120 patients with BMI >35 (mean 46.0 kg/m<sup>2</sup>, SD 5.2) were included, 72.5% were women, mean age 43.3 (SD 8.8). Table 1 shows the cut-off points for HGS, ALM/Weight, ALM/BMI and the percentage of patients with probable/confirmed sarcopenic obesity. Probable or confirmed sarcopenic obesity ranged from 12-18% in our sample. Men have a higher percentage of probable sarcopenic obesity and confirmed sarcopenic obesity than women, except with ALM/BMI which diagnoses a higher percentage of women.

Appendicular lean mass (ALM).

**Conclusion:** ALM/Weight diagnoses sarcopenic obesity in a slightly higher percentage than ALM/BMI in this population.

**Disclosure of Interest:** None declared.

## P321

### WEIGHT REGAIN IN WOMEN AFTER ROUX-EN-Y GASTRIC BYPASS

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**Rationale:** The Roux-en-Y gastric bypass (RYGB) is a surgical procedure effective for the treatment of severe obesity. Despite its efficacy, weight

regain (WR) is a common long-term complication of RYGB. Thus, the purpose of this study was to characterize individuals with weight regain > 30% after RYGB.

**Methods:** This is a prospective study that included adult patients with WR after ≥ 2 years of RYGB. Personal, clinical, and dietary intake data was recorded.

**Results:** So far, 21 patients have been included in the study; their mean age was 47.9 and 100% was female. The results are summarized in table 1.

**Table 1.**

Description of the characteristics of groups of women with WR.

Variables	Weight regain		P Value
	<30% (n = 13)	>30% (n = 8)	
Age at time surgery, years	42.7 ± 6	35.1 ± 7	<b>0.014</b>
Age, years	51.1 ± 6.1	42.5 ± 7.2	<b>0.009</b>
Education level, n (%)			
Higher Education	2 (15.3)	3 (37.5)	0.325
High School	11 (84.6)	5 (62.5)	0.325
Time after surgery, years	8 (7 – 9)	7 (7 – 8)	0.450
Anastomosis Size, mm	17 (16 – 21)	17 (15 – 17.7)	0.821
Energy, Kcal/day	1127 ± 342	1411 ± 457	0.121
Carbohydrate, g	146 ± 61	186 ± 68.6	0.182
Protein, g	56.1 ± 23.1	63.7 ± 27.9	0.504
Lipid, g	32.9 ± 11.2	46.4 ± 13.2	<b>0.022</b>

Data are expressed as the mean ± SD, median (including the lower and upper quartiles) or percentage. Student's t, Mann-Whitney, Chi-square or Fisher's exact tests were used.

**Conclusion:** Our data suggest that less age at time surgery and higher daily intake of lipids can be determinant in excess weight regain after RYGB.

**Disclosure of Interest:** None declared.

### P322

#### ASSOCIATION OF ADHERENCE TO THE MEDITERRANEAN DIET WITH ADIPOSITY AND MUSCLE MASS IN FEMALE YOUNG ADULTS

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**Rationale:** Growing evidence shows that the Mediterranean diet (MD) is associated with health benefits in deferent age groups. This study aimed to explore the association between adherence to the MD with adiposity and muscle mass as well as physical activity among Saudi female young adults aged 18–25 years.

**Methods:** A total of 197 female students from King Saud University, Saudi Arabia [aged 18–25 years, mean±SD; 20.56±1.66 years], enrolled in this

**Table 1:**

Characteristics of study participants according to adherence to the MD using KIDMED index <sup>1</sup>.

Characteristics	Total	Adherence to MD			P Value <sup>2</sup>
		High	Moderate	Low	
N (%)	197 (100)	110 (55.8)	74 (37.6)	13 (6.6)	-
Weight (kg)	56.84 ± 12.11	58.27 ± 12.06	55.06 ± 12.12	54.92 ± 11.89	0.179
High (m)	157.22 ± 5.37	157.05 ± 5.25	157.59 ± 5.42	156.55 ± 6.23	0.718
BMI (Kg/m <sup>2</sup> )	22.97 ± 4.64	23.61 ± 4.44	22.14 ± 4.83	22.39 ± 4.71	0.097
Waist circumference (cm)	68.31 ± 8.88	69.78 ± 9.22 <sup>a</sup>	66.43 ± 8.24 <sup>a</sup>	66.55 ± 7.6	<b>0.032</b>
Hip circumference (cm)	97.43 ± 10.02	98.76 ± 10.53	95.6 ± 8.86	96.66 ± 10.88	0.106
Waist to hip ratio (cm)	0.70 ± 0.05	0.71 ± 0.06	0.69 ± 0.05	0.69 ± 0.04	0.210
Body Fat mass (kg)	21.65 ± 8.78	22.67 ± 8.76	20.34 ± 8.81	20.6 ± 8.22	0.191
Body Fat %	36.85 ± 7.39	37.8 ± 6.96	35.54 ± 7.91	36.27 ± 7.14	0.121
SMM (kg)	18.67 ± 2.72	18.93 ± 2.78	18.37 ± 2.64	18.11 ± 2.58	0.292
SMI %	33.41 ± 3.81	32.99 ± 3.68	34.01 ± 4.02	33.51 ± 3.36	0.206
ALM/h <sup>2</sup> (kg/m <sup>2</sup> )	5.57 ± 0.74	5.66 ± 0.75	5.47 ± 0.72	5.41 ± 0.77	0.180
ALM/BMI (kg/kg/m <sup>2</sup> )	0.61 ± 0.09	0.60 ± 0.08	0.63 ± 0.09	0.61 ± 0.10	0.138

<sup>1</sup> Data are presented as mean ± SD.

<sup>2</sup> p-value significant < 0.05, p-value tested by one-way ANOVA.

<sup>a</sup> a significant difference using post hoc test.

Abbreviations: BMI: Body mass index; SMM: skeletal muscle mass; SMI: skeletal muscle index; ALM: appendicular lean mass; SD: Standard Deviation.

cross-sectional study. Adherence to the MD was assessed using Mediterranean Diet Quality Index for children and teenagers (KIDMED index). Based on the KIDMED index score, participants were grouped in three categories, high, moderate and low adherence to the MD (Figure 1). Anthropometric measurements including height, weight, waist and hip circumference were taken. Body composition was assessed using bioelectrical impedance (BIA, Inbody 770). Skeletal muscle mass index (SMI), appendicular lean mass (ALM) divided by height squared and ALM divided by body mass index (BMI) were calculated. One-way ANOVA test followed by a post-hoc analysis was performed to assess the differences between the groups (high, moderate and low adherence to the MD).

**Results:** More than half of the study participants (55.8%) were highly adhered to the MD. A significant association between adherence to the MD and waist circumference was observed ( $p = 0.032$ ), waist circumference was higher in females with a higher adherence to the MD. However, no significant differences were observed across the study groups in the other adiposity indices (weight, BMI, waist-to-height ratio, body fat % and body mass fat) or muscle mass (SMM, SMI, ALM/h<sup>2</sup> and ALM/BMI) (All,  $p > 0.05$ ).

**Conclusion:** The findings suggest that higher adherence to the MD was associated with a higher waist circumference, but not with the other adiposity indices or muscle mass among Saudi female young adults.

**Disclosure of Interest:** None declared.

### P323

#### THE RELATIONSHIP BETWEEN DAILY CALORIE AND THIAMINE INTAKE AND WHOLE BLOOD THIAMINE STATUS IN OBESE SUBJECTS

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**Rationale:** There is limited information on how thiamine status change with overfeeding situation in obese patients. The aim of this study was to determine thiamine status, factors associated with it and its relationship between daily thiamine and calorie intake in obese subjects.

**Methods:** Adult 30 obese subjects with body-mass index (BMI) >30 kg/m<sup>2</sup> and 10 healthy volunteers with a BMI <25 kg/m<sup>2</sup> and no systemic disease were recruited. Subjects who consumed thiamin-containing vitamins or diuretics, received dialysis, underwent bariatric surgery, had short bowel syndrome or history of alcohol were excluded. Medical history, 3- day dietary report, and laboratory values were recorded. Mass spectrometry analysis was used to determine the whole blood thiamine status. Comparisons between groups for continuous variables were performed using Student's t-test. The Fisher test or the  $\chi^2$  test was used for all categorical data.

**Results:** In obese group, 13 (43.3%) males and 17 (56.7%) females were enrolled and mean age (50.8 ± 11.5 years) was significantly higher. There

were no differences in daily thiamine intake ( $0.72 \pm 0.10$  mg in obese group and  $0.84 \pm 0.25$  mg in healthy volunteers;  $p=0.219$ ), creatinine, C-reactive protein and sex between the groups. Age, BMI, fasting glucose level, thiamine levels, daily calorie intake were significantly higher in obese subjects ( $p<0.005$ ) (cf. Table).

Variables	Obese group	Healthy volunteers
BMI, kg/m <sup>2</sup>	33.4 ± 2.8	20.7 ± 3.2
Glucose, mg/dl	102.1 ± 16.4	90.5 ± 8.2
Thiamine levels, ng/mL	44.2 ± 15.5	33.2 ± 9.1
Daily calorie intake, Kcal/kg	2114 ± 280	1850 ± 293

**Conclusion:** Although there was no significant difference in daily thiamine intake, thiamine levels and daily calorie intake were significantly higher in obese subjects. This result suggests that there may be an adaptation in thiamine absorption depending on the increasing need for thiamine.

**Disclosure of Interest:** None declared.

### P324

#### PREVALENCE OF VITAMIN D DEFICIENCY IN MORBIDLY OBESE PATIENTS: A COMPARISON WITH AND WITHOUT BARIATRIC SURGERY

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**Rationale:** Hypovitaminosis D is a common endocrine disorder associated with the risk of developing diabetes mellitus and obesity. To determine the concentrations of 25 (OH) D, and to analyze their alterations in patients with obesity with and without bariatric surgery.

**Methods:** Cross-sectional, observational, and analytical study. Patients from the obesity clinic were included, both sexes, between 18 and 55 years old. Two groups of patients were analyzed: a) the group without bariatric surgery, and b) the bariatric surgery (surgery performed one year before the study). Patients were excluded if they had CKD G3 or higher according to the KDIGO, a history of vitamin D deficiency, intestinal malabsorption syndromes, or if they were using glucocorticoids. The anthropometric measurements considered were body weight (kg), BMI (kg / m<sup>2</sup>), and distribution of body composition. Biochemical determinations included the 25 (OH) D, calcium, and PTH concentrations. The 25 (OH) D levels were classified, according to the Endocrine Society criteria. This study was approved by the Ethics Committee of the Hospital in accordance with the guidelines of the Declaration of Helsinki.

**Results:** A total of 34 patients were analyzed, mostly women (71%), with a mean age of  $39.03 \pm 7.71$  years. Before the surgery, patients had a mean weight of  $120.55 \pm 17.36$  kg, compared to that of  $121.71 \pm 21.78$  kg of patients without surgery ( $p=0.864$ ), and a mean BMI of  $40.85 \pm 4.84$  kg/m<sup>2</sup>, compared to the  $44.92 \pm 8.62$  kg/m<sup>2</sup> of non-surgery patients ( $p=0.09$ ). The most prevalent comorbidities in both groups were diabetes mellitus, arterial hypertension, and dyslipidemia. Patients with RYGB showed a significant decrease in serum concentrations of 25 (OH) D ( $p<0.001$ ), but not significant for PTH, and calcium compared to patients without surgery. The 79% of patients with bariatric surgery presented vitamin D deficiency vs. 59% of patients without surgery. Vitamin D status for both groups is shown in the table 1. The 25 (OH) D concentrations were negatively correlated with the percentage of weight lost after surgery ( $r = -0.328$ ,  $p=0.05$ ), at the postoperative follow-up RYGB ( $r = -0.371$ ,  $p=0.03$ ).

**Table 1.**

Results of vitamin D status and bone metabolism

Characteristics	Without bariatric surgery n=17	With bariatric surgery n=17	P
25 (OH) D, ng/mL	31.95 ± 31.00	14.04 ± 10.42	0.001
Vitamin D status, % (n)			
Deficient	59 (10)	70 (12)	0.711
Insufficient	12 (2)	12 (2)	
Sufficient	29 (5)	18 (3)	

**Conclusion:** The prevalence of 25 (OH) D deficiency is high in patients with obesity, even in patients with bariatric surgery despite supplementation. It's essential to screen individuals with risk factors regularly.

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**Disclosure of Interest:** None declared.

### P325

#### HEART RATE VARIABILITY PREDICTING MORTALITY IN MALNUTRITION SECONDARY TO BARIATRIC SURGERY

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**Rationale:** Bariatric surgery is the most effective treatment for adults with severe obesity, although it was associated with increased risk of incident alcohol use, illicit drug, and substance use disorders<sup>1</sup>. Heart Rate Variability (HRV) is simply a measure of the variation in time between each heartbeat. This variation is controlled by the autonomic nervous system (ANS). Thus HRV reflects autonomic behavior and correlates with prognosis since lower HRV values, more compromised patients' homeostasis is. HRV accurately predicts clinical complications and mortality<sup>2</sup>.

**Methods:** Clinical case report.

**Results:** Female patient, 45 years old, hospitalized with vomiting, diarrhoea, syncope and recurrent abdominal pain due to chronic pancreatitis complicated by pseudocyst and deep venous thrombosis in lower limbs, caloric protein malnutrition (body mass index: 21.3 kg/m<sup>2</sup>) and a history of bariatric surgery 16 years ago, drug addiction, chronic alcoholism and poor eating habits. There was a weight loss of 10 kg in the last 2 months, associated with brittle nails, changes in skin and flaking in the soles of the feet. She evolved with clinical worsening, dying 13 days after hospitalization despite attempts at clinical stabilization, enteral diet, parenteral nutrition (after refusing the passage of a new nasogastric tube) and intensive care. HRV captured with a frequency meter, 2 days after the onset of parenteral nutrition showed an extremely low parasympathetic tone as described in Table 1.

Table 1	Normal values	Patient values
Mean RR (ms)	785-1,160	508
Mean HR (bpm)	60 - 80	118
SDNN (ms)	32-93	2,1
RMSSD (ms)	19-75	1,5
Stress index	7 - 12	86,5
LF (ms <sup>2</sup> )	193-1,009	2
HF (ms <sup>2</sup> )	82-3,63	1
LF/HF ratio	1,1-11,6	3,058
SD1 (ms)	19±4	1,1
SD2 (ms)	64±14	2,7
Parasympathetic Nervous System (PNS)	-1 a +1	-3,27
Sympathetic Tone (stress) (SNS index)	-1 a +1	16,82

The patient was conscious, stable, breathing without the need for oxygen, but cried copiously due to severe depression. Unexpectedly, her condition worsened dramatically and died only 31 hours after the examination.

**Conclusion:** Correcting malnutrition is a huge challenge, especially when other comorbidities are associated with it, such as in cases following bariatric surgery. The extremely altered HRV values, practically indicating

the absence of parasympathetic tonus and important sympathetic stress, were indicators of severe loss of homeostasis and risk of imminent death.

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### P326

#### VALUE OF APPENDICULAR LEAN MASS AND RELATED INDEXES IN PATIENTS WITH OBESITY

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**Rationale:** Appendicular lean mass (ALM) is used to assess sarcopenia. There are indexes that determine ALM in relation to weight or BMI allowing a better detection of sarcopenia in patients with obesity. Our objective is to determine the ALM values in patients with high risk obesity.

**Methods:** Descriptive cross-sectional study of patients with obesity under study prior to bariatric surgery between 2017–2021. The study was approved by Ethical Research Committee of the CAULE (n°2049). Body composition and muscle strength were studied using bioimpedance (MC-780A; TANITA) and hand grip strength (HGS) with dynamometry (Dynx®). ALM/weight, ALM/BMI, ALM/height<sup>2</sup> and HGS/ALM ratios were calculated. Kolmogorov Smirnov test was performed to assess the normality. Statistically significant differences were determined using Student's T or Mann-Whitney test.

**Results:** 120 patients with BMI > 35 (mean 46.0 kg/m<sup>2</sup>, SD 5.2) were included, 72.5% were women, mean age 43.3 (SD 8.8). Table 1 shows the values of body composition and ALM indexes according to sex. There are no differences between BMI and fat mass (FM), however women present less muscle mass (MM) and ALM with lower HGS. ALM adjusted for weight, BMI and height is also lower in females.

Variables	Men(33)	Women(87)	p
Age(years)	43.1(SD 9.3)	43.4(SD 8.7)	0.895
Weight(Kg)	140.3(SD 16.3)	120.7(SD 14.9)	<0.001
BMI(Kg/m <sup>2</sup> )	45.9(SD 5.0)	46.1(SD 5.3)	0.869
FM(Kg)	59.4(SD 11.7)	57.2(SD 9.8)	0.290
Fat free mass(Kg)	81.8(IQR 14)	63.7(IQR 8)	<0.001
MM(Kg)	78.5(IQR 11.8)	60.5(IQR 7.6)	<0.001
ALM(Kg)	39.7(IQR 7.7)	26.6(IQR 3.5)	<0.001
HGS(Kg)	34.5(IQR 16.5)	22.4(IQR 7.3)	<0.001
ALM/Weight	0.3(IQR 0.02)	0.21(IQR 0.02)	<0.001
ALM/BMI	0.9(IQR 0.11)	0.56(IQR 0.06)	<0.001
ALM/height <sup>2</sup>	12.7(IQR 2.2)	9.6(IQR 1.2)	<0.001
HGS/ALM	0.93(SD 0.25)	0.91(SD 0.25)	0.694

**Conclusion:** In patients with obesity, ALM and ALM indexes adjusted for weight, height and BMI are lower in women, with no differences in BMI and FM.

**Disclosure of Interest:** None declared.

### P327

#### EFFECT OF BROWN RICE INTAKE ON OBESE PEOPLE WITH EXERCISE HABITS

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**Rationale:** It was generally accepted that obesity was a health hazard because of its association with numerous metabolic complications such as dyslipidaemia, type 2 diabetes. The obese observations for brown rice suggest that the efficiency of metabolism changes in response to the level of nutrition such as to provide a long-term control of energy balance that is additional to any control of energy intake. The purpose of this study was to investigate the effect of brown rice intake for 3 months on obese people with exercise habits whose liver function values are above.

**Methods:** Fifteen top level male Sumo wrestling player as volunteer who belong to college Sumo association in Japan (age: 21.04 ± 0.98; BMI 38.31 ± 7.45 kg/m<sup>2</sup>) participated in this study. In this experiment, they consumed brown rice as daily meals during four months as an intervention observation. This experiment approval in Jissen Women's University ethical committee (No.AC2019-15). It was performed examination of the blood below: cholesterol, total protein, glycoalbumin and GPTs. In each statistical analysis, probability values below 0.05 were regarded as significant.

**Results:** There were no significant difference between before and after brown rice feeding periods. Moreover half of subject had changed for the better value in  $\gamma$ -GPT. However there was no statistical change in fatty liver as ALT(GOT).

**Conclusion:** The judgment result of BMI was showed over obese class II according to Japanese setting data. All subjects were within the reference values in both groups in cholesterol (Nakajima, et al, 2018). These Results illustrated that repeated high intensity exercise training for Sumo can overcome a distinct subset of the changes in the distal gut and fecal microbiota caused by high-carbohydrate diet for induced obesity, independently of changes in body mass and fat mass. It was necessary measurement body composition, especially recorded muscle mass and lean fat mass.

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**Disclosure of Interest:** None declared.

### P328

#### ASSOCIATIONS OF OBESITY, SUBJECTIVELY EVALUATED PROBABLE SARCOPENIA AND THEIR COMBINATIONS WITH MORTALITY IN NURSING HOME RESIDENTS

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**Rationale:** There are studies on associations of obesity and mortality in nursing home (NH) residents, but the presence of concomitant sarcopenia has been examined in none of them. In this study, we aimed to examine associations of obesity alone, probable sarcopenia alone, and their combination (sarcopenic obesity, SO) with mortality in NH residents.

**Methods:** We designed a retrospective longitudinal follow-up study. Age, sex, nutritional status, functionality, number of chronic diseases, and regular drugs were noted. Obesity was assessed by the body fat percentage method estimated by bioimpedance analysis and probable sarcopenia by subjective evaluation of grip strength. We assessed the mortality outcome after a 46 months follow-up period. We evaluated the survival with the Kaplan-Meier method and performed a multivariate analysis using Cox regression.

**Results:** We included 214 participants; mortality occurred in 37.4%. In multivariate analysis adjusted by age, sex, undernutrition, number of chronic diseases and regular drugs, functional scores; having non-sarcopenic non-obese or sarcopenia alone or SO phenotypes were significantly associated with higher mortality risk when compared with the "obesity alone" phenotype (HR=2.6, 95% CI= 1.2–5.5, p=0.01; HR=2.6, 95% CI= 1.2–5.9, p=0.02; HR=3.0, 95% CI= 1.2–7.7, p=0.02).

**Conclusion:** Obesity was associated with lower mortality risk when not accompanied with concomitant sarcopenia (obesity alone phenotype). Obesity with concomitant sarcopenia (SO) was associated with mortality risk similar to non-sarcopenic non-obese or sarcopenia alone phenotypes and higher than that of the obesity alone phenotype. According to these findings, in NH residents, obesity should be evaluated simultaneously with sarcopenia.

**Disclosure of Interest:** None declared.

### P329

#### MICROBIOME AND METABOLOME-RELATED BIOMARKERS OF MOOD ALTERATIONS IN OBESE PATIENTS

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**Rationale:** Obesity is associated with several co-morbidities including an increased risk for neurological and behavioural alterations. The aim of the study is to find new therapeutic target to improve mood in obesity. To do so, we explored the biological, microbial and metabolomic profile of obese subject presenting with mood disturbances.

**Methods:** Psychological, biological characteristics (anthropometry, biological markers, gut microbiome) and nutritional habits of 94 obese subjects (BMI: 36.5±6.1) from the Food4Gut cohort were analysed to find biomarkers of mood disturbances (assessed by the Positive and Negative Affect Schedule – PANAS). Gut microbiota composition (16S rDNA sequencing, ASV method) and predicted-function (PICRUSt2) as well as plasma non-targeted metabolomics (high performance liquid chromatography-mass spectrometry) were performed in a subcohort of 86 and 39 patients respectively. Finally, a food survey (24-hours recall) was conducted to evaluate nutritional intake of obese individuals with a specific focus on amino-acids intake. Partial least square discriminant analysis followed by adjusted logistic regression were used to select the biological, microbial and metabolomics variables segregating our two groups.

**Results:** Obese subjects with impaired affect balance display elevated levels of *Coprococcus* and decreased levels of *Sutterella* and *Clostridium XIVa*. Metabolomics analysis revealed that these subjects display altered levels of several amino-acids derived metabolites. The main changes observed were an increased level of L-Histidine and a decreased of Phenylacetylglutamine. Regarding biological profile, we did not observe any differences between both groups.

**Conclusion:** Our Results revealed that gut microbiota composition and the levels of amino-acids derived metabolites are associated with alterations of mood in obese subjects.

**Disclosure of Interest:** None declared.

### P330

#### THE ASSOCIATION BETWEEN LEPTIN LEVEL AND LIPID PROFILE IN WOMEN WITH HASHIMOTO'S DISEASE

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**Rationale:** Weight gain is a well-known side effect of Hashimoto's autoimmune thyroiditis [1]. As body weight increases, one can expect increased levels of circulating leptin and deleterious changes in lipid profile [2]. **The study aimed** to assess concentrations of leptin, cholesterol fractions, and triglycerides in women with Hashimoto's disease (HD) and in healthy subjects.

**Methods:** 26 women were recruited into the study, based on the inclusion and exclusion criteria – 12 women with Hashimoto's disease (mean age 43.6 ± 10.9) and 14 healthy ones (mean age 38.0 ± 11.1). All subjects provided an informed consent before the onset of the study, which was approved by the Independent Bioethical Committee for Scientific Research (NKBBN/348/2018). A well-trained consultant measured height, waist circumference (WC), body weight and body fat content (BF) in all participants. Based on the data on the height and the current body weight, body mass index (BMI) was calculated. Serum leptin levels were measured using immunoenzymatic test (Demeditec Diagnostics GmbH, Germany). To examine HDL, LDL, total cholesterol (TC) and triglycerides (TG) a direct method was used (Alpha Diagnostics, Poland).

**Results:** The study showed higher BMI and WC in the HD group (P=0.05). Median serum leptin levels were 30.1 ± 12.7 in HD patients and 12.9 ± 13.7 in the control group (P=0.05). We observed no differences in TG levels; HDL and TC were higher in healthy women (respectively P=0.05 and P=0.001), while LDL was higher in HD subjects (P=0.002). There were no significant correlations between lipid profile and leptin concentrations, while we observed statistically significant relationship between leptin levels and BMI, BF and WC in both groups (P<0.001).

**Conclusion:** Weight gain observed in HD patients implies rise of leptin levels and dyslipidaemia, both of which contribute to negative health outcomes.

**References:**

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**Disclosure of Interest:** None declared.

### P331

#### EFFECTS OF VITAMIN D AND CHROMIUM SUPPLEMENTATION ON PREVENTION OF DIABETES TYPE-A SYSTEMATIC REVIEW

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**Rationale:** Epidemiological and interventional studies showed that altered vitamin D status may be associated with decreased insulin synthesis, increased insulin resistance and increased risk of metabolic syndrome through several mechanisms.(1)Mechanisms were defined as stimulation of pancreatic beta cell function, decreased fat tissue, inflammatory markers. However, the exact mechanism lacks supporting evidence. Chromium seems to play a vital role in regulation of carbohydrates and lipids, hence it enhance the signalling pathway and insulin action according to current studies, yet the exact reasoning is not fully understood.(2)There is no clinically defined state of chromium deficiency but T2DM has been shown to develop in low levels of chromium picolinate. Nevertheless, diets lacking essential trace elements is interrelated to reproducible structural or biochemical changes that are irreversible according to Espen guidelines.

**Methods:** It has emerged to conduct a systematic-review with meta-analysis to fill the gap in evidence in literature. Selective search strategy was performed for relevant articles using 2 independent investigators with keywords using Ovid in Cochrane, Medline and CINAHL database. Our main focus was to measure the effects on prevention and therapeutic effects, therefore selected studies were extracted and tabulated with quality assessment using GRADE criteria.

**Results:** Combined results did not show a significant change in HbA1C(-0.27%)(95%CI=-1.03 to -2.18,p<0.001) levels of the subjects associated with Vitamin D status or supplementation. However, outcome based conclusion

analysis indicated a positive correlation for glycaemic control of the patients. Pooled results for chromium supplementation showed a significant reduction ( $-0.75\%$ ) of HBA1C levels of subjects. ( $95\%CI = -0.88$  to  $-0.22, p < 0.005$ ) Egger's Bias indicating a moderate bias and due to small sized studies an average number of  $I^2$  was calculated as 0.54 and 48% respectively. Interpretation of  $I^2$  is "might not be important" according to Cochrane handbook.

**Conclusion:** Our Results indicated an association between vitamin D supplementation and glycaemic control. However, the role in prevention require further non-observational studies with standards of bio-markers to support with evidence. Results from chromium picolinate showed its therapeutic and preventive value in management of metabolic syndrome but further studies with extended focus is required to understand the mechanism lying behind its protective and therapeutic effects regarding safety.

#### References:

1(Lips,2017)

2(Maret,2019)

**Disclosure of Interest:** None declared.

### P332

#### RISK FACTORS AND MORTALITY RATE IN COVID-19 CRITICALLY ILL PATIENTS IN MEXICO

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**Rationale:** Mexico is the third country in the world with the highest death rate from covid-19. When the pandemic reached Mexico, it was already dragging a long epidemic of obesity and diabetes.

**Methods:** An observational, longitudinal, and retrospective study was performed in the Hospital Regional de Alta Especialidad de Ixtapaluca. Data from patients with positive to covid-19 was included. Demographic variables, serum-based biomarkers, and case mortality rate were collected. Categorical variables were reported as frequencies and percentages. Baseline characteristics were compared using an independent sample t-test between death patients and survivors.

#### Results:

**Table 1.**

Demographic and clinical risk factors for mechanical ventilation and death in Covid-19

Risk factor	Unadjusted odds ratio (95% CI)	Chi- square	p value
Male sex	2.79 (1.36 – 5.74)	8.65	<b>0.005</b>
BIM > 29.9 kg/m <sup>2</sup>	1.98 (0.93 – 4.21)	3.18	0.82
Diabetes	0.82(0.43- 1.58)	0.32	0.62
Hypertension	1.02 (0.52-2.00)	0.005	1.00
Ferritin>800ng/ml	3.97 (1.51 – 10.43)	8.28	<b>0.005</b>

CI= Confidence interval BIM= body mass index;

We aimed to describe the mortality rate and clinical characteristics in the SARS-CoV-2 infected Mexican population. A total of 197 patients were included. The mean age of patients was  $49.8 \pm 13.9$  years; 141 (71.6%) were men. The case mortality rate in all hospitalization areas was 37.1%, in critically ill patients in the ICU was 64.4%. The mortality risk factors were ferritin >800ng/ml (unadjusted OR 3.97) and male sex (unadjusted OR 2.79). Patients with a BMI between 35–39.9 kg/m<sup>2</sup> (9.2%) had a 63.6% mortality rate. The 42.1% of the patients had chronic diseases such as diabetes and hypertension. There was no statistical association between death and diabetes or hypertension with mortality (table 1).

**Conclusion:** The mortality rate for critically ill patients with covid-19 is 1.7 times higher than the moderate disease. Obesity is related to the high mortality rate of covid-19 in Mexico, due to the fact that 75% of the Mexican population is overweight or obese.

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**Disclosure of Interest:** None declared.

### P333

#### EFFECTIVENESS AND DECONSTRUCTION OF SUPPORT GROUPS MEASURING PSYCHOLOGICAL WELLBEING, SOCIAL SUPPORT AND QUALITY OF LIFE: A SYSTEMATIC REVIEW AND META-ANALYSES

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**Rationale:** Despite the widespread use of support groups, it's unclear whether they improve general wellbeing and perceived social support effectively. This systematic review and meta-analyses aimed to evaluate the use of support groups for individuals with mental health problems, obesity and/or diabetes and to describe the components of these interventions.

**Methods:** The databases Embase, PsychINFO, Medline and Web of Science were systematically searched for studies including pre-post designs and a comparison group. Outcomes of interest were (1) depression, (2) anxiety, (3) eating disorder symptoms, (4) social support and (5) quality of life. Twenty-eight papers met the inclusion criteria for the review. Eighteen were included in the meta-analysis. Due to a lack of papers, eating disorder symptoms were not assessed in the meta-analysis.

**Results:** Support groups did not have a significantly different impact on mental health outcomes, social support or quality of life compared to a comparison condition. There was high study heterogeneity and often inadequate methodology description in papers retrieved.

**Conclusion:** There is insufficient high quality evidence to draw conclusions on support group efficacy for the outcomes of interest. This review highlights the general lack of research into support group interventions, in particular obese/overweight populations. It also highlights how greater focus needs placed on the standardising of support group intervention reporting so that studies can be better compared, deconstructed and replicated.

**Disclosure of Interest:** None declared.

### P334

#### RELATIONSHIP BETWEEN EPICARDIAL FAT TISSUE THICKNESS AND CRP AND NEUTROPHIL LYMPHOCYTE RATIO IN METABOLIC SYNDROME PATIENTS OVER 65 YEARS

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**Rationale:** There are no data evaluating the association of neutrophil to lymphocyte ratio (NLR) and C- reactive protein (CRP) with epicardial fat tissue thickness (EFTT) in elderly metabolic syndrome (MS) patients. In this study, we tried to investigate the relationship of EFTT with CRP and NLR in patients with metabolic syndrome over 65 years.

**Methods:** A cross-sectional study was performed. Fifty patients (patient group) with metabolic syndrome and 25 subjects (control group) without metabolic syndrome were included in the study. All parameters were compared in patient and control groups. The correlations between NLR, CRP and EFTT were evaluated.

**Results:** WBC and neutrophil levels were higher in metabolic syndrome group ( $p=0,020$ ,  $p=0,019$  respectively). Both transverse and longitudinal EFTT were increased in metabolic syndrome patients ( $p<0,001$ ). There was a significant correlation between the EFTT and NLR but not with CRP in the metabolic syndrome group ( $r=0.4$ ,  $p= 0.003$ ).

**Conclusion:** There is a positive relationship between EFTT and NLR in metabolic syndrome patients over 65 years. No significant relationship was detected between EFTT and CRP.

**Disclosure of Interest:** None declared.

### P335

#### MEDICAL FOLLOW-UP OF OBESITY SURGERY PATIENTS: DEVELOPMENT OF A MONITORING SHEET FOR GENERAL PRACTITIONERS, “BARIA CHECK”

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**Rationale:** The current obesity epidemic is associated with an increased recourse to obesity surgery (OS). The French health care system struggles to ensure long-term follow-up of the operated patients. The general practitioner (GP) should play a crucial role. Our objective was to develop a monitoring sheet, “BARIA Check”, in order to improve patient follow-up and care after OS by the GP.

**Methods:** We followed the methodology of ‘memo sheet’ proposed by the French National Authority for Health (HAS), supported by a systematic review, validated by a task group.

**Results:** The systematic review reveals that OS, yet effective on severe obesity and its comorbidities, can expose to severe postoperative or nutritional complications, adverse psychosocial impact, or weight regain. Nutritional deficiencies are frequent (vitamin D 25-85%, B12 7-70%, Iron 13-62%), and can lead to anemia, osteoporosis, or neurological disorders. A lifelong micronutrient supplementation (multivitamin complex, vitamins D, B12, iron) is essential to prevent them. Their prevention-screening-treatment are part of a global interdisciplinary management, including medical and biological monitoring, motivational coaching for changing eating behavior and exercise habits, and psychological support. The published literature does not always reach consensus on the management of post-OS care. The academic societies recommend strengthening the collaboration between GPs and specialized OS teams. The “BARIA Check” sheet is the synthetic result of our work, with the aim to guide the GP for post-OS follow up and care, in tight relation with the OS centre. “BARIA Check” will be presented besides this abstract at ESPEN 21.

**Conclusion:** The “BARIA Check” sheet could contribute to prevent the OS nutritional complications and to ensure long-term safety and effectiveness. It may help structuring a coordinated community-hospital health-care pathway.

**Disclosure of Interest:** None declared.

### P336

#### BODY COMPOSITION ASSESSMENT IN OVERWEIGHT OBESE SRILANKANS-SINGLE TERTIARY CARE CENTER STUDY

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**Rationale:** Bioelectrical analysis method is a recognized tool for body composition analysis used for obese patients. It allows correct estimation of visceral fat, resting metabolism and skeletal muscle mass in obese patients. Objective of this study is to describe the body composition characteristics in relation to BMI groups of overweight and obese patients referred to obesity clinic of National Hospital-Kandy during August 2020. BMI groups were chosen according to the indian BMI cut-off values(1).

**Methods:** Descriptive cross-sectional study was done by using bio electrical impedance analysis book, maintained for obese patients referred to the obesity clinic during August 2020 at National hospital-Kandy. Seventy-nine overweight and obese patients' body composition were analyzed using SPSS 22 software. Visceral fat, total body fat and skeletal muscle mass cut offs were selected according to specifications given by the BIA machine manual (2).

**Results:** Total of seventy-nine patients [male-22 (27.9%), female-57 (72.1%), mean chronological age-45.9] were analyzed in this study. Resting metabolic rate, skeletal muscle mass and total body fat percentage were significantly different in each BMI category of both sexes. The visceral fat percentage (16.62%) was significantly high in both overweight and obese BMI categories of both sexes, compared to normal population.

**Conclusion:** All overweight and obese patients have shown to have high visceral fat percentage irrespective of their BMI category and sex increasing their high metabolic risk. Hence, this study highlights the importance of implementing interventions to reduce visceral fat in both overweight and obese patients to improve their metabolic risk. Since sample size is seventy-nine, it is recommended to do this study in large scale with wider population.

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**Disclosure of Interest:** None declared.

### P337

#### WHAT ARE PREDICTORS OF BMI IN DALMATIAN HYPERTENSIVE DIABETIC PATIENTS?

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**Rationale:** Many patients with metabolic disorders such as type 2 diabetes and hypertension are either overweight or obese. The aim of our study was to determine predictors of body mass index (BMI) as indicator of nutritional status in Dalmatian hypertensive diabetic patients (DHDP).

**Methods:** 220 DHDP patients, aged 68 (range 35-86) years, 128 (58.2%) men and 92 (41.8%) women were included in the study. Dietary habits were assessed by food frequency questionnaire completed by dietician. Tanita MC780 Multi Frequency segmental body composition analyser was used to measure body fat (kg), trunk fat mass (kg and %), skeletal muscle mass (kg) and bone mass (kg) for each study subject. Also, Agedio B900 device was used to measure arterial pressure (AP) (central diastolic AP (CDAP) and peripheral diastolic AP (PDAP)).

**Results:** Body fat ( $p<0.001$ ), trunk fat mass ( $p<0.001$ ), skeletal muscle ( $p=0.001$ ), bone mass ( $p<0.001$ ), CDAP ( $p=0.02$ ) and PDAP ( $p=0.001$ ) were

shown as significantly positive predictor of BMI. Furthermore, frequency of consumption of fast food was shown as statistically positive predictor of BMI ( $p=0.009$ ) while consumption of grains was shown as statistically negative predictor of BMI ( $p=0.02$ ). No other observed food showed significance in prediction of BMI in DHDP.

**Conclusion:** Our Results showed that dietary habits and body mass composition might significantly predict BMI. So, dietary intervention in order to change dietary habits and to reduce fat tissue are necessary in this population of patients.

**Disclosure of Interest:** None declared.

**P338**

**EFFECT OF TELENUTRITION INTERVENTION ON BODY COMPOSITION AND EATING BEHAVIOR CHANGES IN A OVERWEIGHT POPULATION**

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**Rationale:** Obesity is a serious public health problem and according to a 2020 survey, Brazil's population shows 60,3% of overweight and 26% of obesity diagnosis. The main purpose of this study was to contribute to the treatment of this disease, facilitating the patient's access to a nutrition reeducation program, through telenutrition resources.

**Methods:** Longitudinal and retrospective study, which analyzed the efficiency of a nutritional intervention executed from August 2017 to November 2019. A six-month program was developed, compound by three face-to-face consultations, performed initially and with a three and six-month follow-up, and seven teleconsultations. In face-to-face care, the nutritionist collected anthropometric data, such as weight and height, body composition by bioimpedance exam and food anamnesis. Patients were followed remotely by teleconsultation, applying motivational educational tools to encourage changes on eating behavior and lifestyle.

**Results:** The cohort consisted a total of a 93 patients, being adults with body mass index (BMI)  $\geq 25$  kg/m<sup>2</sup> and elderly people with BMI  $\geq 28$  kg/m<sup>2</sup>, who agreed to participate in this study. From the total, 61 (65,6%) were women and 32 (34,4%) men, with age ranged between 23 and 73 years and an average of 45,7 years ( $\pm 11,8$  years). There was evidence of an association between weight and eating behaviors ( $p < 0,001$ ), sweet and sugar intake ( $p < 0,023$ ) and processed food intake ( $p < 0,023$ ).

**Rationale:** Obesity surgery is used as the most effective treatment for morbid obesity, with better cost-benefit, less morbidity and mortality. The present study aimed to analyze the Results of a surgical center for obesity treatment and integrate them with the most recent scientific evidence.

**Methods:** Retrospective cross-sectional observational study involving 298 patients aged 18 years or older, who underwent bariatric surgery between July 2008 and February 2021 in a private hospital in Portugal.

**Results:** The sample presented an average age of  $45 \pm 12$  years, being mostly female (83,2%). The average pre-surgery Body Mass Index (BMI) was  $40,9 \pm 4,9$  kg/m<sup>2</sup>. The most performed surgery was Gastric Bypass (81,2%), followed by Gastric Banding (13,8%) and Gastric Sleeve (5%). One month after surgery, there was a Percentage of Excess Weight Loss (% EWL) of 25,1%. After 6 months, there was an average % EWL of 65,7%. One year after surgery, the average % EWL was 76,7% and the average BMI was  $29,3 \pm 4,6$  kg/m<sup>2</sup>.

**Conclusion:** Gastric Bypass is the mostly performed surgery, because it is the Gold Standard method for surgical treatment of obesity in this center. On average, all surgeries performed have extremely positive Results of excess weight loss. After 1 year, patients maintained an average weight loss percentage of 30,1%, in line with data presented in a study that estimated an average recorded weight loss percentage of 28,9%. Data like those presented by the American Society for Nutrition (ASN), the Obesity Action Coalition (OAC), the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO), the International Society for the Perioperative Care of the Obese Patient (ISPCOP) and the American Society for Parenteral and Enteral Nutrition (ASPEN) (2019), indicate a target weight loss percentage between 20 and 45%.

**Disclosure of Interest:** None declared.

**P341**

**GRAPE POMACE SUPPLEMENTATION ATTENUATES METABOLIC PARAMETERS IN SUBJECTS WITH OVERWEIGHT AND OBESITY**

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	Initial	3 months	6 months	p-value 3 months-initial	p-value 6 months-initial	p-value 6 months- 3 months
Weight (Kg)	90,6(86,9; 94,4)	87,5(84,0; 91,1)	86,4 (82,9; 90,1)	<0,001	<0,001	0,013
BMI (Kg/m <sup>2</sup> )	31,9 (30,9; 32,9)	30,8(29,8; 31,7)	30,4(29,4; 31,4)	<0,001	<0,001	0,014
Abdominal circumference	107,3(104,6; 110,2)	103,7(101,1; 106,4)	102,2(99,6; 104,9)	<0,001	<0,001	<0,001
Waist-to-height ratio	0,64(0,62; 0,65)	0,61(0,60; 0,63)	0,61(0,59; 0,62)	<0,001	<0,001	<0,001
Fat Mass (Kg)	36,3(34,1; 38,7)	33,8(31,7; 36,0)	33,5(31,4; 35,8)	<0,001	<0,001	0,34
Fat Mass (%)	40(38,3; 41,8)	38,7(37,0; 40,4)	38,8(37,0; 40,7)	<0,001	0,012	0,723
Muscle Mass (Kg)	27,8(26,4; 29,4)	27,4(25,9; 28,9)	26,8(25,3; 28,3)	0,001	<0,001	0,028

CI 95%: 95% confidence interval; p-value corrected by Bonferroni sequential method

**Conclusion:** With nutritional intervention, dietary counseling and telenutrition monitoring, improvements on anthropometric Results and body composition were related to behavioral change were demonstrated.

**Disclosure of Interest:** None declared.

**P340**

**THE REALITY OF AN OBESITY SURGICAL TREATMENT CENTER IN PORTUGAL**

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**Rationale:** Grape pomace (GP) is a waste product obtained after the winemaking process, which contains relatively high amounts of bioactive compounds like polyphenols and dietary fiber. We previously showed that Malbec GP supplementation improves metabolic parameters in rats with metabolic syndrome. The aim of this study was to evaluate whether GP supplementation could improve lipid profile and others metabolic parameters in overweight and obese subjects.

**Methods:** Subjects with body mass index (BMI)  $\geq 27$  were assigned to consume a granola enriched with 10 g of GP (containing 5.3 g of dietary fiber and 400 mg of phenolic compounds), for 6 weeks. Anthropometric and metabolic variables were determined at the beginning and at the end of the experimental period. Data were analyzed using the statistical



GraphPad Prism version 5.00. Statistical significances were assessed by paired Student's t test.

**Results:** 10 subjects, age  $38.8 \pm 12.3$  years, were included. Anthropometric and metabolic variables are shown in Table 1. Supplementation with 10 g of malbec GP-enriched granola significantly reduced waist circumference, systolic blood pressure, total cholesterol and LDL cholesterol levels. No significant differences were observed in body weight, BMI, HDL cholesterol, triglycerides, glycemia, insulinemia and CRP levels.

**Table 1.**

Effect of a 6 weeks supplementation with GP on anthropometric and metabolic parameters.

Parameter	Baseline	End	p
SBP (mmHg)	$119.0 \pm 3.4$	$115.3 \pm 3.3$	0.040*
Total cholesterol (mg/dl)	$186.8 \pm 11.3$	$171.1 \pm 9.8$	0.002*
LDL cholesterol (mg/dl)	$117.9 \pm 11.0$	$105.3 \pm 10.2$	0.0006*

Data are mean  $\pm$  SEM. Difference between baseline values (0 weeks) and End values (6 weeks) were compared using a paired Student's t test (two-tailed). p values <0.05 were considered statistically significant.

SBP: systolic blood pressure

**Conclusion:** GP supplementation had a positive impact on the lipid profile since it significantly decreased total cholesterol and LDL cholesterol. Overall, consumption of GP, a winemaking residue rich in bioactive compounds, can be a beneficial, sustainable and low-cost strategy to be used in the food industry as a functional food to counteract the adverse effects associated with overweight and obesity.

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## P342

### VISCERAL ADIPOSITY INDEX (VAI) AS AN INDICATOR OF CARDIOMETABOLIC RISK IN THE GROUP OF WOMEN WITH MORBID OBESITY

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**Rationale:** Obesity is a metabolic disease, currently of an epidemic nature. The disease is often accompanied by unintentional weight gain associated with excessive accumulation of adipose tissue, which is a factor contributing to the development of hyperlipidemia and increased cardiovascular risk in this group of patients [1]. A new anthropometric parameter that indirectly reflects the risk of cardiometabolic complications related to overweight or obesity is the visceral adiposity index (VAI) [2]. **The aim of the study** was to evaluate the usefulness of VAI as a new indicator in the prevention of cardiometabolic diseases in the group of women.

**Methods:** 30 women participated in the study, assigned on the basis of the inclusion and exclusion criteria to the study group (15 morbidly obese people, OP) and control group (15 lean people, LP), respectively.

Anthropometric measurements were performed in all patients (Jawon, Contact 350F) and the lipid profile in serum samples was performed using a direct method (Alpha Diagnostics, Poland). On the basis of the obtained Results VAI was calculated.

**Results:** In the OP group a statistically significantly higher percentage of adipose tissue was recorded compared to the LP group ( $p < 0.01$ ) and the mean waist-hip ratio  $\geq 0.88$ , indicating a higher risk of cardiovascular diseases. Mean VAI ( $3.38 \pm 1.69$ ) in OP group was significantly higher than in LP group ( $p < 0.05$ ), and was outside the normal range ( $\leq 2.23$ ), while in the LP group the average VAI was  $1.52 \pm 0.21$  and was within the normal range ( $\leq 1.92$ ). In the OS group, 8 of them had diabetes and their VAI also exceeded the reference values ( $\leq 2.23$ ).

**Conclusion:** Anthropometric measurements are simple but important preventive tests performed in the case of cardiovascular diseases accompanying overweight and obesity. The VAI index is a new tool that can also facilitate the diagnosis of cardiovascular risk and may be used as predictor of diabetes remission after bariatric surgery [3].

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**Disclosure of Interest:** None declared.

## Nutrition and cancer

### P345

#### NUTRITIONAL SUPPORT DURING HIGH DOSE CHEMOTHERAPY WITH AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANTATION (AUTOHSCT) IN PATIENTS WITH HODGKIN'S LYMPHOMA. (INTERIM RESULTS)

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**Rationale:** Correction of metabolic disorders is one of the important points of supportive care during high-dose chemotherapy with autologous stem cell transplantation (autoHSCT) in patients with Hodgkin's lymphoma (HL).[1] The impact of nutritional support on recovery during autoHSCT for this group of patients is not clearly understood. We performed this trial to assess the effect of combined nutritional support on the intensity of body weight loss, sarcopenia developing, the duration of neutropenic fever (NL), the frequency of blood transfusions during high-dose chemotherapy with autoHSCT in patients with HL.

**Methods:** The study analyzed 72 patients with Hodgkin's lymphoma who received high-dose chemotherapy with autoHSCT without combined parenteral and enteral nutritional support (NS) between 2013 and 2016 and 76 patients with same diagnosis and treatment options, treated between 2016 and 2020 and received combined NS: combination of parenteral and enteral sipping nutrition. The primary endpoints were the intensity of weight loss, differences between the duration of febrile neutropenia, and the frequency of transfusions of blood components. The t-test was used to determine the statistical significance of the mean values of equal samples.

**Results:** In group with combined nutritional support, regardless of patients initial nutritional status, there was a statistically significant difference in the duration of FN: the median in the nutritional support group was  $4 \pm 1$  days and  $6 \pm 3$  days in the group without combined NS,  $p < 0.05$ . The average frequency of thrombocytes transfusions in the group with NS was  $2.0 \pm 1.0$  transfusions, and in the group without NP -  $3.5 \pm 2.0$  transfusions, with  $p < 0.05$ . There were no statistically significant

differences in the frequency of erythrocytes transfusions,  $p = 0.1$ . A statistically significant difference was also found in the intensity of the decrease in body weight, expressed as a percentage decrease in BMI: in the group without NS, the average decrease in BMI was 14%, while in the group with NS - 7%,  $p < 0.05$ . Mean reduction psoas muscle index as an indicator of sarcopenia during autoHSCT, in group without NS was  $4.5 \pm 2.5$ , in nutritional support group -  $3.0 \pm 1.8$ ,  $p = 0.01$ .

**Conclusion:** The data obtained show that combined nutritional support reduces the risk of a decrease in BMI, sarcopenia, shortens the duration of FN, and reduces the need for trombocytes transfusion during high-dose chemotherapy with autoHSCT in patients with Hodgkin's lymphoma.

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**Disclosure of Interest:** None declared.

#### P346

### PREOPERATIVE FASTING TIME ASSESSMENT IN PEDIATRIC ONCOLOGICAL PATIENTS AT A BRAZILIAN PEDIATRIC ONCOLOGY REFERENCE CENTER

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**Rationale:** Pediatric cancer patients are often submitted to elective surgery as part of their treatment and most of them are candidates for shortened fasting times. This reality is still not well known due to the scarcity of studies in this population, so the preoperative fasting time in a sample of patients was analyzed and compared with the time recommended by the main Anesthesiology Societies.

**Methods:** Retrospective observational cross-sectional study, with collection of secondary data from the anesthetic record completed on the day of surgery. Patients undergoing elective surgeries, previously scheduled, were included in a reference institution for pediatric cancer treatment, located in São Paulo - Brazil, from January to December 2020. Patients who underwent small procedures were excluded. The variables age, sex, surgical specialty, time of total fasting (considering the time of the last meal or drink until entering the operating room) and variation of the total fasting time in relation to that recommended by national and international guidelines (8 hours) were analyzed. for solid foods and 2 hours for clear liquids). The categorical variables were described in absolute and relative values and the continuous variables were described in median and interquartile range (IQR). To compare the fasting time between groups, the Kruskal-Wallis test was used. T

**Results:** 373 surgical records were analyzed, 213 of which were female patients (57.1%). The median age was 9 years (IQR  $\pm 11$ ) and the fasting time (hours:minutes) was 09:45 (IQR  $\pm 4:20$ ). The shortest fasting time was 02:30 (lymphangioma resection) and the longest fasting time was 22:20 (neurosurgery) There was a difference in the fasting time between the surgical specialties: orthopedics (median 10:05; IQR  $\pm 03:42$ ), neurosurgery (median 09:00; IQR  $\pm 02:50$ ), abdominal / pelvic (median 11:50; IQR  $\pm 05:33$ ), thoracic (median 14:00; IQR  $\pm 04: 20$ ) and others ( median 08:47; IQR  $\pm 03:17$ ) ( $p < 0.001$ ).

**Conclusion:** Fasting time was much longer than recommended by national and international guidelines. The recommendation for preoperative fasting abbreviation in pediatrics is well established in the international scientific literature, but there are still obstacles in the implementation of protocols in clinical practice. These Results demonstrate the need to create protocols for the implementation of the abbreviation for fasting in the pediatric oncology specialty.

**Disclosure of Interest:** None declared.

#### P347

### PREHABILITATION IN CANCER - WHAT DO PATIENTS WANT TO KNOW?

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**Rationale:** Prehabilitation is a term describing a course of interventions to improve under or over nutrition before treatment, which are combined with exercise and psychological input to improve physical and mental well-being. It is being embedded in cancer pathways as evidence of its efficacy increases but questions remain on how best to design and deliver services to achieve their maximum potential. We engaged with patients and the public to design interventions, influence reported outcomes and shape future research questions.

**Methods:** Approval was granted for a service evaluation to recruit participants to attend two focus groups. Members of the public and cancer patients who had an interest in or had experienced therapy interventions were eligible to attend. Participants were recruited through prehabilitation clinics, via PPI representatives and social media.

21 participants attended a 2-hour session, conducted by a patient advocate with support from specialist cancer health professionals.

The groups were asked to reflect on and share their beliefs regarding good practice and barriers to implementing diet, exercise and psychological or behaviour changes and time was also given for free discussion. People were encouraged to share their experience and ideas that would help and support others in the future. They were asked to formulate questions they would like answered regarding the implementation or outcomes of prehabilitation. These were used to form research priorities to be shared.

Participant comments were recorded by the facilitators, and a visual minute taker created posters providing a pictorial representation to enable thematic analysis

**Results:** The discussions showed that participants understood the key components of a healthy lifestyle including the general healthy eating messages that applied to the population but not necessarily how it might need to be adapted to them before during and after treatment.

Challenges to adherence identified:

- Cancer or treatment related physical changes to health
- Lack of confidence and self-efficacy
- Safety concerns, particularly with exercise
- Conflicting information available on lifestyle and cancer, particularly diet
- Uncertainty of the potential benefits

Enablers supporting prehabilitation:

- Clear and consistent messaging on the benefits from all health professionals
- Peer and carer support
- Personalised goals and monitoring which could be used across multiple settings
- A non-clinical setting
- Techniques to improve self-efficacy
- Trusted and accessible resource

Pictorial representation of the focus group discussions will be presented.

Research questions:

Do cancer patients need a targeted 'healthy eating' message compared to the general population?

Can Big data be used to answer any of the questions about the benefits of diet and exercise?

Does the use of peer support, buddy systems or nudge technology improve adherence and patient experience?

Can prehabilitation improve outcomes for black, asian and minority ethnic people and other hard to reach groups?

**Conclusion:** Participants were able to share valuable insights and generate important research questions which are being shared for use in future research protocols and prehabilitation programme design.

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### P348

#### WEIGHT LOSS AND MUSCLE WASTING IN PEDIATRIC CANCER PATIENTS UNDERGOING RADIOTHERAPY

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**Rationale:** Radiotherapy is a modality of treatment for childhood cancer, which can cause toxicities, predisposing to nutritional depletion, and due to the lack of data in literature, not well know about the nutritional evolution of patients during this therapy. The present work aims to evaluate the evolution of the different anthropometric parameters during this treatment.

**Methods:** This is a historical cohort, which analyzed patients undergoing radiotherapy during the period from October / 2014 to October / 2018, in a pediatric oncology reference center, São Paulo-Brazil. The sample was non-probabilistic and selected. Patients from 1 to 19 years of age who were followed up at the nutrition clinic during the entire radiotherapy treatment were included. Reradiated patients, submitted to total body irradiation (TBI) and individuals with edema / anasarca were excluded. The patients were analyzed in 3 stages: Time 1 (T1) - pre-radiotherapy (up to 1 month before the start of radiotherapy); Time 2 (T2) - during radiotherapy (2/3 after the beginning of radiotherapy); Time 3 (T3) - post-radiotherapy (up to 1 month after the end of radiotherapy treatment). The variables analyzed were age, sex, clinical diagnosis, weight, brachial circumference (BC), tricipital skinfold (TS) and body mass index Z-score for age (BMI/A). Friedman test was performed with multiple comparisons by pairwise method for analysis of each continuous variable among 3 times, considering statistical significance level  $p < 0.05$ .

**Results:** 116 patients were analyzed, with a median age of 7.0 years  $\pm$  7.0 (min 1- max 17), 50.9% male. Regarding the oncological diagnosis, 57.8% had tumors of the central nervous system, 19% abdominal tumors, 8.6% head and neck tumors and 14.7% other tumors. Regarding to anthropometric variables, a significant reduction in weight was observed between times 1 and 3 and time 2 up 3 ( $p=0.001$ ), showing a reduction of 1.38 kg during the treatment. The weight between T1 and T2 showed no difference. The same was found for BC measurements ( $p=0.001$ ), with a 0.6 cm reduction and TS ( $p=0.005$ ), with a 0.6 mm decrease. These results demonstrate a significant attenuation of lean mass and fat mass in these individuals. Regarding the BMI/Age Z-score, a statistical difference was observed at the three times ( $p < 0.001$ ), with a reduction in Z-score values of this indicator during radiotherapy, demonstrating overall nutritional depletion in the sample.

**Conclusion:** This study demonstrated that during radiotherapy, patients showed nutritional depletion, with a reduction in all anthropometric parameters evaluated, occurring mainly after 2/3 of the planned sessions and up to 1 month after the end of radiotherapy. These repercussions justify the need for nutritional monitoring throughout this stage of treatment.

**Disclosure of Interest:** None declared.

### P349

#### FREQUENCY OF TASTE DISORDERS IN BREAST CANCER PATIENTS UNDERGOING CHEMOTHERAPY

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**Rationale:** The aim of the study was to evaluate the frequency of taste disorders in newly diagnosed breast cancer patients during chemotherapy.

**Methods:** A prospective cohort study was conducted in patients admitted to the Hospital General de México over a two years period. Patients performed a self-administered taste survey at baseline and after completing the chemotherapy scheme by tasting 1% and 5% solutions (sweet, sour, bitter, and salty flavours). Results were scored using a Likert scale from 0 to 3. Pearson's chi-squared test was used to compare the principal dependent variables.

**Results:** A total of 91 patients were included in the cohort stud; 69.9% of patients referred taste disorders (ageusia, dysgeusia, or hypogeusia) before chemotherapy therapy. This frequency was reduced to 61.8% after the fourth chemotherapy cycle. Alterations within the sweet flavour were the most frequent (31%), whereas salty and bitter salty and bitter flavours had the lowest prevalence of dysgeusia, 7.9%, and 9.5%, respectively. No significant differences were observed between chemotherapy regimens scheme, BMI, and age ( $p > 0.05$ ).

**Conclusion:** Taste disorders are common before and after chemotherapy. Hypogeusia and dysgeusia are common side effects in cancer patients undergoing chemotherapy; sour and bitter flavours had the lowest prevalence of post-treatment taste disturbances. This can be contribute to guide patients to make better food choices without generating discomfort during the treatment, considering the flavours that are better perceived to improve food intake and maintain adequate and pleasant consumption during chemotherapy.

**Disclosure of Interest:** None declared.

### P351

#### THE RELATIONSHIP BETWEEN FAT FREE MASS AND TOXICITY OF CYTOSTATICS IN CANCER PATIENTS

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**Rationale:** Body surface area (BSA) is used to calculate the dosage of cytostatic agents. As cytostatics are generally water soluble, the Fat Free Mass (FFM) would be a logical alternative as basis for the calculation. We wanted to evaluate, if the dose of cytostatic agent/FFM (kg) is related to toxicity.

**Methods:** A single-center, observational and prospective study was performed on 69 colorectal (CRC) and pancreatic cancer (PC) patients in systemic cytostatic treatment. FFM was measured by bioimpedance spectroscopy (BIS-SOZO, Impedimed) at the beginning of each treatment cycle for two-five cycles during two month. Toxicity outcomes were bone marrow depression, dose-limiting toxicity (DLT) and hospitalization, patient-reported energy and protein intake (24-hour recall), general health, quality of life and selected side effects (PRO-CTCAE). Analysis was performed for the individual cytostatic agents and regimens.

**Results:** No significant change was found in FFM over two months of treatment. Median (min-max) relative change in FFM over a one and two month period was -0.16 % (-11.5-13.0) and 1.48 % (-10.8-13.2) respectively. After adjusting for age and gender, a one unit increase in relative FFM was associated with reduced odds for hospitalization (OR=0.778 (95% CI 0.617-0.982,  $p=0.034$ ). Change in FFM was correlated with length of hospitalization:  $r=0.41$  (-0.655- -0.08),  $p=0.012$ ). Other associations were non-significant after adjustment. One unit increase in baseline 5-Fluorouracil mg/FFM was related to a 2.04% reduction in thrombocyte count/L from cycle 1 - 3 (-3.65- -0.428,  $p=0.019$ ) after adjusting. Other dose/FFM and toxicity estimates were non-significant, or deemed inconclusive. The correlation between BSA and FFM was  $r=0.846$  (0.745-0.909,  $p < 0.001$ ).

**Conclusion:** Primarily due to low statistical power and reliability concerns for estimates by BIS, a systematic correlation between FFM, and dose/FFM, and cytotoxicity could not be determined, and an

association between FFM and cytostatic induced toxicity could not be proven.

**Disclosure of Interest:** None declared.

### P352

#### THE RISK OF MISCLASSIFICATION DURING DIAGNOSIS OF MALNUTRITION IN RETROPERITONEAL SARCOMA PATIENTS

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**Rationale:** Retroperitoneal sarcoma (RPS) is a rare tumour that can appear exceptionally large at diagnosis and affects body weight with its volume. We investigated the risk of nutritional status misclassification based on the GLIM criteria chosen in RPS patients.

**Methods:** We retrospectively collected the baseline preoperative data of patients with primary RPS including anthropometry, MUST score and skeletal muscle index (SMI) calculated from the images of computed tomography. Phenotypic GLIM criteria considered were non-volitional weight loss, low BMI and muscle mass. MUST score, being inclusive of weight loss, was chosen as its surrogate. Reduced muscle mass was defined with SMI cut-offs <38.5-52.4 cm<sup>2</sup>/m<sup>2</sup> for female and male. All continuous variables are expressed as medians [25<sup>th</sup>-75<sup>th</sup>] with their IQR. Comparisons were performed with Fisher exact test.

**Results:** From 2018 to 2020 100 consecutive patients (male/female: 48/52) were included. Median age was 61 [48-68] years, median BMI 24.6 [21.5-27.4] kg/m<sup>2</sup>. Seven patients (7%) reported MUST score ≥2 and 80 (80%) score 0. Five patients (5%) were underweight, 42 (42%) overweight. Sixty patients (60%) presented low SMI, of those 56 (93%) were normal and overweight and 44 (73%) not at nutritional risk. Both low BMI and MUST score ≥2 were not correlated with low SMI (p value 0.406 and 0.612, respectively).

**Conclusion:** Detection of malnutrition is of paramount importance in RPS patients before surgery. GLIM criteria are a useful tool for diagnosis; however, our analysis suggests that phenotypic criteria are not interchangeable with each other. Due to the volume of tumour, weight-based classification seems not appropriate, moreover it may fail to account for altered body composition, a condition often hidden. Therefore, it is of the utmost importance the measurement of mass muscle to avoid non-detection of many malnourished patients.

**Disclosure of Interest:** None declared.

### P353

#### DIET AND GUT MICROBIOTA ANALYSIS IN PATIENTS WITH ADVANCED MELANOMA UNDERGOING IMMUNOTHERAPY

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**Rationale:** In recent years, it has been demonstrated that the gut microbiota (GM) plays an important role in influencing the response to immunotherapy. The GM composition is known to be modulated by diet; however, diet impact on clinical outcomes in patients undergoing immunotherapy is still unexplored. Our aim is to establish a correlation between diet and GM in patients undergoing immunotherapy.

**Methods:** The present observational prospective study enrolled 24 patients with unresectable advanced cutaneous melanoma, treated with anti-PD-1 immunotherapy. Diet was assessed at baseline (T0) and after therapy (3 months, T1), using a 3-day food diary. To investigate the GM profile, faecal samples were collected at T0 and T1 for 16S rRNA gene sequencing. Statistical analysis of data was performed with Wilcoxon and PERMANOVA tests.

**Results:** Patients didn't receive any nutritional indication, but spontaneously changed their diet: despite the significant increase in carbohydrate intake (p=0.0046), with a positive trend mean (SD) +6.6 (8), and reduction in lipid intake (p=0.0094), with a negative trend -6.3 (8), no statistically significant difference was found in GM α- and β-diversity between T0 and T1. However, post-therapy (T1) increased proportions of microorganisms belonging to the health-associated saccharolytic families *Ruminococcaceae* and *Lachnospiraceae* were highlighted (e.g., *Anaerotruncus*, *Lachnospiraceae*, *Anaerostipes*).

**Conclusion:** The changes observed in diet and GM composition in patients undergoing immunotherapy suggest that a personalized dietary intervention could favourably modulate the GM and improve the therapeutic outcome of patients. Further studies are required to investigate whether nutritional interventions specifically aimed at increasing GM diversity and abundance of 'favourable' taxa can influence immunotherapy response in these patients.

**Disclosure of Interest:** None declared.

### P354

#### INDEPENDENT ASSOCIATION OF SERUM SERINE LEVELS AND RISK OF CANCER: A PROSPECTIVE CASE-CONTROL STUDY NESTED IN CHINA STROKE PRIMARY PREVENTION TRIAL

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**Rationale:** Dysregulation of serum serine is associated with cancers, and increased serine biosynthesis occurs in cancer cells and supports tumor growth. Whereas, the association between the serum serine concentration and incident cancer risk in Chinese hypertensive adult patients remains unclear.

**Methods:** A nested cases-control study design, including 116 patients with incident cancer during a median 3.9 years of follow-up, and 116 matched controls derived from the China Stroke Primary Prevention Trial (CSPT) were performed. Baseline serum serine concentrations were measured by liquid chromatography with tandem quadrupole mass spectrometry (LC-MS/MS). The conditional logistic regression analysis was used to assess the association of serum serine level and the cancer risk.

**Results:** The median serum serine concentration of cases group (34.9 ug/mL) was higher than that in controls group (31.1 ug/mL) (P = 0.032). There is a positive relation between serum serine and incident cancer risk of total cancers and digestive system cancers. The odds ratio (OR) (95% Confidence index, 95%CI) of participants in quintiles 2-4 (20.6-43.3 ug/mL) and fifth quintile (≥43.3 ug/mL) were 2.08 (0.98-4.41) and 3.39 (1.04-8.43) in total cancers, respectively, compared with quintile 1 (<20.6 ug/mL). These associations were consistent in digestive system cancers, but not in non-digestive system cancers. In addition, a potential interaction effect factor, smoking, was found to promote the incidence of cancer combined with high serine concentration.

**Conclusion:** High serum serine concentrations were associated with increased total cancer risk and digestive system cancer risk among Chinese hypertensive adult patients, compared to lower serine concentrations, and had joint effect with smoking on the cancer risk.

**Disclosure of Interest:** None declared.

### P355

#### ACTIVIN A CAUSES MUSCLE ATROPHY THROUGH MEF2C-DEPENDENT IMPAIRED MYOGENESIS

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**Rationale:** Several data support a role of Activin A (ActA) in cancer-induced cachexia (CC). Circulating ActA levels are elevated in patients with CC and predictive of mortality (1-2). However, the mechanisms through which ActA could mediate CC and in particular skeletal muscle atrophy in

humans are not yet fully understood. In this work, we aimed to investigate the effects of ActA on human skeletal muscle.

**Methods:** We used a model of human skeletal muscle cells in culture to explore how ActA acts towards human skeletal muscle.

**Results:** Recombinant ActA (100 ng/ml) induced myotube atrophy (-21%,  $p < 0.05$ ) associated with decreased MyHC- $\beta$ /slow (-44%;  $p < 0.05$ ), the main myosin isoform in human muscle cells. To identify the mechanisms involved, we assessed the main transcription factors regulating *MYH7* expression, the gene encoding the MyHC- $\beta$ /slow. Among them, MEF2C was dramatically inhibited by ActA (-85%;  $p < 0.05$ ), which suggests its role in the decreased *MYH7* mRNA. Indeed, using siRNA, we showed that MEF2C is necessary to maintain MyHC- $\beta$ /slow and *MYH7* expression in differentiated myotubes. ActA also downregulated MRFs, such as *MyoD* mRNA (-50%,  $p < 0.05$ ) and *MyoG* mRNA (-51%,  $p < 0.01$ ), which regulate positively MEF2C expression. The role of the downregulation of the MEF2 pathway in SM atrophy is supported by the decline of MEF2C and *MYH7* expression in the skeletal muscle of animal models of CC.

**Conclusion:** In this work we showed that ActA is a potent negative regulator of skeletal muscle mass by inhibiting myogenesis. In addition, we highlighted a novel interaction between ActA/pSmad2/3 signaling and MEF2C transcriptional activity that could mediate the decrease of MyHC- $\beta$ /slow synthesis in response to ActA. Further studies are needed to delineate the mechanism of action of ActA on MEF2C activity and the contribution of MEF2C down regulation to its atrophic action.

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**Disclosure of Interest:** None declared.

#### P356

### THE INFLUENCE OF ENTERAL NUTRITION ON LANGUAGE ABILITIES IN MALNOURISHED CANCER PATIENTS

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**Rationale:** Cancer patients are exposed to many complications related to anti-cancer treatment and the ongoing disease process. Malnutrition accompanying cancer generates the risk of severe nutritional deficiencies and may affect up to 75% of patients. The life expectancy of patients after anticancer therapy elongated, which increased the percentage of patients manifesting long-term complications, including cognitive disorders. Currently, it is assumed that rehabilitation of the nutritional status may have a positive effect on the cognitive functioning in cancer patients. The study aimed to assess the influence of enteral nutrition and nutritional status on cognitive functions to evaluate one of the aspects of the quality of clinical nutrition procedures in cancer patients.

**Methods:** In the study, 38 patients undergoing enteral nutrition procedures were included. For the assessment of nutritional status, the Subjective Global Assessment (SGA) was used. The Addenbrooke's Cognitive Examination III was carried out with the specifically trained interviewer to evaluate the quality of the cognitive functions. The measurement of cognitive functions and the assessment of nutritional status have been carried out twice. The first measurement was done on the day of qualification to home enteral nutrition (HEN) procedure and the second after three months of enteral feeding.

**Results:** Enteral nutrition caused significant improvement in the results in a linguistic dimension of cognitive functions at the trend level ( $p = 0.066$ ) in malnourished patients.

Verbal fluency was positively correlated with BMI ( $rs = 0.496$ ;  $p = 0.016$ ) and the Results of handgrip strength. Moreover, with the increasing attention efficiency, the handgrip strength fell moderately.

Enteral nutrition caused significant improvement in the Results of linguistic dimension of cognitive functions at the trend level ( $p = 0.066$ ) in malnourished patients. Improvement in language function has not always been associated with an improvement in nutritional status. Verbal fluency was positively correlated with BMI ( $rs = 0.496$ ;  $p = 0.016$ ) but it was not dependent on body weight or SGA score.

**Conclusion:** Enteral nutrition in malnourished cancer patients may improve language functions after three months of enteral feeding. There is probably a correlation between the BMI and cognitive functions or their specific subcategories, e.g. verbal fluency.

**Disclosure of Interest:** None declared.

#### P357

### NUTRITIONAL PROBLEMS, NUTRITIONAL SUPPORT PRACTICES, AND BARRIERS TO ADHERENCE TO THE ESPEN/EBMT NUTRITIONAL GUIDELINES DURING INTENSIVE TREATMENT FOR ACUTE MYELOID LEUKEMIA: PATIENTS' AND HEMATOLOGY NURSES' PERSPECTIVES

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**Rationale:** The updated guidelines of the European Societies for Clinical Nutrition and Metabolism (ESPEN) and for Blood and Marrow Transplantation (EBMT) on nutrition in intensively treated acute myeloid leukemia (AML) patients recommend enteral nutrition (EN) instead of parenteral nutrition (PN) as the first-choice nutritional intervention. Despite this, PN remains the preferred route of nutrition administration in daily practice. The aim of this qualitative study was to gain insight into the patients' and hematology nurses' experiences and perceptions regarding nutritional problems and nutritional support and the reasons for the low adherence to the ESPEN/EBMT guidelines.

**Methods:** Semi-structured interviews were conducted in 23 patients from various Dutch hospitals who had completed intensive AML treatment. Interviews with 22 patients were audio-recorded and transcribed, one interview was summarized. The transcripts and summary were thematically analyzed using Atlas.ti. From each of the 22 Dutch hospitals providing intensive AML treatment, one hematology nurse participated in a telephone questionnaire survey. The Results of this survey are presented in a descriptive way.

**Results:** Nutritional problems were a major source of distress in most participating patients. Nutritional support, including EN and PN, often led to well-being and less concerns, provided that there were no conflicting nutritional support practices among treating hospitals. Patients perceived PN and EN as a life-line and necessary for the prevention of or recovery from physical decline, but they also experienced loss of independence, limited mobility, fear of undesired body weight gain and problems with the feeding equipment. Both patients and hematology nurses regarded PN as an easy method of nutrition administration, while EN was often seen as a necessary evil or was even refused by patients, owing to tube-related physical discomfort and EN intolerance. Both patients' and hematology nurses' reluctance to administer EN were barriers to the ESPEN/EBMT nutritional guideline adherence. Among the surveyed hematology nurses, barriers to adherence included personal factors related to their knowledge (lack of awareness) and attitudes (negative outcome expectancy and lack of agreement), guideline-related factors (lack of evidence) and external factors (lack of collaboration).

**Conclusion:** Individualized nutritional support, including EN and PN, may reduce nutrition-related distress in intensively treated AML patients, provided that conflicting nutritional support practices among hospitals are avoided or explained. The barriers to adherence to the ESPEN/EBMT guidelines on EN and PN in this patient group may be reduced by enhancing hematology nurses' awareness and knowledge of the guidelines, incorporating the guidelines into multidisciplinary clinical pathways, improving outcome of EN by proper triage of patients eligible for EN and increasing the level of evidence of the guidelines.

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### P359

#### NUTRITIONAL INTAKE OF ONCOLOGIC OUTPATIENTS

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**Rationale:** In cancer patients, an inadequate food intake may contribute to malnutrition. Achieving the nutritional recommendations may prevent or reverse this malnutrition but very little is known regarding the real nutritional intake of these patients, especially in Portugal.

The aim of this study was to evaluate the nutritional intake of cancer outpatients initiating chemotherapy (CT) and/or radiotherapy (RT).

**Methods:** We applied a self reported Food Frequency Questionnaire and determined the nutritional intake (using Food Processor Plus®) of adult cancer patients in the month before CT/RT in a portuguese hospital. We also collected demographic, anthropometric, clinical and lifestyle data.

We determined medians and frequencies, used Kruskal-Wallis or Mann-Whitney tests. The level of significance was  $p < 0.05$ .

**Results:** An observational study was conducted with adult outpatients with cancer diagnosis *de novo*. 331 patients were evaluated, mostly men, mostly with lung cancer, in advanced stage and proposed to adjuvant treatment. The median age was 62 years and median BMI was 25.4kg/m<sup>2</sup>. A third of the patients reported a decreased food intake in the previous month. The median energy intake was 1374kcal or 20.2kcal/kg and the median protein intake was 0.84 g/kg, below the ESPEN recommendations for cancer patients and among the lowest over other studies. The median intake of biotin, folate, pantothenic acid, vitamins D, E and K, calcium, iodine, magnesium, molybdenum and potassium in both sexes and zinc in men were below the recommendations (EAR). The married patients and those who live with their family are those with lower nutritional intake.

**Conclusion:** In this sample of portuguese cancer patients, nutritional intake was inadequate and below the recommendations. Of particular concern are the energy, protein, n-3 polyunsaturated fatty acids and micronutrients (folate, vitamin D, vitamin E, calcium, magnesium, zinc and iodine) deficits.

**Disclosure of Interest:** None declared.

### P360

#### PROSPECTIVE OBSERVATIONAL STUDY TO BUILD THE BODY WEIGHT CHANGE MODEL DURING MODERN CONCURRENT CHEMO-RADIOTHERAPY IN HEAD AND NECK CANCER PATIENTS

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**Rationale:** Nutrition plays major roles in many aspects of cancer treatment. Malnutrition can have a profound effect on the cancer patient that

typically affected experience loss of weight. Patients with upper gastrointestinal malignancies or head and neck cancers are highest risk group with malnutrition may be up to 40-80%. Therefore, the maintenance of body weight during concurrent chemo-radiotherapy (CCRT) is a critical issue to solve. We want to build the model to find the trend of body weight loss during CCRT and predict the body weight change by related factors.

**Methods:** A prospective, observational study was performed to investigate the body weight change during CCRT. From Sep 2020 to April 2021, a total of 10 patients with newly diagnosed, non-metastatic head and neck patients treated by curative CCRT via modern volumetric modulated arc therapy (VMAT) RT technique were enrolled in this study. The body weight was regularly checked during RT and standard care was offered for nutrition support. The trend of body weight change and the possible risk factors were also recorded.

**Results:** The median age was 61 years (range, 48–74 years), and there were 9 men (90 %) and 1 woman (10 %). The mean body weight before the CCRT was 62.1 Kg  $\pm$  9.4 kg. There was one patient with baseline body mass index (BMI) less than 18.5. The percentage of baseline BMI within normal range and overweight was 40% (n=4), and 50% (n=5) respectively. There are 40% patients with weight loss more than 5% during RT and only one patient without significant body weight loss. The trend analysis showed the body weight at 5<sup>th</sup> week since the start day of CCRT is significantly less than the initial weight since the 1<sup>st</sup> day of CCRT (62.1 $\pm$ 9.4 kg vs. 60.5 $\pm$ 9.2 kg,  $P=0.016$ ). We also applied mini nutritional assessment (MNA) to predict the weight loss. The p value was 0.023 based on the data on 5<sup>th</sup> to 7<sup>th</sup> week of CCRT.

**Conclusion:** The percentage of body weight loss during CCRT is still high even using modern RT technique. The body weight loss since the 5<sup>th</sup> week of CCRT is significant. The latest intervention timing may be the 4<sup>th</sup> week of CCRT to improve the treatment efficacy and reduce the toxicity.

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### P362

#### NUTRITIONAL MANAGEMENT OF CANCER PATIENTS: PERSPECTIVE OF PATIENTS AND HEALTHCARE PROFESSIONALS IN SPAIN

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**Rationale:** Malnutrition is a prevalent problem in cancer patients that is associated with a worse prognosis. The European Society for Clinical Nutrition and Metabolism (ESPEN) recommends evaluating malnutrition in cancer patients and providing nutritional support. Despite this, the nutritional management of these patients is often suboptimal. This study aims to describe the nutritional management of cancer patients from patients and healthcare professionals (HCP) perspective.

**Methods:** A cross-sectional descriptive observational study was carried out in the Spanish public health setting through two surveys addressed to HCP and oncology patients.

**Results:** A total of 230 cancer patients (36% breast, 35% haematological and 7% digestive) and 461 HCP (41% generalists, 16% endocrinologists, 14% oncologists, 10% haematologists and 8% nurses) answered the survey.

Eating problems during treatment and sequelae affecting nourishment were experienced by 55% and 64% of patients, respectively, but only 16% and 9% reported having received nutritional supplements or tailored dietary recommendations. Nearly 40% of and HCP indicated that nutritional status was not assessed during patients' follow up. Most HCP (86%) stated that nutritional information is provided to patients. Still, only 34% of patients reported having received it, 33% being dissatisfied, and 79% sought other information sources. Most HCP (87%) reported that patients on nutritional support are followed to assess adherence. However, only 49% of patients receiving them confirmed this. General discomfort or gastrointestinal problems were the main perceived barriers for correct adherence for patients (42%) and HCP (95%). Compared to the patients' perspective, all the listed obstacles were overestimated by the HCP (Table).

Barriers to adherence to nutritional support	Patients / HCP (%)
General discomfort or gastrointestinal problems	41.8 / 95.4
Apathy or depression	17.9 / 89.6
Demotivation	13.5 / 76.3
Family circumstances	6.0 / 52.3
Age	4.5 / 52.3
Lack of information on the importance of adequate nutrition	14.9 / 71.3
Lack of follow-up by healthcare professionals	14.9 / 69.8
Absence of a nutrition expert	26.9 / 70.9
Characteristics of nutritional formulas	25.0 / 61.2
Tolerance problems to nutritional support	23.5 / 78.5

**Conclusion:** Nutritional management of Spanish oncology patients continues to be suboptimal. It remains needed to incorporate routine nutritional assessment into clinical practice. Furthermore, different perceptions exist between HCP and patients regarding nutritional counselling and adherence monitoring of nutritional support. Thus, it is necessary to improve HCP-patient communication and to engage in the adoption of ESPEN recommendations.

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#### P363

#### THE ASSOCIATION OF FAT-FREE MASS INDEX WITH MORTALITY IN CANCER PATIENTS: A MULTICENTER OBSERVATIONAL STUDY

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**Rationale:** Low fat-free mass index (FFMI) has been related to higher mortality in community populations. However, the information on the relationship between FFMI and mortality is lacking for cancer patients. The

objective of this study was to examine the association of FFMI with mortality in cancer patients from China.

**Methods:** This retrospective analysis included 1,744 cancer patients from a multicenter cohort study. The restricted cubic splines were used to flexibly model the association of FFMI with all-cause mortality. The association of low FFMI with overall survival was analyzed by the Kaplan-Meier method and a Cox model.

**Results:** Among all patients, there were 702 (40.3%) males and 1,042 (59.7%) females. The FFMI showed a significant inverse association with mortality for males ( $P$  value  $< 0.001$ ;  $P$  for non-linearity=0.168), whereas showed a significant L-shaped relation for females ( $P$  value = 0.002;  $P$  for non-linearity=0.013). After adjustment, low FFMI was significantly associated with an increased risk of mortality for both males and females. In addition, FFMI showed a strong L-shape ( $P$  value  $< 0.001$ ;  $P$  for non-linearity=0.002) in elderly cancer patients, and the mortality risk significantly decreased with increasing FFMI. For specific tumor type, low FFMI was independently associated with mortality in patients with lung cancer and gastrointestinal cancer.

**Conclusion:** Low FFMI is an independent risk factor of mortality in cancer patients, especially for elderly cancer patients. These Results highlight the usefulness of FFMI for routine clinical assessment and prognostic estimation in cancer patients.

**Disclosure of Interest:** None declared.

#### P364

#### EFFECT OF AN ANTI-INFLAMMATORY DIET ON CERVICAL CANCER PATIENTS

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**Rationale:** Worldwide and in Mexico, cervical cancer (CC) is the fourth cause of death of cancer in female population (Ferlay J et al. 2020). Treatment for locally advanced stages is concurrent chemoradiation followed by brachytherapy (CCRT) (Bhatla et al. 2018). Low residue diet (LRD) is routinely used for patients that receive pelvic radiation, and it has been demonstrated to reduce diarrhea frequency and severity. Recently, several foods have demonstrated to have the capability of modulate inflammation in chronic diseases due to their anti-inflammatory components (Medina-Contreras et al. 2020, Luvían-Morales et al. 2021). The objective of this study was to evaluate the effect of an anti-inflammatory diet (AID) nutritional status and gastrointestinal (GI) toxicity symptoms, compared with LRD.

**Methods:** This is an open controlled randomized clinical trial performed on women with locally advanced CC. Dietary requirements were calculated according to previous reports (Bye et al. 1992, Castro-Eguiluz et al. 2018). In both groups biochemical, anthropometrical, nutritional and GI toxicity variables were assessed. Five evaluations were carried out: Before CCRT (V1), starting CCRT (V2), after the third cycle of CCRT (V3), at the end of CCRT (V4), and three months after CCRT (V5). Patients received education about the number of portions and foods allowed from each food group. Between-group differences were assessed with unpaired t-tests, Mann Whitney U test or chi squared.  $P$  value  $\leq 0.05$  was considered statistically significant.

**Results:** Fifty-seven patients were included for this analysis. Mean age was  $47.7 \pm 11.9$  years. No differences were found in clinical staging, histopathology or CCRT treatment between-groups.

There were differences in energy intake/kg of weight only in V3; the patients in AID ingested more energy than the patients in LRD (17.4 kcal/kg; IQR: 10.6-22.4 vs 12.2 kcal/kg; IQR: 9.1-16.5,  $p=0.031$ ). During the five visits, there were no differences in the proportion of protein, fat or carbohydrate intake. However, from V2 to V5, the patients in the AID group consumed more fiber ( $p<0.05$ ) and polyphenols ( $p<0.05$ ); in V2 and V3 the same group consumed more portions of omega-3 fatty acids and from V2 to V4 more portions of probiotics than patients in the LRD group. No differences were observed in malnutrition development.

According to incidence of GI toxicities during and after treatment, it was observed higher early satiety in V4 and V5 ( $p < 0.05$ ) and a trend towards lower abdominal pain in V4 ( $p = 0.16$ ) and abdominal bloating in V3 ( $p = 0.08$ ) for patients in the AID group. No differences were observed for other GI toxicities symptoms.

**Conclusion:** Both groups, AID and LRD, had similar proportion of patients with malnutrition. Nevertheless, toxicity recovery period could be longer for patients in the LRD group than for patients in the AID group. We found no evidence of any benefit of fiber, lactose and fat limitation in patients with CC under CCRT treatment. It is necessary to increase sample size to confirm these Results.

**Disclosure of Interest:** None declared.

### P365

#### PROGNOSTIC NUTRITIONAL INDEX (PNI) IN ONCOGENE ADDICTED ADVANCED NON-SMALL CELL LUNG CANCER (ANSCLC) PATIENTS (PTS): AN ITALIAN EXPERIENCE

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**Rationale:** PNI is a prognostic factor in lung cancer pts. However, its role in oncogene addicted setting is limited and based on small size trials conducted mainly in Asian and in EGFR-mutated pts. Here we reported our preliminary Results of an Italian single institution experience conducted in oncogene addicted aNSCLC pts treated with tyrosine kinase inhibitors (TKIs).

**Methods:** in oncogene addicted aNSCLC pts (EGFR mutated or *other*), PNI ( $10 \times \text{serum albumin (g/dl)} + 0.005 \times \text{total lymphocyte count (per mm}^3\text{)}$ ) was evaluated before starting TKIs therapy. The cut-off for the PNI was calculated using the time-dependent receiver operating characteristic (ROC) curve analysis by overall survival (OS) and progression free survival (PFS) predictions. PNI and the clinical/pathologic characteristics were correlated with Pearson's  $\chi^2$  test. Survival curves were made using the Kaplan–Meier method and compared with Log Rank test. Univariate and multivariate analyses were performed using the Cox proportional hazards model.

**Results:** 49 pts were prospectively enrolled. Patients' characteristics were as follows: median age (range) 67 y (35–84); male/female 12/37; oncogene addiction in EGFR/other 32/17. The PNI cut-off (range) was 37.6 (30.75–51.90). According to PNI value, the preliminary correlation with PFS and OS was hardly accurate (AUC 0.57; HR 0.090; [95% CI 0.393–0.7491] and AUC 0.52; HR 0.092; [95% CI 0.341–0.702]). Higher PNI was more common in pts with age > 65y, female gender, EGFR-mutation, even if only the correlation with former smoker habit tended towards statistical significance ( $p = 0.159$ ). Survival curves were still immature.

**Conclusion:** PNI is a promising and easy-to-use tool for nutritional assessment. Its prognostic role in Italian aNSCLC oncogene-dependent patients is still unclear, but our preliminary report could be considered as the basis for further investigation.

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### P366

#### FACTORS PREDICTING SKELETAL MUSCLE MASS LOSS AFTER GASTRIC CANCER SURGERY: A RETROSPECTIVE OBSERVATIONAL STUDY

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**Rationale:** After gastric cancer surgery, body weight and muscle mass tend to decrease, and these have been reported as postoperative prognostic factors. We investigated the factors predicting skeletal muscle mass loss after gastric cancer surgery.

**Methods:** We retrospectively enrolled 47 patients who underwent pyloric gastrectomy or total gastrectomy between January 2016 and April 2019 at our hospital. The patients underwent body composition analysis before surgery and 6 months postoperatively. Patients' background, preoperative and 6-month postoperative skeletal muscle mass, grip strength, and presence of sarcopenia were investigated. Patients with a 5% or higher decrease in skeletal muscle mass index (SMI) at 6 months postoperatively with respect to the preoperative value were included in group A, while those without a decrease in SMI were included in group B. The Results were compared between the two groups. Factors associated with a 5% or higher reduction in postoperative SMI were investigated using univariate and multivariate logistic regression analyses.

**Results:** Of the 47 patients, 18 were in group A and 29 were in group B. The results of the unpaired t-test showed that the patients in group A, were older and had higher serum levels of CA19-9. In addition, participants in group A showed a greater decrease in preoperative grip strength and skeletal muscle mass than those in group B. There were more cases of sarcopenia in group A than in group B. Group A also had a more advanced clinical stage, more frequent total gastrectomy, and more complications of oedema. A comparison of the overall survival between group A and group B showed a trend toward a poorer prognosis in group A, although the difference was not significant. Preoperative grip weakness was identified as a factor that reduced SMI by more than 5% at 6 months postoperatively with respect to the preoperative value (hazard ratio 6.23, 95% confidence interval 1.420–27.40,  $p = 0.015$ ).

**Conclusion:** Preoperative grip weakness was identified as a significant factor that reduced SMI by more than 5% at 6 months postoperatively.

**Disclosure of Interest:** None declared.

### P367

#### CORRELATION OF CLINICAL, BIOCHEMICAL AND DIETETIC VARIABLES WITH QUALITY-OF-LIFE QUESTIONNAIRES FOR PATIENTS WITH CANCER CACHEXIA

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**Rationale:** Cachexia is a common phenomenon in cancer; approximately 32% to 78% of cervical cancer patients (CC) suffer from cancer cachexia (CAX) (Sánchez et al. 2019). Traditionally, the response to cancer treatment is assessed through clinical response, tumor size, recurrence, progression-free survival, or overall survival. However, in recent decades it has been considered that the patients' point of view can be evaluated to quantify the degree of relief or harm caused by treatment (Fayers and Machin 2013). Currently, there are two questionnaires which have been developed to assess health related quality of life (HRQL) in patients with CAX: The Functional Assessment of Anorexia/Cachexia Therapy (FAACT) (Ribaud et al. 2000) and the European Organization for Research and Treatment of Cancer (EORTC) quality of life questionnaire (QLQ) CAX24 (Wheelwright et al. 2017). The objective of this study was to correlate the FAACT and the EORTC QLQ-CAX24 scales with clinical, biochemical and dietetic variables.



**Methods:** This is a transversal study. The FAACT, the EORTC QLQ-CAX24, clinical and dietetic variables were assessed. Nutritional status was measured by the Patient Generated-Subjective Global Assessment (PG-SGA). Spearman test was used for correlations. For FAACT, the higher the score, the better the HRQoL. For EORTC-CAX24, the higher the score, the worse the HRQoL, except “adequate information about weight loss”. P value  $\leq 0.05$  was considered statistically significant.

**Results:**

**Table 1.**

Correlation of clinical, biochemical and dietetic variables with FAACT and EORTC QLQ-CAX24 scores

Variable	FAACT						EORTC QLQ-CAX24								
	PWB	SWB	EWB	FWB	ACS-12	Total	FA	EVLW	ED	LC	PD	DM	IH	FE	AI
Line of treatment	-0.31*	-0.1	-0.18	-0.03	-0.28	-0.26*	0.33*	0.18	0.26	0.25	0.32*	0.2	0.01	0.01	0.09
Handgrip strength (kg/m <sup>2</sup> )	0.4**	0.07	0.2	0.08	0.33*	0.3*	-0.28*	-0.13	-0.43**	-0.3*	-0.35**	-0.33*	-0.29*	-0.33*	-0.23
PG-SGA	-0.51***	-0.2	-0.24	-0.39**	-0.62***	-0.55***	0.37**	0.46***	0.38**	0.32*	0.35**	0.18	0.16	0.52***	-0.09
Albumin (mg/dL)	0.24	0.11	-0.07	0.18	0.21	0.24	-0.14	-0.06	-0.12	-0.15	-0.33*	-0.2	-0.05	-0.21	0.19
PCR (mg/dL)	-0.38**	-0.04	-0.12	-0.24	-0.26	-0.33*	0.29*	0.04	0.16	0.1	0.28*	0.21	0.17	0.18	-0.08
Hemoglobin (mg/dL)	0.23	0.13	0.05	0.11	0.25	0.23	-0.12	-0.25	-0.15	-0.17	-0.33*	-0.04	0.03	-0.15	-0.01
WL in 1 month (%)	-0.39**	0.13	-0.082	-0.3*	-0.36**	-0.4**	0.43**	0.21	0.28*	0.07	0.14	0.19	0.25	0.41**	-0.01
WL in 6 months (%)	-0.42**	-0.17	-0.01	-0.32*	-0.5***	-0.4**	0.41**	0.41**	0.32*	0.19	0.4**	0.19	0.3*	0.38**	-0.07
Protein intake (g/kg)	0.13	0.12	0.08	0.22	0.14	0.18	-0.27*	-0.11	-0.17	-0.29*	-0.08	-0.02	0.14	-0.01	0.03
Lipid intake (g/kg)	0.01	-0.01	-0.09	0.002	0.13	0.002	-0.19	0.05	-0.19	-0.29*	-0.08	0.03	0.1	-0.08	0.09

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001.

**PWB:** Physical wellbeing, **SWB:** Social wellbeing, **EWB:** Emotional wellbeing, **FWB:** Functional wellbeing, **ACS-12:** Anorexia cachexia, **FA:** Food aversion, **EVLW:** Eating and weight loss worry, **ED:** Eating difficulties, **LC:** Loss of control, **PD:** Physical decline, **DM:** Dry mouth, **IH:** Indigestion or heartburn, **FE:** Forced yourself to eat, **AI:** Adequate information about weight loss, **SGA-GP:** Subjective Global Assessment-Generated Patient, **WL:** Weight loss.

A total of 56 patients were included for the analysis. Mean age was 50.45 ± 13.8 years; 43 (76.8%) were diagnosed at locally advanced stage; the histopathologic analysis showed that 73.2% were diagnosed with epidermoid carcinoma; 23 (41%) were under treatment and 33 (59%) were under surveillance.

FAACT scores were correlated negatively with the number of lines of treatment, PG-SGA, C reactive protein (CRP), and weight loss. Positive correlation was found with handgrip strength. EORTC QLQ-CAX24 scores had positive correlations with the number of lines of treatment, PG-SGA, CRP, and weight loss. Negative correlations were found for handgrip strength, albumin, hemoglobin, protein intake and fat intake.

Histology, age, weight loss in 1 week, energy and carbohydrate intake were analyzed, but none had significant correlations. Table 1 shows all correlations between clinical, biochemical and dietetic variables with HRQoL questionnaires.

**Conclusion:** Increased number of lines of treatment, a worse nutritional status measured by PG-SGA, higher CRP and increased weight loss are related to a more deteriorated HRQoL measured by FAACT and EORTC QLQ-CAX24. Additionally, the lower the protein and fat intake are related to a worse HRQoL measured by EORTC QLQ-CAX24.

**Disclosure of Interest:** None declared.

### P368

#### IS THERE A RELATIONSHIP BETWEEN MALNUTRITION AND NEUTROPHIL ENGRAFTMENT IN PEDIATRIC PATIENTS UNDERGOING ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION?

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**Rationale:** Pediatric patients undergoing hematopoietic stem cell transplantation (HSCT) are susceptible to malnutrition, a complication that can worsen the response to chemotherapy and increase the risk of infections, length of hospital stay, toxicity and morbidity and mortality. Thus, the relationship between malnutrition prior to allogeneic HSCT and hematological recovery time (neutrophil engraftment) was assessed.

**Methods:** Retrospective observational cross-sectional study. Patients undergoing allogeneic HSCT were included in a reference institution for

pediatric cancer treatment, located in São Paulo - Brazil, from January 2017 to February 2021. Patients undergoing autologous HSCT, undergoing previous HSCT and >19 years old were excluded. The variables age, sex, baseline diagnosis, type of HSCT (haploidentical, related and unrelated), body mass index Z-score for age (BMI-I-Z score) and days between bone marrow infusion and neutrophil engraftment were analyzed. Patients with a Z-score <-2 were classified as malnourished, as referenced by World Health Organization. Categorical variables were described in absolute and

relative values and continuous variables were described in median and interquartile range. Mann-Whitney or Kruskal-Wallis test was used to compare the difference between the BMI/Age Z-score and the days of neutrophil engraftment between the groups.

**Results:** 145 patients were analyzed, 80 of whom were male (55.2%). The main baseline diagnoses were leukemia (n=114;78.6%) and non-malignant hematological diseases (n = 29; 20%). Malnutrition was present in 3.4% of patients. The median of the BMI z-score was 0.26 (IQR ± 1.93) and the median of days for neutrophil engraftment was 16 days (IQR ± 6). There was no difference between sexes for BMI/Age z-score, basic diagnoses or types of transplantation. There was a difference between neutrophil engraftment time only between the transplant categories (p<0.001).

**Conclusion:** In this study, there was no relationship between malnutrition prior to HSCT and hematological recovery time in these patients. Studies are needed to assess the worsening of nutritional status during and after HSCT. It is also possible that, due to the casuistry of previous malnourished patients, no statistical significance was observed in the Results.

**Disclosure of Interest:** None declared.

### P369

#### NUTRITIONAL PROFILE OF OROPHARYNGEAL CANCER PATIENTS ACCORDING TO HPV STATUS

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**Rationale:** Human papillomavirus (HPV)-related oropharyngeal squamous cell carcinoma (OPSCC) is increasing in some parts of the World and represents a distinct biological and clinical entity characterized by improved treatment-responsiveness and survival. We aimed to appraise differences in nutritional characteristics of HPV-related versus HPV-unrelated OPSCC.

**Methods:** A prospective cohort of primary OPSCC patients (stages I-IVb) treated with curative intent at the Catalan Institute of Oncology in 2016–2020 was investigated. We examined nutritional and anthropometric parameters from baseline until 6-month post-treatment. All patients were assessed by an oncology dietician. Database was built with STATA/SE.1.6 and Chi2/ANOVA tests were performed with RStudio (two-sided and Sig.  $p < 0.05$ ).

**Results:** HPV status was assessed for 104 patients; 40 (38.5%) were HPV-related (i.e. HPV DNA and p16<sup>INK4a</sup> double positive). Patients were vastly men (76%) with a mean age of 59 years (sd 8.39). Higher proportions of non-smokers (30.8% vs 3.23%  $p < 0.05$ ), non-drinkers (51.3% vs 6.78%  $p < 0.05$ ) and early stages at diagnoses (74.4% vs 20.0%  $p < 0.05$ ) were observed among HPV-related OPSCC. At baseline, HPV-related patients had a higher body mass index (28.1 vs 23.4 kg/m<sup>2</sup>  $p < 0.05$ ) and a better nutritional diagnosis (47.4% vs 25%  $p < 0.05$ ) with no need for nutritional support (47.4% vs 28.3%  $p < 0.05$ ). Conversely, at end-of-treatment, there were no differences in malnutrition rates according to HPV status (94.4% vs 88.9%  $p > 0.05$ ). At 3- and 6-month post-treatment, both groups showed similar nutritional profiles.

**Conclusion:** HPV-related patients have better nutritional status than HPV-unrelated OPSCC at diagnosis but not after treatment. Our Results have clinical implications for optimizing nutritional interventions on HPV-related and HPV-unrelated OPSCC. In-depth analyses are ongoing of specific nutritional parameters.

**Disclosure of Interest:** None declared.

### P370

#### EFFECTS OF NUTRITION IMPACT SYMPTOMS BEFORE RADIOTHERAPY ON OVERALL SURVIVAL IN PATIENTS WITH HEAD AND NECK CANCER: A PROSPECTIVE COHORT STUDY

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**Rationale:** Nutrition impact symptoms (NISs) effect patients' dietary intake or digestive absorption and have a negative impact on their nutritional status. The NISs are common in head and neck cancer (HNC) patients as a result of tumor location and treatment received. This study aimed to explore the effects of NISs before radiotherapy on overall survival in HNC patients.

**Methods:** This was a prospective cohort study. Adult patients with HNC undergoing RT between March 2017 to November 2019 were recruited. Before radiotherapy, we assessed the NISs status using the symptom section of Patient-Generated Subjective Global Assessment (PG-SGA). Moreover, the survival outcome was followed up from November 2020 to March 2021. Kaplan-Meier survival curves, univariate and multivariate Cox regression analysis were performed to analyze the association between NISs and overall survival (OS).

**Results:** A total of 816 patients were recruited, and 655 patients completed follow-up; the loss rate was 19.7%. Before radiotherapy, there are 244 (37.3%) patients who had NISs. The median NISs score was 0 (range 0–16). The higher incidence of them was poor appetite (9.0%), problems swallowing (7.2%), and pain (6.6%). The median follow-up time of 655 HNC patients was 30.2 months, and 538 patients (82.1%) survived, with 1-year OS of 91.3%, 2-year OS of 84.1%, and 3-year OS of 79.9%. The multivariate Cox regression showed that aging ( $HR=1.039$ , 95%CI: 1.023–1.055), induction chemotherapy ( $HR=1.941$ , 95%CI: 1.314–2.866), advanced tumor stage ( $HR=2.984$ , 95%CI: 1.958–4.549), and total NISs score ( $HR=1.141$ , 95%CI: 1.074–1.213) were independent prognostic factors for OS in HNC patients.

**Conclusion:** Some patients with head and neck cancer had nutrition impact symptoms even before radiotherapy, and they were independent predictors of overall survival. So, in order to improve patients' prognosis, it's essential to pay more attention to the nutrition impact symptoms before radiotherapy and take appropriate measures to manage the symptoms in time.

**Disclosure of Interest:** None declared.

### P371

#### SARC-F QUESTIONNAIRE SCORE PREDICTS MORTALITY OF CANCER PATIENTS RECEIVING PALLIATIVE CARE

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**Rationale:** The Simple Questionnaire to Rapidly Diagnose Sarcopenia (SARC-F) is a screening tool for sarcopenia that assesses simple muscle strength and physical function. SARC-F score  $\geq 4$  has been associated with increased risk of mortality in the elderly, but its association with SARC-F  $\geq 4$  prognosis in cancer patients is unknown. We aimed to determine the prognostic value of SARC-F scores in cancer patients receiving palliative care.

**Methods:** We conducted a retrospective study of 304 cancer patients receiving palliative care from May 2019 to April 2020. Patients were divided into two groups according to SARC-F score estimated on admission: SARC-F  $\geq 4$  and SARC-F  $< 4$ . We compared their clinicopathological characteristics and analyzed the association of SARC-F with mortality. We used Kaplan-Meier methods to calculate the survival rates. Univariate and multivariate analysis were both preceded by Cox regression model.

**Results:** Groups SARC-F  $\geq 4$  and SARC-F  $< 4$  comprised 116 and 188 patients, respectively, of whom survival of the former (95% CI: 29–47) was significantly shorter (95% CI: 95–156,  $P < 0.001$ ). Univariate analysis found age  $\geq 65$  (95% CI: 1.02–1.73,  $P = 0.039$ ); oedema (95% CI: 2.09–3.65,  $P < 0.001$ ); albumin (95% CI: 0.37–0.55,  $P < 0.001$ ); C-reactive protein (95% CI: 1.06–1.10,  $P < 0.001$ ); Eastern Cooperative Oncology Group performance status (PS)  $\geq 3$  (95% CI: 2.12–3.77,  $P < 0.001$ ); and SARC-F  $\geq 4$  (95% CI: 0.379–0.628,  $P < 0.001$ ); were associated with survival. Multivariate analysis found oedema ( $HR=1.94$ , 95% CI: 1.41–2.68,  $P < 0.001$ ); C-reactive protein ( $HR=1.05$ , 95% CI: 1.02–1.08,  $P < 0.001$ ); PS  $\geq 3$  ( $HR = 1.47$ , 95% CI: 1.04–2.09,  $P = 0.03$ ); and SARC-F  $\geq 4$  ( $HR = 1.56$ , 95% CI: 1.20–2.38,  $P = 0.003$ ); were independent prognostic factors.

**Conclusion:** A score of SARC-F  $\geq 4$  predicts poor prognosis in cancer patients receiving palliative care. Prognostification is important in palliative care practice, and the SARC-F, a simple tool for assessing sarcopenia, may be useful for the prediction.

**Disclosure of Interest:** None declared.

### P372

#### ASSESSMENT OF POST-OPERATIVE CHANGES IN BODY COMPOSITION AFTER PYLORUS-PRESERVING GASTRECTOMY FOR EARLY GASTRIC CANCER

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**Rationale:** It is well-known that body weight loss (BWL) is a common problem after gastrectomy for gastric cancer (GC). Pylorus-preserving gastrectomy (PPG) has been reported to be effective in maintaining weight

after surgery, whereas its effect on body composition is unclear. Therefore, we conducted a study to assess the changes in body composition after PPG, compared to distal gastrectomy.

**Methods:** The medical records of 31 patients between April 2017 and July 2020, were analyzed retrospectively. Patients were divided into two groups: the Pylorus-preserving gastrectomy (PPG) group (N = 12) and the Distal gastrectomy (DG) group (N = 19). In both groups, body composition analysis was performed regularly from preoperative to 1 year after surgery. We collected body composition data from bioelectrical impedance analysis using InBodyS10™. Following parameters from body composition data were compared: body weight (BW), body fat (BF), skeletal mass mass (SMM), phase angle (PhA). This study was approved by the Asahikawa Medical University Research Ethics Committee (No. 20204).

**Results:** The median ages of PPG group and DG group were 67 and 70 years (p=0.187), respectively.

The median data for PPG group and DG group before surgery were as follows: BW ( 61.8kg vs 52.8kg, p=0.839 ), BF ( 15.2kg vs 16.8kg, p=0.655 ), SMM ( 23.2kg vs 19.5kg, p=0.326 ), and PhA ( 5.2 vs 4.6, p=0.155 ).

The median data for PPG group and DG group 6 months after surgery were as follows: change in BW ( -9.1% vs -7.3%, p=0.617 ), change in BF ( -27.3% vs -26.2%, p=1.00 ), change in SMM ( -2.8% vs -1.6%, p=0.617 ), and PhA ( 4.7 vs 4.2, p=0.300 ).

The median data for PPG group and DG group 12 months after surgery were as follows: change in BW ( -10.6% vs -6.3%, p=0.287 ), change in BF ( -33.1% vs -19.2%, p=0.306 ), change in SMM ( -1.4% vs 0.0%, p=0.367 ), and PhA ( 4.7 vs 4.1, p=0.113 ).

**Conclusion:** PPG was not significantly different from DG in body composition changes after surgery.

Fat loss accounted for a large part of postoperative BWL in both groups.

**Disclosure of Interest:** None declared.

### P373

#### STANDARD NUTRITIONAL CARE DOES NOT PREVENT MALNUTRITION AFTER HEMATOPOIETIC STEM CELL TRANSPLANTATION

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**Rationale:** Evidence for nutritional support in hemato-oncologic patients comes mostly from retrospective studies. We assessed in a prospective study if standard nutritional care can be sufficient for patients receiving hematopoietic stem cell transplantation (HSCT).

**Methods:** 100 patients suffering from AML (n=59), ALL (n=16) or MDS (n=25) were included. Body-mass index (BMI), handgrip strength, plasma protein, nutritional risk score (NRS), oral nutritional supplements (ONS) and parenteral nutrition (PN) were assessed before HSCT and at 30, 90, and 365 days after HSCT.

**Results:** BMI decreased significantly one year after HSCT (28.3±6.0 kg/m<sup>2</sup> vs. 24.9±5.0 kg/m<sup>2</sup>; P<0.001). Weight loss peaked at 90 days after HSCT (-8.5±8.3%) and in patients suffering from AML and ALL (P<0.001). Handgrip strength decreased significantly at 30 days after HSCT compared to enrollment (34.7±11.5 kg vs. 30.2±11.0 kg; P<0.001). In a cluster analysis weight loss correlated with the decrease in handgrip strength before HSCT (R=0.3; P<0.01) and 30 days after HSCT (R=0.3; P<0.05). Meanwhile, weight loss before HSCT correlated with lower plasma protein levels at enrollment (R=0.2; P<0.05). The number of patients that indicated to eat less than 75% of their normal portion size increased from 38% before HSCT to 69% around the time of HSCT, and 57% after HSCT. Despite the fact that around hospitalization for HSCT, 18% patients received ONS, 26% received PN, and 30% received both, patients with registered NRS≥3 rose from 34% before HSCT to 66% at 30 days after HSCT. During follow-up, 21 patients died and 8 withdrew for personal reasons.

**Conclusion:** Our findings suggest that standard nutritional care is not sufficient to maintain an adequate nutritional state in patients undergoing HSCT and early intensive nutritional therapy should be investigated in randomized controlled studies.

**Disclosure of Interest:** None declared.

### P374

#### NUTRISCORE IS NOW VALIDATED FOR ONCOHEMATOLOGICAL INPATIENTS: NUTRISCORE\_H

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**Rationale:** NUTRISCORE is a nutritional screening tool designed and validated for onco-hematological outpatients since it includes questions regarding cancer site and active treatment. NUTRISCORE has been proof to have higher sensitivity and specificity than Malnutrition Screening Tool in outpatients with cancer. We aim to validate this tool for onco-hematological patients at hospitalization.

**Methods:** A single center, cross-sectional study was conducted in a comprehensive cancer center. We randomly selected patients during the first 24–48h of admission. These patients were assessed using NUTRISCORE, Nutritional risk screening tool (NRS-2002) and Patient Generated Subjective Global Assessment (PG-SGA) to detect risk for malnutrition. We also included the main reason for hospital admission to be part of NUTRISCORE (NUTRISCORE\_H). Sensitivity, specificity were calculated for NUTRISCORE and NRS-2002 using PG-SGA as a reference method. For the overall agreement between pairs of nutritional screening tools the kappa coefficient was assessed.

**Results:** We evaluated 224 patients. According to NUTRISCORE\_H, 65.6% were at risk of malnutrition. NRS2002 detected 52.7% and PG-SGA found 70.5% of patients malnourished or at malnutrition risk. Using PG-SGA as a reference method, the NRS2002 had a sensitivity of 67.1% and a specificity of 81.8%, whereas NUTRISCORE\_H, adding the main reason for hospital admission, improved sensitivity (80.4%) with a specificity of 69.7%. The agreement between NUTRISCORE\_H and PG-SGA was moderate, with a kappa index of 0.478 (p <0.001; 95%CI 0.350 to 0.593) compared with a kappa of 0.416 (p<0.001; 95%CI 0.313 to 0.530) between NRS2002 and PG-SGA.

**Conclusion:**

Adding the main reason for hospital admission at NUTRISCORE makes this novel, fast and simple nutritional screening tool valid for oncological inpatients.

**References:**

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**Disclosure of Interest:** None declared.

### P375

#### DIET AND BOWEL SYMPTOMS AMONG COLON CANCER SURVIVORS

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**Rationale:** Bowel dysfunction is a late sequelae to treatment for colon cancer (CC). Many CC survivors make dietary changes. The present study aimed to describe the effects of diet on bowel function in a large, well-defined cohort of CC survivors and to compare the level of dietary information provided by clinicians with the patients' perception of the information.

**Methods:** CC patients from four surgical departments in Denmark were invited to complete surveys regarding the effects of diet on bowel function and dietary advice received. Data concerning sociodemographic

characteristics and the surgical procedure (right-sided or left-sided hemicolectomy) were collected from the Danish Colorectal Cancer Group database. Forty-four clinicians specialized in treatment of CC completed a questionnaire about how they advise CC survivors about diet.

**Results:** Among 1544 patients invited, 1239 (80.4%) responded and 844 met the inclusion criteria (53% males, median age 72.6 years, median time since surgery 742 days). 267 (32%) reported that food affected their bowel function. Fat had a negative effect in 193 (25%), spices in 149 (19%), sweets in 101 (13%) and meat in 99 (13%). There was no association between tumour site and food categories affecting bowel function. 93% of clinicians stated that their unit gave advice about diet to CC survivors, but only 24% of patients remembered having received such information.

**Conclusion:** One third of CC survivors report that some food, especially fat and spices, has a negative impact on their bowel function. We found a major discrepancy between clinicians reporting that they provide dietary advice and the proportion of patients remembering this.

**Disclosure of Interest:** None declared.

### P376

#### NUTRITION THERAPY PROMOTES OVERALL SURVIVAL IN CACHECTIC CANCER PATIENTS THROUGH A BIOPHYSICAL PATHWAY: THE TICACONCO TRIAL

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**Rationale:** Cancer, both by the disease and by its treatment, threaten the nutritional status and many patients will become cachectic with negative impact on prognosis. In a pilot trial, we showed a positive effect of calorie matching nutrition therapy in cachectic cancer patients. We attempt to validate these Results.

**Methods:** In a prospective, randomized, single-blinded, controlled trial, patients were treated with either intensive, individual biometric parameter-oriented dietary counseling (nutrition therapy NT) for a period of three months, or regular dietary counseling (control CT), before and during conventional cancer treatment. Caloric targeting was guided by indirect calorimetry and proteins by ESPEN recommendations. Body composition was measured by BIA.

**Results:** Overall survival at 12 months was 47% (14/30 patients) in the CT group with a median OS of 45.5 weeks, and 73% (22/30 patients) in the NT group with a median OS that was undefined. The difference is nearly entirely observed in the male patients.

**Conclusion:** Nutrition Therapy, based on patient-specific biophysical parameters, including measurement of metabolism by indirect calorimetry and body composition measurements by BIA, improves Overall Survival, at least in men.

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### P377

#### STANDARD AND THERAPEUTIC DIETS IN HOSPITAL: ASSESSMENT OF CAREGIVERS' KNOWLEDGE AND APPLICATION IN COMPREHENSIVE CANCER CENTRES (CCC) IN FRANCE

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**Rationale:** Due to the high rate of sarcopenia in oncology [1, 2] and based on the guidelines on standard and therapeutic diets in hospital published in 2019 [3], the nutritionist experts in oncology working in CCC (Inter-CLAN) decided to assess the knowledge of caregivers about diet in hospital.

**Methods:** An online survey (RedCap) including 11 questions was conducted from December 2020 to January 2021 in the 18 French CCCs. All physicians, caregivers (nurses and nursing assistants) and paramedics could participate.

**Results:** 1122 responses were collected, of which 42% were from nurses, 26% from physicians and 18% from nursing assistants. Participants worked mainly in medical oncology (54.9%) and surgery/anaesthesia (22.7%).

While only 45% of physicians agree with restrictive diets, almost 62% of nurses and nursing assistants promote it (association of more than 2 diets, salt-free diet associated with corticosteroid therapy, sugar-free diet associated with diabetes).

73% of physicians think that dietitians prescribe diets in hospital and only 52% of physicians think that it is their own task to prescribe a therapeutic diet.

93% of participants know that giving the possibility to the patient to choose their meal contributes to prevent malnutrition. 73% think that snack is essential to increase intakes and 40% are aware of the nutritional value of the menus proposed in hospital.

**Conclusion:** Traditional diets are still applied by caregivers, although associated with a risk of malnutrition [4]. These Results show the priority for training actions focused to each profession's needs [5].

Physicians and caregivers have to give to the patients a greater autonomy in their food choices. Moreover, they must be educated and daily supported in that way by dietitians during their hospitalization. A thought on these practices and application of these guidelines is essential.

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**Disclosure of Interest:** None declared.

### P380

#### ASSOCIATION OF A PREHABILITATION WITH THE RECOVERY OF PATIENTS AFTER COLORECTAL SURGERY

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**Rationale:** The colon cancer morbidity is growing every year. Most cancer patients suffer from different degree of malnutrition, weight loss or immunodeficiency. These processes are more intensive during postoperative catabolism, leading to an increased rate of complications and post-operative mortality. Prehabilitation is an increasingly used procedure aimed at improving patients' prognosis.

The purpose of this study was an assessment of efficiency of prehabilitation in colon cancer patients (CRC) treated by surgery.

**Methods:** 259 patients (mean age 65.6 ± 11.5 yr.; 105 F, 154 M) included to the study were diagnosed with colorectal cancer (G1-3). Patients based on

the random selection were divided into two groups: a group receiving Oral Nutritional Supplement (ONS; n=82) two weeks before surgery and group without Oral Nutritional Supplement (non-ONS; n=177). Anthropometry was performed using electronic scale. Nutritional status was estimated by NRS 2002. The nutritional consultation took place and biochemical measurement were done before and 5 days after surgery. The analysis of overall survival was done by Kaplan-Meier plot, deaths were analyzed up to, 5 years after surgery.

There was no significant difference in the administration of adjuvant radiation or chemoradiation between the two groups. The statistical analysis was done using Statistica 13.0.

**Results:** The number of malnourished patients was 42.4% in non-ONS group and 59.8% in ONS group at baseline. The level of postoperative complications in both studied groups were comparable (8.5% vs 9.6%; p=0.78). The overall survival (Kaplan-Meier curve; p= 0.0001) was statistically higher in the ONS group; in ONS group 12,2 % of deaths and in non-ONS 43,5% were observed.

**Conclusion:** The study showed that nutrition as a part of the prehabilitation process may influence on 5- year overall survival in CRC patients undergoing surgery.

**Disclosure of Interest:** None declared.

### P381

#### ASSOCIATION BETWEEN PLATELET COUNT WITH 1-YEAR SURVIVAL IN PATIENTS WITH CANCER CACHEXIA

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**Rationale:** Changes in platelet count (PLT) are strongly associated with patient survival and may be clinically indicative of certain underlying diseases. However, there were few studies on the prognosis of patients with cancer cachexia.

**Methods:** We performed a nested case-control study of data from a multicenter clinical study of cancer. There were 252 patients with cancer cachexia whose survival time was less than or equal to 1 year and 252 patients with cancer cachexia whose survival time was more than 1 year meeting the inclusion criteria. The mortality risk and the adjusted risk were estimated by logistic regression and displayed as odds ratios (ORs) and 95% confidence intervals (95% CIs).

**Results:** PLT was negatively correlated with 1-year overall survival (OS) of patients with cancer cachexia (increased per standard deviation (SD): OR = 1.25; 95% CI: 1.01-1.54; P = 0.036). The higher the PLT, the lower the OS of patients. When classified by dichotomy (D1 < 296×10<sup>9</sup>/L, D2 ≥ 296×10<sup>9</sup>/L), OS of patients in the D2 group was worse (OR = 2.10; 95% CI: 1.34-3.33; P = 0.001). When classified by quartile (Q1-Q3 < 305×10<sup>9</sup>/L, Q4 ≥ 305×10<sup>9</sup>/L), OS of patients in the Q4 group was poorer (OR = 1.46; 95% CI: 1.10-1.94; P = 0.009). In addition, patients with a low PLT (< 296×10<sup>9</sup>/L) and either a high total bilirubin (TBIL) (≥ 17.1 μmol/L) or a smoking history had poor 1-year survival. Based on our primary cohort study, we conducted a survival analysis of 3130 patients with cancer cachexia and found that OS was better in patients with low PLT (< 296×10<sup>9</sup>/L).

**Conclusion:** PLT was negatively correlated with 1-year overall survival of patients with cancer cachexia.

**Disclosure of Interest:** None declared

### P382

#### CLINICAL IMPACT OF PREOPERATIVE SERUM CHOLINESTERASE IN STAGE III COLORECTAL CANCER

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**Rationale:** We have reported the association between various nutritional indicators such as preoperative Onodera's prognostic nutritional index (PNI) and controlling nutritional status (CONUT) and short-term and long-term outcomes of gastrointestinal cancer surgery. In search of a simpler index, we have investigated the relationship between the preoperative

cholinesterase (ChE) level and the prognosis of gastric cancer and colorectal cancer (CRC). ChE has a relatively short half-life and can be easily measured. We have also reported that preoperative ChE levels correlate with preoperative PNI and CONUT in CRC. This time, we focused on stage III CRC, which requires not only surgery but also adjuvant chemotherapy, and examined the prognostic impact not only of preoperative ChE levels but also of postoperative changes.

**Methods:** We reviewed the medical records of 661 patients with CRC who underwent surgery at our hospital from 2006 to 2014, and 209 were in stage III (115 for colon cancer and 94 for rectal cancer). The average age is 71.3 years. The prognosis was compared using Kaplan-Meier method and Logrank test. ROC curves were created with the outcome of 5-year survival after surgery in all 661 patients, and the cut-off value of ChE was examined. The cut-off value was 240 IU / L, which was the same as the lower limit of male normal range.

**Results:** The mean preoperative ChE was 260.7 IU / L, which decreased in 87 cases (41.6%). One month after the operation, 181 cases were measured, and the mean value was 235.5 IU / L, which was decreased in 92 cases (50.8%). When the preoperative ChE level was divided into a normal group and a decreased group, the prognosis of patients with normal preoperative ChE levels was significantly better than that of patients with decreased preoperative ChE. In addition, the prognosis of the patients with normal ChE levels 1 month after the operation was significantly better than that of the decreased group. Focusing on the change in ChE level before and after the operation, patients were divided into four groups. Group A is the normal ChE level group before and after the operation. Group B have the improvement from the decreased ChE level to the normal ChE level. Group C have the deterioration from the normal ChE level to the decreased ChE level. Group D is the decreased ChE level group before and after the operation. Group A had the best prognosis and Group D had the worst prognosis. Group C was the same as group D, and group B was between groups A and C.

**Conclusion:** The preoperative ChE value is useful in the treatment of stage III CRC, but the ChE value one month after the operation is also suggested to be useful, and it is necessary to pay attention to the decrease of ChE level in the perioperative period.

**Disclosure of Interest:** None declared.

### P383

#### ONE-YEAR MORTALITY IN PATIENTS WITH CANCER CACHEXIA: ASSOCIATION OF ALBUMIN AND TOTAL PROTEIN

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**Rationale:** Previous studies have shown that serum albumin data from an individual can indicate the onset of cancer cachexia, provide information about a patient's nutritional status, and also serve as a biomarker for prognosis of patients with cancer cachexia. However, the relationship between serum albumin and mortality in patients with cancer cachexia remains unclear.

The purpose of this study was to examine the association of albumin and total protein with one-year mortality in cancer cachexia patients.

**Methods:** We conducted a nested case-control study using data from a multicenter cancer clinical survey from 2013 - 2018. A total of 266 patients with cancer cachexia who had survived less than one year and 266 patients who had survived more than one year were included in this study. The participants were matched by age, sex, tumor type, tumor stage, and hospital site. The crude and adjusted risks of one-year survival were estimated by odds ratios (ORs) and 95% confidence intervals (95% CIs) using logistic regression, with or without adjustment for pertinent covariates.

**Results:** In the logistic regression analysis, there was a significantly negative linear association between albumin and one-year mortality in cancer cachexia patients (p < 0.001). An L-shaped relation existed between total protein and one-year mortality, with a turning point around 70.4 g L<sup>-1</sup>. When albumin was divided into quartile numbers, Q3 (OR: 0.40; 95% CI: 0.24, 0.68; p < 0.001) and Q4 (OR: 0.33; 95% CI: 0.19, 0.55; p < 0.001) were associated with higher one-year survival than Q1 among cancer cachexia patients. When total protein was divided into quartile numbers, Q2 (OR: 0.38; 95% CI: 0.23, 0.64; p < 0.001), Q3 (OR: 0.57; 95% CI: 0.33, 0.96; p =

0.035), and Q4 (OR: 0.43; 95% CI: 0.25, 0.72;  $p = 0.002$ ) were associated with higher one-year survival than Q1 among cancer cachexia patients.

**Conclusion:** The Results of this study suggest that serum albumin and total protein might be good parameters for predicting one-year survival. It will potentially stimulate future clinical studies to get a more comprehensive understanding of the effects of serum protein levels in cancer cachexia patients.

**Disclosure of Interest:** None declared.

### P384

#### ASSOCIATION BETWEEN FOLATE INTAKE AND PRESENCE AND SEVERITY OF GASTRIC INTESTINAL METAPLASIA

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**Rationale:** The gastric intestinal metaplasia is a precancerous injury. Folate has a determinant role on carcinogenesis and may increase the risk of gastric cancer. The present investigation is aimed at the association between folate intake and the presence and severity of gastric intestinal metaplasia.

**Methods:** This cross-sectional study included 145 adult individuals that were submitted to clinical evaluation, nutritional assessment and upper endoscopy high resolution narrow band imaging. The food habits were analysed through food frequency questionnaire, validated for the Portuguese population, with subsequent food into nutrients conversion. In order to clarify the relationship encompassing folate intake and presence and severity of gastric intestinal metaplasia, we resorted to the t test.

**Results:** The consumption of folate was higher in the group without lesion ( $n=69$ ) and if comparing with Dietary Reference Intakes (400  $\mu\text{g}/\text{day}$ ), it was inferior to the one in the group where metaplasia was detected ( $325.3 \pm 104.4 \mu\text{g}$ ). To specify, the majority of individuals with mentioned metaplasia (77.6%) presented a folate intake below the DRI, additionally this difference was significant ( $t_{75} = -6.237$ ;  $p < 0.05$ ). Taking into account the lesion severity, we verified that patients with either mild ( $n=40$ ) or severe gastric intestinal metaplasia ( $n=36$ ) both had meaningfully diminished folate intake if compared with DRI (respectively,  $t_{39} = -5.706$ ;  $p < 0.05$ ; and  $t_{35} = -3.388$ ;  $p < 0.05$ ).

**Conclusion:** The assessment of food habits in individuals with metaplasia revealed that these had inferior folate intake, due to a reduced consumption of folate rich-food (legumes, vegetables and nuts) Therefore, such factor requires particular attention, since subjects with the condition here studied have a heightened predisposition for gastric cancer.

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**Disclosure of Interest:** None declared.

### P385

#### THE EFFECT OF PANCREATIC ENZYME REPLACEMENT THERAPY ON COMPLAINTS OF MALABSORPTION AFTER ESOPHAGECTOMY FOR CANCER

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**Rationale:** Pancreatic enzymes are often prescribed in clinical practice to treat complaints of maldigestion and malabsorption after esophagectomy for cancer, but knowledge regarding the effect of this treatment on malabsorption related complaints is lacking. Aim of this study is to evaluate the presence of malabsorption related complaints after esophagectomy and to determine whether treatment with pancreatic enzymes is effective.

**Methods:** This single-center, retrospective cohort study included patients after esophagectomy for cancer between 2014 and 2019 at Amsterdam UMC (location VU University Medical Center). Medical charts of patients with a postoperative follow-up period of at least 6 months were screened. Endpoints of this study were 1) patient reported signs of malabsorption, defined as; steatorrhea or diarrhea alone, or in combination with weight loss, abdominal pain, flatulence or abdominal bloating, and 2) the effect of treatment with pancreatic enzymes on these complaints.

**Results:** This cohort included 184 patients. Median postoperative follow-up was 24 months (range 6-78 months). Complaints of postoperative malabsorption were present in 38.6%. Of all patients suffering from malabsorption related complaints, 59.2% received an empirical trial with pancreatic enzymes. The majority of patients (85.7%) reported a positive effect of treatment with pancreatic enzymes, varying from a complete resolution, to a mild reduction of symptoms. Median period between surgery and starting pancreatic enzymes was 7 months (range 0-53 months).

**Conclusion:** Based on these data, pancreatic enzymes appear to be effective in the treatment of malabsorption related complaints after esophagectomy for cancer and should therefore be considered in postoperative patients reporting malabsorption related complaints.

**Disclosure of Interest:** None declared.

### P386

#### EFFECT OF A MEDITERRANEAN DIET-BASED LIFESTYLE INTERVENTION ON THE DIETARY INFLAMMATORY INDEX IN THE LIBRE STUDY

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**Rationale:** Low-grade inflammation is associated with the development of chronic diseases. The inflammatory potential of a diet may affect the incidence and/or progression of cancer. A tool which assesses this potential is the Dietary Inflammatory Index (DII) [1]. The ongoing randomized LIBRE study has already shown that the dietary intervention led to an increased adherence to the Mediterranean Diet (MedD) in women with BRCA1/2 associated breast cancer risk [2]. We hypothesize that our lifestyle intervention program decreases the DII and that adherence to the MedD is inversely associated with the DII.

**Methods:** The intervention group (IG) received 15 group lessons on the MedD, the control group (CG) received one initial lesson on healthy nutrition according to the German Nutrition Society's recommendations. Nutritional habits were assessed using the MedD Adherence Screener (MEDAS) and a Food Frequency Questionnaire (EPIC-FFQ) at study entry (SE), after 3, and 12 months (V1, V2). The DII was calculated based on FFQ data from subjects who have hitherto completed V2 (IG=149, CG=172). Participants were divided into tertiles (T1-T3) according to their DII scores, with T1 representing individuals with an anti-inflammatory and T3 with a pro-inflammatory diet pattern. Statistics: Mann-Whitney-U-tests, Spearman correlations.

**Results:** There was no difference between the study groups in the DII at SE, yet the DII was lower in the IG compared to CG at V1 ( $-1.33 \pm 2.09$  vs.  $-0.07 \pm 2.47$ ,  $p < 0.001$ ) and at V2 ( $-1.33 \pm 2.07$  vs.  $0.02 \pm 2.50$ ,  $p < 0.001$ ). Subjects in T1 had a higher MEDAS score and higher intake of vegetables, fruits, legumes, and vegetable oil compared to subjects in T3. At all study time points the MEDAS score was inversely associated with the DII ( $p < 0.001$ ), yet the correlations were rather weak (all Spearman- $\rho$  between  $-0.24$  and  $-0.35$ ).

**Conclusion:** Our data show that increased adherence to the MedD is associated with a lower DII. The weak statistical correlation, which resembles findings of others [3], indicates that both scores reflect different dietary aspects and could complement each other in assessing the

preventive potential of a diet. The long-term evaluation of the LIBRE trial will show whether a diet with low DII affects breast cancer incidence in this at-risk population.

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**Disclosure of Interest:** None declared.

#### P387

### PROTEIN INTAKE AND MUSCLE MASS MAINTENANCE IN PATIENTS WITH CANCER TYPES WITH HIGH PREVALENCE OF SARCOPENIA: A SYSTEMATIC REVIEW

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**Rationale:** Cancer has been associated with muscle wasting. However, optimal protein intake has not been determined, limiting the efficacy of nutritional interventions. This systematic review aims to assess the effect of protein intake on muscle mass of patients with cancer types with high prevalence of sarcopenia, during treatment in longitudinal studies.

**Methods:** MEDLINE, CINAHL, and Scopus databases were searched. All longitudinal studies written in English or Portuguese, including adults with high sarcopenia prevalence cancer diagnosis, submitted to (chemo)radiotherapy, with assessment of protein intake and muscle changes during treatment, published until 4 October 2020 were included. Studies including supplementation with substances such as n-3 fatty acids, specific amino acids, or proteins, were excluded. Study appraisal was independently conducted by two reviewers, and a qualitative research synthesis was performed.

**Results:** A total of 575 records was initially identified, of which, eight studies were included (one RCT and seven uncontrolled before and after studies). The studies included head and neck ( $n=5$ ), lung ( $n=2$ ), and esophageal cancer patients ( $n=1$ ), comprising a total of 554 participants. The included studies presented heterogeneous methodologies, objectives, as well as methods to assess body composition. Overall, participant groups with a mean protein intake below 1.2g/kg presented muscle wasting, with one exception, while those who reported a mean protein intake above 1.4g/kg, maintained muscle during treatment.

**Conclusion:** This systematic review suggests a positive relationship between protein intake above 1.2-1.4g/kg and muscle maintenance during cancer treatment, but high-quality, well-designed studies are needed to explore this relationship and to establish an optimal dose-response.

**Disclosure of Interest:** None declared.

#### P388

### PREVALENCE OF EARLY SARCOPENIA IN NEWLY DIAGNOSED NON-METASTATIC CANCER PATIENTS

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**Rationale:** With the recent ESPEN guideline in cancer nutrition, there is a need for early identification of muscle mass loss to change the timing of

intervention. This study aimed to determine the prevalence of early sarcopenia, prior any cancer treatment, in newly diagnosed Asian patients.

**Methods:** Newly diagnosed stage I-III cancer (Breast, colon, Lung and liver) adult patients with CT scans done within four months of diagnosis of cancer and before any chemotherapy or radiation were analyzed. Patients were classified sarcopenia using published cutoffs of SMI/BMI for Asian Populations. Class I and II sarcopenia were defined as  $-2.0 \leq T$ -scores  $< -1.0$  and T-scores less than  $-2.0$ , respectively. Nonrandom associations were conducted.

**Results:** Patients ( $n=225$ ) were  $56.8 \pm 12.2$  years, 67.5% breast, 22% colon, 21% lung, 6% liver and 51% had stage III disease. Overall prevalence of early sarcopenia were 43% and 10%, class I and class II respectively. Higher BMI showed relation to sarcopenia ( $p<0.001$ ).

**Conclusion:** Early CT-defined sarcopenia were prevalent among newly diagnosed cancer patients, even prior any cancer treatment. Assessment of skeletal muscle using CT on initial consult can guide clinicians to start early nutritional intervention.

**Disclosure of Interest:** None declared.

#### P389

### SYSTEMATIC REVIEW OF NUTRITION SUPPORT INTERVENTIONS IN ADULT HAEMATOLOGY AND ONCOLOGY PATIENTS RECEIVING CAR T CELL THERAPY

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**Rationale:** Chimeric Antigen Receptor (CAR) T cell therapy is a novel adoptive immunotherapy that is revolutionising treatment outcomes in haematology and oncology. Phase I/II CAR T cell therapy clinical trials have reported weight loss in 11-20% of patients, with 11-51% experiencing decreased appetite. Maintaining nutritional status has been shown to improve certain patient-centred outcomes in standard anti-cancer therapies, however guidance for nutrition support in CAR T cell therapy is lacking. Our aim was to determine the impact of nutrition support interventions on patient-centred outcomes for adult CAR T cell therapy haematology and oncology patients. The patient-centred outcomes of interest included nutritional and functional status, oral intake, morbidity and mortality. Secondly, we aimed to describe the nutrition implications that have been acknowledged (but not evaluated rigorously) in this therapy, and guide future research.

**Methods:** Four electronic databases (CENTRAL, Embase, MEDLINE, CINAHL) were searched to Jan 2021, with additional records identified through handsearching and snowballing. Studies eligible for inclusion were RCTs, quasi-RCTs, cohort and observational studies, assessing nutrition support interventions (oral, enteral or parenteral) in adult haematology or oncology patients receiving CAR T cell therapy or adoptive immunotherapy. No publication status, year or language restrictions were used. PROSPERO ID: CRD42020220450.

**Results:** Two authors reviewed the title and abstracts of 1181 retrieved records; no studies were eligible for inclusion.

**Conclusion:** We are currently unable to identify if there is an association between nutrition support and outcomes in CAR T cell therapy. Lower quality records permitted us to identify the potential increased risk for malnutrition in this therapy. This empty review confirms the need for research into the role of nutrition in this treatment modality, including prospective clinical trials.

**Disclosure of Interest:** None declared.

#### P392

### EXTRACELLULAR WATER TO TOTAL BODY WATER RATIO MAY MEDIATE THE ASSOCIATION BETWEEN PHASE ANGLE AND MORTALITY IN PATIENTS WITH CANCER CACHEXIA: A SINGLE-CENTER, RETROSPECTIVE STUDY

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**Rationale:** The prognostic factor about cancer cachectic population has been researched for a long time. The aim of this study was to evaluate the predictive utility of phase angles how are mediated by several BIA factors and other anthropometric parameters.

**Methods:** 114 consecutive patients (both outpatients and inpatients) for whom the stage of cancer cachexia was determined from July 2018 to December 2019 in Fujita Health University Hospital, were included in this retrospective cohort study. Their mean age was 74.0 (standard deviation, 8.5) years; 70 were males and 44 females. Time-dependent Cox proportional-hazards regression (adjusted for age and sex) was performed to assess the following: 1) the association between potential mediators and mortality; 2) the association between five PhAs and statistically significant mediators from 1); and 3) the association between the five PhAs and mortality. Finally, Kaplan-Meier survival curves were compared between two groups based on patients' median baseline ratio of extracellular water (ECW) to total body water (TBW) using a log-rank test.

**Results:** The ECW/TBW ratio (hazard ratio [HR] per 1-interquartile range [IQR] increase: 2.87; 95% confidence interval [CI]: 1.46, 5.46;  $p < 0.001$ ) and skeletal muscle mass index (SMI; HR per 1-IQR increase: 0.67; 95% CI: 0.51–0.89;  $p = 0.001$ ) were associated with mortality. All five PhAs were associated with the ECW/TBW ratio ( $p < 0.001$ ). Before adjustment for the ECW/TBW ratio, all five PhAs were associated with mortality ( $p < 0.001$ ); after adjustment, only the PhAs of the left arm and the trunk were ( $p < 0.05$ ). The median survival times in the low (370 days; 95% CI: 168, not calculated) and high ECW/TBW groups (101 days; 95% CI: 61, 219), differed ( $p < 0.001$ )

**Conclusion:** Although PhA was associated with mortality, this association was largely mediated by the ECW/TBW ratio. Therefore, the ECW/TBW ratio is the important mediator for predicting the prognosis of patients with cancer cachexia with PhA.

**Disclosure of Interest:** None declared.

### P393

#### “ADHERENCE TO NUTRITIONAL SUPPORT: EFFECTS ON QUALITY OF LIFE AND NUTRITIONAL PARAMETERS”: ANYVIDA TRIAL

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**Rationale:** International guidelines support the benefits of nutritional counseling and oral nutritional supplements (ONS) for improving nutritional status and health-related quality of life (HRQoL) in cancer patients. Monitoring and optimizing adherence to nutritional therapy may have a critical impact on health outcomes.

**Methods:** Observational and prospective study in clinical practice. Outpatients in active treatment with advanced cancer were admitted from the Division of Oncology and began a comprehensive program for the morphofunctional assessment of malnutrition.

The aims were to monitor adherence and evaluate the HRQoL related to nutritional intervention for 3 months. Two indirect methods to assess adherence of ONS were used. A daily self-reported consumption was used to quantify intake quartiles of each bottle. A validate specific questionnaires were used to assess qualitative adherence aspects to ONS (Wanden-Bergue et. al) and the quality of life (NutriQoL®).

**Results:** 55 outpatients were included of which 40 completed the study, 62.5% males, mean aged 61,18 ± 12,11 years. The global qualitative score of the adherence questionnaire showed 35.9% "high adherence group" (HAG), 56.4% "medium adherence group" (MAG) and 7.7% "low adherence group" (LAG). The median quantitative adherence to the ONS was 56.3±26.6% with an interquartile range of 35.7% to 74.6%.

The assessment of the quantitative intake of ONS in LAG was 22.7 ± 12.4% compared to 55.8±23.0% in MAG and 69.1±22.6% in HAG. The effectiveness of nutritional support is influenced by the reduction of caloric and protein intake. Compared with LAG, a reduction of 350.0±149.2 Kcal / day, and 18.7±7.6 g / day compared to MAG and 472.5 ± 155.7 Kcal / day, and 24, 8 ± 8.0 g / day compared to HAG.

Mean Results obtained with NutriQoL® total score are 86,7±11.4% that being an excellent HRQoL according to the developers. The social live (VS) and physical function and daily living activities (FF-AVD) were 15,9±2,9%

and 70,8±7,9%. Significant improvements were reported in total score (+2,9%) and FF-AVD (2,5%). Correlation analysis showed significance for NutriQoL® total score ( $R = 0,434$ ,  $p = 0,07$ ) and FF-AVD ( $r = 0,417$ ,  $p = 0,008$ ) compared to adherence to ONS.

Low adherence compromises the Results of nutritional recovery. Nutritional recovery with weight gain is observed in different ways depending on the degree of adherence to the ONS ( $-2.2 \pm 2.7$  in LAG,  $+ 3.7 \pm 7.2$  in MAG, and  $4.4 \pm 4.7$  Kg in HAG).

QoL changes through the EORTC-QLQ-C30 reported a significant improvement in global health (+ 8.9%), emotional functioning (+ 10.1%), fatigue (-10.7%), nausea and vomiting (-11.3%), pain (-9.7%) and appetite loss (+ 13.4%).

**Conclusion:** Nutritional support improves nutritional status and HRQoL in patients with advanced cancer with active treatment. The evaluation of HRQoL and adherence to treatment is important due to its correlation on health outcomes. High adherence to nutritional support leads to greater treatment efficacy through an increase in caloric-protein intake that result in weight recovery.

**Disclosure of Interest:** None declared.

### P394

#### IS THERE A RELATIONSHIP BETWEEN MALNUTRITION AND NEUTROPHIL ENGRAFTMENT IN PEDIATRIC PATIENTS UNDERGOING AUTOTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANTATION?

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**Rationale:** Pediatric patients undergoing hematopoietic stem cell transplantation (HSCT) are susceptible to malnutrition, a complication that can worsen the response to chemotherapy and increase the risk of infections, length of hospital stay, toxicity and morbidity and mortality. In this way, the relationship between malnutrition prior to autologous HSCT and hematological recovery time (neutrophil engraftment) was assessed.

**Methods:** Retrospective observational cross-sectional study. Pediatric patients undergoing autologous HSCT were included in a reference institution for pediatric cancer treatment, located in São Paulo - Brazil, from January 2017 to February 2021. Patients older than 19 years were excluded, in addition to those who had undergone previous, allogeneic and autologous tandem HSCT. The variables age, sex, baseline diagnosis, body mass index Z-score for age (BMI/A- z-score) and days of spinal cord infusion until neutrophil uptake were analyzed. Patients with a Z-score  $< -2$  were classified as malnourished, as referenced by the World Health Organization. Categorical variables were described in absolute and relative values and continuous variables were described as mean and standard deviation or median and interquartile range (IQR). To compare the difference of BMI/A Z-score between the groups, Student's t test was used and to compare the difference in catch days between the groups, the Mann-Whitney or Kruskal-Wallis test was used.

**Results:** 122 patients were analyzed, 71 of whom were male (58.2%). The main baseline diagnoses were neuroblastoma ( $n = 38$ ; 31.1%), tumors of the central nervous system ( $n = 36$ ; 29.5%) and ocular tumors ( $n = 20$ ; 16.4%). Malnutrition was present in 7.37% of patients. The mean BMI z-score was 0.06 (SD ± 1.35) and the median days for the catch was 12 days (IQR ± 5). There was no difference between the z-score of BMI / I between genders, nor the baseline diagnoses. There was a difference between the neutrophil engraftment time and genders ( $p = 0.014$ ), diagnoses ( $p < 0.001$ ), but there was no difference between patients who were malnourished or not ( $p = 0.507$ ).

**Conclusion:** In this study, there was no relationship between malnutrition prior to HSCT and hematological recovery time in these patients. Studies are needed to assess the worsening of nutritional status during and after HSCT. It is also possible that, due to the casuistry of previous malnourished patients, no statistical significance was observed in the Results.

**Disclosure of Interest:** None declared.



## P395

**PNI DECREASED IN THE ESOPHAGEAL CANCER PATIENTS WITH GOOD DENTAL OCCLUSAL SUPPORT DURING NEOADJUVANT THERAPY**

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**Rationale:** It would be important for the patients with esophageal cancer who undergo esophagectomy to maintain Prognostic Nutritional Index (PNI) during neoadjuvant therapy (NAT). We hypothesized that dental factors would relate to decrease in PNI during NAT, and examined the dental factors related with difference in PNI between before and after NAT, and investigated how to maintain PNI during NAT, in the patients with esophageal cancer.

**Methods:** This retrospective study included 34 patients who underwent NAT before esophagectomy (32 males, 2 females; age 36–82 years old) in 2012 in Okayama University Hospital. Difference in PNI between before and after NAT, and related general and dental factors were investigated. Moreover, the relation between the status of dental occlusal support and events during NAT was analyzed. Non-parametric test including Wilcoxon signed rank test, Mann-Whitney U test, Spearman correlation coefficient, Fisher's exact test, and multiple regression analysis were used.

**Results:** Decrease in PNI during NAT was significantly correlated to low level of total protein after NAT ( $p = 0.01$ ) and good occlusal support ( $p = 0.02$ ), by multiple regression analysis. Although, before NAT, the patients with good occlusal support had significantly higher PNI than those with poor occlusal support ( $p = 0.018$ ), there was not significant differences in PNI after NAT between groups ( $p = 0.135$ ). Significantly more patients with poor occlusal support received nutritional intervention including percutaneous endoscopic gastrostomy and parenteral nutrition during NAT more than those with good occlusal support ( $p < 0.05$ ).

**Conclusion:** Decrease in PNI during NAT was significantly related to good occlusal support, and the patients with good occlusal support did not received nutritional intervention less than those with poor occlusal support. During NAT, it was suggested that also the esophageal cancer patients with good occlusal support should be pay attention to nutritional status as well as the patients with poor occlusal support.

**Disclosure of Interest:** None declared.

## P397

**NUTRITIONAL ASSESSMENT IN CANCER PATIENTS UNDER IMMUNOTHERAPY TREATMENT IN SPAIN: AN OBSERVATIONAL STUDY IN SPAIN**

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**Rationale:** Malnutrition is a common problem in oncology patients<sup>1-3</sup>. Between 15 and 40% of oncology patients present weight loss at the time of diagnosis and the incidence of malnutrition increases throughout the development of the disease. The presence of malnutrition<sup>4</sup> has a negative impact on the evolution of patients and their health-related quality of life, increasing morbidity and mortality.

**Methods:** Cross-sectional, multicenter, descriptive study of a single-visit in patients with locally advanced or metastatic solid tumors, which was carried out in 10 sites. The sources of information were the medical records of the patients and the information obtained through a nutritional examination, in addition to some questions related to the sociocultural and relational level of the patient.

**Results:**

A total of 585 valid patients were included: 385 patients in immunotherapy group (A) and 200 patients in chemo group (B). Mean (SD) age was 63.37 (11.16) years old and 60.0% were males. All patients were classified between ECOG 0 and 2.

Mean (SD) score of Nutriscore was 4.00 (1.13) points in Group A and 4.77 (1.09) points in group B, ( $p < 0.0001$ ). In group A, 28.3% of the patients were at risk of malnutrition, compared to 58.5% in group B.

The nutritional status according to PG-SGA showed statistically significant differences between both groups ( $p < 0.0001$ ). In relation to the Results of NutriScore and patient nutritional status, the results show that, of the total number of patients, 27.4% were on nutritional therapy, 97 (42.9%) of patients who obtained a score  $\geq 5$  (at risk) and 63 (17.5%) of patients who obtained a score  $< 5$  (out of risk) in Nutriscore.

**Conclusion:** The dietary advice was the most common type of therapy. Regarding oral supplements, these were more common among patients in stage severely or moderately malnourished than in stage of well nourished patients. The main reason for nutritional therapy was problems that affected eating. In the case of "Changes in body weight" and "Changes in the amount and time of food consumed", the percentage of patients was higher in State severely or moderately malnourished group than well nourished patients.

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## P398

**GASTRIC CANCER: NUTRITIONAL AND FUNCTIONAL STATUS & SURVIVAL TIME/MORTALITY**

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**Rationale:** Gastric cancer (GC) is one of the most frequently diagnosed types of cancer worldwide and with a high mortality rate. Weight loss and severe malnutrition are very prevalent in patients with GC, leading to a

worse prognosis and reflecting a shorter survival time. In addition, about 10–20% of mortality in cancer patients is attributed to malnutrition and not to the malignancy of the pathology itself, being an independent predictor of mortality with a risk of mortality 2 to 5 times higher. Our aims were to track and evaluate the nutritional status (NS) and functional status (FS) of GC patients and associate NS with survival time/mortality.

**Methods:** Observational study in GC patients from Garcia de Orta Hospital. NS was evaluated using Patient-Generated Subjective Global Assessment (PG-SGA) and GLIM (Global Leadership Initiative on Malnutrition) criteria. To assess FS we used the handgrip dynamometer (HGD).

**Results:** 155 GC patients. 67.1% (n=104) to 71.6% (n=111) malnourished according to the GLIM criteria and PG-SGA, respectively. 86.1% (n=93) of the patients had a value of HGD below the 30th percentile. In malnourished patients, HGD <P10 (78.1%; n=57–GLIM criteria and 76.5%; n=62–PG-SGA B+C) values prevailed. At the mortality associated with NS, it was found that, in malnourished patients, more than 75% (n>80) died, of which, the majority (55.8%; n=53–GLIM and 58.8%; n=60–PG-SGA B+C) died after less than 2 months of the assessment of NS. PG-SGA and GLIM criteria were significantly (p<0.01) positively correlated with the time survival (r=0.413–GLIM; r=0.538–PG-SGA) and mortality (r=0.302–GLIM; r=0.413–PG-SGA).

**Conclusion:** There is a relationship between NS and FS, with survival time and mortality, because the greater the degree of severity of malnutrition and the worse the functional status, the higher the prevalence of mortality and the shorter survival time.

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**Disclosure of Interest:** None declared.

#### P399

### THE IMPACT OF LOW IODINE DIETS ON PEOPLE WITH DIFFERENTIATED THYROID CANCER: A MIXED METHODS SYSTEMATIC REVIEW

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**Rationale:** Treatment for differentiated thyroid cancer (DTC) is usually thyroidectomy followed by radioactive-iodine treatment (RAIT). High iodine status (IS) may interfere with RAIT, and so a low iodine diet (LID) prior to RAIT may be advised. We present preliminary findings from a mixed methods systematic review of LIDs in relation to IS/LID on treatment success, and challenges experienced.

**Methods:** The studies included participants of any age with clinically diagnosed DTC. There were no date or language restrictions. An effectiveness synthesis (quantitative studies) and views synthesis (qualitative, survey and experience-based evidence) were conducted individually and then integrated. Five electronic databases, [ClinicalTrials.gov](http://ClinicalTrials.gov) website and grey literature were searched to Feb 2021. Risk of bias and quality assessment was undertaken.

**Results:** The odds ratio (OR) and 95% confidence interval (CI) for ablation success for moderate iodine depletion (<50 mcg/L or mcg/gCr) vs. >50 was 1.47 (1.00 to 2.17) (n=5 studies) and for mild iodine depletion (<100 vs. >100) was 1.82 (0.99 to 3.35) (n=3 studies). These results attenuated when studies with high risk of bias and abstracts were excluded (1.20 [0.75 to 1.91] and 1.53 [0.80 to 2.91], respectively). Strict LID advice vs. less strict (author defined) resulted in little to no difference in ablation success (OR, 0.93; 95% CI 0.61 to 1.42) (n=5). The quality of evidence ranged from low to

very low. Main challenges to consuming a LID were a negative impact on psychological and physical health, over restriction, confusion and difficulty for sub-groups (e.g., due to culture).

**Conclusion:** Preliminary findings suggest little evidence of benefit of IS/LID on ablation success. High quality studies are needed to confirm these findings as this diet presents challenges to patients and may not be necessary.

**Disclosure of Interest:** None declared.

#### P401

### NEW METHOD TO EVALUATE MUSCLE MASS PHENOTYPE IN PATIENTS WITH INCURABLE CANCER: DEVELOPMENT AND VALIDATION

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**Rationale:** Anthropometric measurements, as well as handgrip strength (HGS), are simple, low-cost and easily available methods that, in combination, can be useful to assess phenotypic criterion of muscle mass in malnutrition. This study aimed to develop and validate a grading system for assessing muscle mass phenotype based on the combination of the mid-upper arm muscle area (MUAMA) and HGS in patients with incurable cancer.

**Methods:** Prospective cohort carried out at the Palliative Care Unit of the National Cancer Institute (Brazil) from July 2016 to March 2020. The total of 1,660 patients was randomized into two data sets: training (n= 1,162; 70%), to determine the muscle mass phenotype grading system derived from the combination of cut-off points of the MUAMA and HGS related to 180-days mortality; and validation (n = 498; 30%), to evaluate the relationship of the grading system with overall survival.

**Results:** The median age of the total sample was 64 (56–72) years, with a majority of female (n = 946; 57%). The analyzes in the training data set resulted in three distinct groups specific to the sex, derived from the combination of the cutoff points of MUAMA (Male,  $\geq 24.9$  and  $< 24.9$  cm<sup>2</sup>; Female,  $\geq 20.4$  cm<sup>2</sup> and  $< 20.4$  cm<sup>2</sup>) and HGS (Male,  $\geq 26$ ,  $< 26$  and  $\geq 16$ , and  $< 16$  kg; Female,  $\geq 22$  kg,  $< 22$  and  $\geq 14$  kg, and  $< 14$  kg). In the validation data set, taking the patients (Group 1) with greater cutoff points for MUAMA and HGS as reference, the hazard ratio (HR) increased progressively in the groups with the lowest values of the combination of MUAMA and HGS: Group 2 (male HR = 1.64 [95% CI = 1.17; 2.19]; female HR = 1.75 [95% CI = 1.21; 2.53]) and Group 3 (male HR = 2.24 [95% CI = 1.39; 3.29]; female HR = 3.21 [95% CI = 1.83; 5.64]).

**Conclusion:** The new grading system formed three distinct groups of muscle mass phenotype, capable to predict the risk of mortality.

**Disclosure of Interest:** None declared.

#### P402

### MODIFIABLE RISK FACTORS AND GASTRIC CANCER PREVENTION: THE MOST RECENT EVIDENCE

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**Rationale:** Gastric cancer is the fifth most incident cancer type and it can be prevented by eliminating modifiable risk factors. The major disease cause is attributed to *Helicobacter pylori* infection, which is also influenced by nutritional factors. Additionally, the literature has been establishing other modifiable risk factors such as body composition, red and processed meat consumption and alcohol intake, having been released a report on the topic by the WCRF/AICR, in 2016.

**Methods:** This review aimed to assess the literature available on lifestyle factors and gastric cancer since 2015, and to evaluate data regarding the role of the Mediterranean diet on this disease. Pubmed database, MeSH terms and Boolean operators were used for the descriptive analysis of this review.

**Results:** The results showed that body fatness (6 studies); alcohol consumption (6 studies); salt intake and red and processed meat (6 studies) were confirmed to be risk factors and citric foods uptake showed to be

protective (3 studies). Additionally, recent research has showed that a high adherence to the Mediterranean Diet pattern may contribute for gastric cancer prevention (7 studies).

**Conclusion:** Despite the already established association between gastric cancer risk and nutrition, more studies are needed to further assess this relation and to allow evidence-based recommendations on this topic. Plus, the growing awareness of nutrition relevance in cancer prevention makes the investment in primary prevention with early diagnostic programs that include nutrition even more crucial.

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**Table 1.**

Nutritional status change by GEE, n (%)

Items	Time point	Category	Control group (n=146)	Intervention group (n=139)	TimeWald $c^2$ P	GroupWald $c^2$ P	Time*GroupWald $c^2$ P		
Critical WLR	T <sub>2</sub>	<5%	108 (74.0)	117 (84.2)	8248.840	<0.001	2.846		
		≥5%	38 (26.0)	22 (15.8)					
	T <sub>3</sub>	<5%	43 (29.5)	55 (39.6)				0.092	2.812
Nutritional status according to GLIM	T <sub>1</sub>	<5%	103 (70.5)	84 (60.4)	183.564	<0.001	4.011		
		≥5%	110 (75.3)	115 (82.7)				0.045	0.103
	T <sub>2</sub>	Well-nourished	36 (24.7)	24 (17.3)					
		Malnutrition	65 (44.5)	75 (54.0)					
	T <sub>3</sub>	Well-nourished	81 (55.5)	64 (46.0)					
		Malnutrition	26 (17.8)	32 (23.0)					
		120 (82.2)	107 (77.0)						

Abbreviations: GEE, generalized estimating equation; WLR, weigh loss rate; GLIM, Global Leadership Initiative on Malnutrition.

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**Disclosure of Interest:** None declared.

#### P403

### NUTRITIONAL COUNSELLING ON WEIGHT LOSS AND DIETARY INTAKE OF HEAD AND NECK CANCER PATIENTS UNDERGOING RADIOTHERAPY: A HISTORICAL CONTROL STUDY FOR FUTURE INTERVENTION IN CHINA

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**Rationale:** Malnutrition is prevalent in head and neck cancer (HNC) patients undergoing radiotherapy (RT). Nutritional counselling (NC) might be beneficial for the outcomes of outpatients during treatment. The aim of this study was to monitor the weight loss and nutritional status of HNC patients undergoing RT, with or without NC. The secondary objective was to assess patients' dietary intake.

**Methods:** This was a historical control study. A total of 139 HNC patients were in NC cohort (intervention group), and 146 patients were in historical cohort (control group). Patients in the intervention group received at least three sessions (T<sub>1</sub>, 1 to 3 days before RT; T<sub>2</sub>, 3 weeks after initiation; and T<sub>3</sub>, 6 to 7 weeks after initiation) of individualized dietary counselling, including a nutrition assessment, face to face nutrition education, and a pamphlet which contained beneficial nutrition information to reduce the severity of side effects over the duration of RT or regular care. Body weight, dietary intake, and nutritional status were evaluated at each of the three sessions.

**Results:** At the end of RT, caloric goals were reached in 47 (33.8%) and protein goals in 63 (45.3%) patients in the intervention group, while 45 (32.4%) patients intake less than 60% calorie and 38 (27.3%) of them intake protein less than 0.6g/day. The average energy consumption at the third consultation was 16.39 kcal/kg/d in the control group and 19.64 kcal/kg/d in the intervention group. Patients in the control group lost more body weight (4.61kg vs 4.17kg). For every consultation, the weight loss rate was increased differently between the control and intervention groups ( $P<0.001$ ). 84 (60.4%) and 103 patients (70.5%) had a weight loss greater than 5% at T<sub>3</sub> in the intervention and control group, respectively. At T<sub>3</sub>, patients in the intervention group showed a greater number of patients that were more well-nourished than the control groups.

**Conclusion:** Our Results are based on the clinical practice setting affirming that three active NC sessions could effectively improve energy intake and further preserved body weight on HNC patients during RT. However, only NC is not enough to keep well-nourished. Future, further validation and multidiscipline team should be established and provide comprehensive nutrition management and help mitigate their nutritional status.

**Disclosure of Interest:** None declared.

#### P404

### BODY COMPOSITION, DIETARY INFLAMMATORY INDEX, INFLAMMATORY MARKERS AND QUALITY OF LIFE OF WOMEN WITH BREAST CANCER IN CHEMOTHERAPY

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**Rationale:** Chemotherapy (C) and its adverse events may cause damage to nutritional status (EN) and quality of life (QoL). It can reflect on patient's prognosis. The anti-inflammatory diet, adequate in energy and nutrients can aid in treatment, preventing worsening in EN and avoiding risk factors for cancer recurrence.

**Methods:** Women with breast cancer on C treatment were submitted to weight and height assessments, body composition evaluation by bioelectric multiple-frequency analysis, blood collection for albumin and PCR evaluation, a questionnaire of QoL (EORTC QLQ-BR23) and a 24-hour recall. The dietary inflammatory index was done using foods of recall by IF Tracker® mobile app. These assessments were made before and after C (T0 and T1).

**Results:** The sample consisted of 61 women with a mean age of 46.16 years, 71.7 kg of weight, 1.58 m tall and mostly overweight (49.1%) or obesity (31.1%) on diagnosis. Weight did not vary significantly after C, as well as percentage of lean and fat mass. The opposite was observed for phase angle (PA) which fell to a value below cutoff point ( $p<0.001$ ), for serum albumin levels from which was also lower after and PCR levels, which increased ( $p<0.01$  and  $p=0.05$ , respectively). The QoL was worse in the end of C ( $p<0.001$ ). Although no significant changes were found in food intake and dietary inflammatory index, overall showed a pro-inflammatory diet profile in both evaluations. The mean dietary inflammatory index indicated "strongly inflammatory" diets, according to app classification.

Also, energy, protein, vitamins A, C and E and saturated fat were inadequate in both moments too.

**Conclusion:** Although there were no body composition and food intake alterations, the fall in phase angle and albumin, and the increased PCR indicate a worsening in nutritional status after C. In addition, food inadequacies as well as inflammatory diet may be factors that contribute to the development of chronic diseases and obesity, which is also a risk factor for breast cancer recurrence.

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#### P405

### PROGNOSTIC SIGNIFICANCE OF SARCOPENIA IN PATIENTS WITH HUMAN PAPILLOMAVIRUS-POSITIVE OROPHARYNGEAL CANCER: A SYSTEMATIC LITERATURE REVIEW

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**Rationale:** Sarcopenia is an independent poor prognostic factor for overall survival in head and neck cancer (HNC), however the importance of sarcopenia in the growing epidemic of younger patients diagnosed with human papillomavirus-positive oropharyngeal carcinoma (HPV+ OPC) has not been established. This study aimed to determine the impact of computed tomography (CT)-defined sarcopenia for patients with HPV+ OPC undergoing curative intent treatment of any modality.

**Methods:** A systematic review of the literature was conducted to January 2021 of PubMed, Embase, CENTRAL, CINAHL, and Web of Science to identify empirical studies conducted in adults ( $\geq 18$  years) with known HPV+ OPC that reported any outcome(s) related to CT-defined sarcopenia. Study bias was assessed using the Quality In Prognosis Studies tool, with certainty of evidence assessed using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system.

**Results:** Four studies ( $n=672$  OPC patients) met the inclusion criteria. Study populations included HPV+ and HPV-negative OPC ( $n=2$ ), and heterogeneous HNC populations ( $n=2$ ), and all were deemed to be at moderate risk of bias. All studies identified varied in sarcopenia assessment methods and skeletal muscle index threshold cut-off values. Baseline body mass index was higher in HPV+ OPC ( $n=85$ , 28.2kg/m<sup>2</sup>) versus HPV-negative OPC ( $n=27$ , 24.2kg/m<sup>2</sup>,  $p=0.01$ ) in the one study reporting this outcome specific to HPV status (sarcopenia prevalence  $n=23$  (27.1%) for HPV+ OPC). Pre-treatment sarcopenia prevalence ranged from 20-56%. Although overall survival (two studies,  $n=216$  HPV+ OPC) and progression-free survival (one study,  $n=117$  HPV+ OPC) was lower in sarcopenic patients with HPV+ OPC, this was not significant. No study reported sarcopenia incidence during treatment or sarcopenic obesity prevalence in HPV+ OPC. GRADE certainty of evidence for impact of pre-treatment sarcopenia on overall and progression-free survival was very low, due to serious bias and imprecision.

**Conclusion:** Despite a high prevalence of pre-treatment sarcopenia in patients with HPV+ OPC, the impact on survival remains uncertain. Limitations included lack of studies specific to HPV+ OPC, variations in sarcopenia assessment methods and definitions, cut-off values, small sample sizes, and use of reference populations unrepresentative of this unique subset of patients with HNC. Further quality research conducted specifically in HPV+ OPC is needed to determine if sarcopenia is an independent prognostic factor in this population.

**Disclosure of Interest:** None declared.

#### P406

### PREDICTIVE ABILITY OF THE G8 SCREENING TEST TO DETERMINE PROBABLE SARCOPENIA AND ABNORMAL COMPREHENSIVE GERIATRIC ASSESSMENT IN OLDER PATIENTS WITH SOLID MALIGNANCIES

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**Rationale:** Pre-treatment evaluation for sarcopenia is recommended in cancer patients. We aimed to investigate whether the G8 screening test can detect probable sarcopenia and is valid and reliable compared to comprehensive geriatric assessment (CGA) in Turkish older adults with solid cancers.

**Methods:** We included solid cancer patients referred to a single center. Probable sarcopenia and abnormal CGA were defined as low handgrip strength and impairment in at least one of the CGA tests, respectively. Receiver operating characteristic curve analyses evaluated the test's predictive ability. Intra-rater and inter-rater reliabilities were assessed.

**Results:** The median age of the 76 patients included was 72 (65–91) years. There was a moderate correlation between handgrip strength and the G8 test total score. The sensitivity and specificity of the G8 test to detect probable sarcopenia alone were 50% and 92%, respectively (area under the curve [AUC]: 0.747;  $p<0.001$ ); to determine abnormal CGA plus probable sarcopenia were 93.33% and 86.89%, respectively (AUC: 0.939;  $p<0.001$ ), and to detect abnormal CGA alone were 79.63% and 95.45%, respectively (AUC: 0.893;  $p<0.001$ ). The G8 test results agreed with those of CGA ( $\kappa=0.638$ ;  $p<0.001$ ). Both inter- and intra-rater assessments of G8 scores revealed a strong agreement (Interclass correlation coefficient (ICC)=0.979,  $p<0.001$  and  $\rho=0.994$ ,  $p<0.001$ , respectively).

**Conclusion:** The Turkish version of the G8 test is a good screening tool to detect probable sarcopenia alone and in conjunction with abnormal CGA in older patients with solid malignancies. The G8 screening tool may be useful in detecting probable sarcopenia in Turkish older adults with solid cancers.

**Disclosure of Interest:** None declared.

#### P407

### RELATIONSHIP BETWEEN BODY COMPOSITION CHANGES AND EPA SUPPLEMENTATION IN PATIENTS DIAGNOSED WITH LOCALLY ADVANCED SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK (LA-SCCHN)

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**Rationale:** Eicosapentaenoic acid (EPA) supplementation has been proposed to be associated with muscle mass improvement in solid tumors. We aim to assess the effect of EPA supplementation on muscle mass during a radiotherapy-based treatment in patients (pts) with LA-SCCHN.

**Methods:** A single center randomized double-blind, placebo-controlled clinical trial was conducted from December 2015 to September 2018 in pts with LA-SCCHN undergoing a conservative treatment with chemo-radiotherapy or bioradiotherapy. Patients were randomly assigned to receive oral pure EPA at a dose of 2.4g or placebo from diagnosis until 2 months after oncological treatment with 2 years follow-up. We assessed body composition by CT imaging at L3 level, nutritional and inflammatory biomarkers throughout the oncological treatment. We measured EPA compliance according to red blood cell EPA levels. All pts were evaluated by an oncology dietitian and nutritional support was given following standard guidelines. To study the changes throughout the treatment, a mixed linear model of repeated measures was used.

**Results:** We included 54 pts, 27 pts per group. Sixteen (59.3%) pts were malnourished at the experimental group (EG) and nine (33.3%) at the control group (CG) ( $p=0.056$ ) at diagnosis. No significant differences at baseline in body composition or other nutritional and inflammatory biomarkers were observed. Over the 6 months treatment period, both intention-to-treat analysis and per protocol analysis revealed no statistically significant improvements in body composition, nutritional or inflammatory biomarkers were observed. The rate of drops out were high for both groups ( $n=11$ , 40.7% in EG;  $n=10$ , 37% in CG). Compliance showed to be low along the oncological treatment in both arms; only 10 out of 18 (55.6%) patients achieved at least 2 g of blood cell EPA levels in the EG at 10 weeks and 9 out of 18 (50%) at the end of oncological treatment  $p=0.892$ .

**Conclusion:** EPA supplementation has no effect on muscle mass in patients with LA-SCCHN treated with radiotherapy. These Results may be affected by the differences in nutritional status at baseline and low compliance.

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## P408

### ASSOCIATION BETWEEN INFLAMMATORY MARKER WITH CHEMOTHERAPY TOXICITY AFTER THE FIRST CYCLE OF CHEMOTHERAPY IN BREAST CANCER

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**Rationale:** Toxicity due to chemotherapy will delay the chemotherapy schedule and survival in cancer patients. Cancer patients are affected by inflammation from the tumor itself and some with sarcopenia before started the chemotherapy. The aim of the study is to evaluate the increment of inflammatory markers after one cycle of chemotherapy in breast cancer patients.

**Methods:** A prospective cohort study was conducted in a cancer referral hospital at Banten, Indonesia. The study population was women with breast cancer. Toxicity was defined by Hematology & gastrointestinal toxicity using CTCAE v4.0. CRP, as an inflammatory marker, was evaluated before the first and after three cycles of chemotherapy. Several factors related to chemotoxicity were assessed. The analysis was done with chi-square and logistic regression analysis.

**Results:** A total of 110 out of 128 patients were followed-up completely after their first chemotherapy cycle either with Taxane or Anthracycline-

based regimen. The median age of the participants was 47(25-29) years old. Toxicities were found in 21 (19%) patients, and after their first cycle, 10 (47.6%) participants had increased CRP. Early stage [OR(CI) 4.34 (1.35-13.94),  $p < 0.001$ ], CRP [OR(CI) 80.00 (9.32-686.14),  $< 0.001$ ]. Comorbidity, type of chemotherapy, and ECOG performance status were not correlated with toxicities.

CRP is associated with toxicities even after adjusted with BMI and cancer staging [OR(CI) 71.523 (7.937-644.533),  $< 0.001$ ]

**Conclusion:** There was an association between inflammatory marker with chemotherapy toxicity after 1 cycle of chemotherapy in breast cancer patients.

**Disclosure of Interest:** None declared.

## P409

### NUTRITIONAL STATUS AND BODY COMPOSITION IN COVID-19 ONCOLOGICAL INPATIENTS

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**Rationale:** Body composition analysis in COVID-19 cancer patients (pts) is limited. Our aim is to describe nutritional status and body composition in COVID-19 oncological inpatients.

**Methods:** We collected demographical and clinical data from oncological COVID-19 pts referred to the clinical nutrition unit (CNU) from March-December 2020. In those who also had PET/CT scan available at the time, body composition was analysed at L3 level. Sarcopenia was established according to previously published cut-points.

**Results:** From 89 COVID-19 oncological inpatients, 37pts (41.5%) were referred to CNU. Twenty-five (67.6%) were men, aged 68 years (SD 10.75). The most frequent tumor location was lung ( $n=9$  24.3%). Mean body mass index was 24.67kg/m<sup>2</sup> (SD 5.49) with 27% overweight ( $n=10$ ) and 16.2% obese ( $n=6$ ). Mean weight loss in the last 3 months was 7.73% (SD 8.31), 35 pts (94.6%) were malnourished and needed nutritional support. 27 pts (72.9%) received oral nutrition supplementation, 5 pts (13.5%) enteral nutrition, 4 pts (10.8%) parenteral nutrition and 1 patient (2.7%) nutritional counseling due to dysphagia. Mean blood serum parameters at nutritional assessment were albumin 30.41g/dL (SD 4.94) and protein C-reactive 132.33 mg/L (SD 97.54). Thirteen pts (14.6%) had also images for body composition analysis. Sarcopenia was present in 8pts (61.5%) and 4 of them were also overweight (30.8%). Mean skeletal muscle index was 42.86 cm<sup>2</sup>/m<sup>2</sup> (SD 9.97) and total adipose tissue was 111.61 cm<sup>2</sup>/m<sup>2</sup> (SD 52.6). Mean length of hospital stay was 22 days (SD 14.51). Sarcopenia was associated with an increase in length of stay ( $p=0.031$ ). No statistical differences were found by gender, tumor localization or survival.

**Conclusion:** Malnutrition and sarcopenia are frequent in COVID-19 oncological inpatients. In our cohort, sarcopenia is associated with hospital length of stay in these patients.

**Disclosure of Interest:** None declared.

## Paediatrics

### P410

#### MACHINE LEARNING ALGORITHMS TO PREDICT WEIGHT GAIN AT DISCHARGE IN NEONATAL INTENSIVE CARE UNIT: STATE OF THE ART

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**Rationale:** Hospitalized newborns are at increased risk of malnutrition and especially preterm infants often experience extruterine growth

restriction (EUGR). It was aimed to predict the discharge weight and presence of weight gain at discharge with machine learning (ML) algorithms using the demographical and clinical parameters prospectively obtained in patients admitted to the neonatal intensive care unit (NICU).

**Methods:** In this study, the mortality, morbidity, early onset sepsis, malnutrition risk scores, demographic and clinical parameters obtained in the first 24 hours of the patients admitted to NICU data was used to develop the models with the R program (ML models) in order to predict discharge weight (elastic net model) and presence of weight gain at discharge (random forest model).

**Results:** A total of 412 patients were included in the study: 212 (51.5%) surgical NICU patients, 232 (56.3%) males and 177 (43%) preterm births. While 88 (21.4%) of the patients had smaller gestational age (SGA) during the hospitalization, 81 (19.7%) of them were found to be SGA at the discharge. Parenteral nutrition (PN) treatment was initiated in 158 (38.3%) of the patients, and the mean duration of PN treatment was 14 days. Duration of PN treatment, postnatal age, and morbidity score are the most important variables in predicting presence of weight gain at discharge ( $F_1$  Score=0.806). In addition, extremely preterm birth, very low birth weight, and extremely low birth weight are the most important variables in predicting discharge weight ( $R^2=0.718$ ).

**Conclusion:** This is the first study on prediction of the discharge weight and the presence of weight gain at discharge in newborns admitted to NICU. It has been observed that the accuracy of the predictive algorithms is quite high. It is estimated that the incidence of EUGR will significantly improve with the implementation of these models in clinical practice.

**Disclosure of Interest:** None declared.

#### P411

### GROWTH, TOLERANCE AND COMPLIANCE WITH USE OF AN EXTENSIVELY HYDROLYSED CASEIN-BASED FORMULA IN INFANTS WITH COW'S MILK PROTEIN ALLERGY

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**Rationale:** The study aimed to evaluate growth, tolerance and compliance with use of an extensively hydrolysed casein-based powder infant formula (eHF) in an intended use population of infants with cow's milk protein allergy (CMPA).<sup>1</sup>

**Methods:** A total of 226 infants (mean(SD) age: 106.5(39.5) days, 52.7% were girls) with CMPA who received eHF comprising at least half of the daily dietary intake were included in this non-randomized, single arm, multicentre clinical trial conducted at 56 paediatric gastroenterology and allergy centres across Turkey. Data on demographics, clinical history and anthropometrics were recorded at baseline (visit 1), while data on infant feeding and stool records, anthropometrics and study questionnaires (Infant Feeding and Stool Patterns and Formula Satisfaction Questionnaires) were recorded at visit 2 (on Days 15±5) and visit 3 (on Days 30±5). Outcome measures included infant growth via maintenance of weight for age (WFA) z score, gastrointestinal (GI) tolerance and compliance of eHF and the parental satisfaction.

**Results:** Mean(SD) WFA z scores improved significantly from baseline to visit 3 (-0.61(1.13) vs. -0.45(1.10),  $p<0.001$ ). More than half of infants never experienced irritability or feeding refusal (55.7%) and spit-up and/or vomiting after feeding (50.2%) during the entire study period along with presence of normal stool consistency in 54.7%. The majority of mothers were satisfied with the study formula (93.2%), reported no adverse reactions (90.2%) and wished to continue using it (92.2%).

**Conclusion:** Our findings indicate that eHF was well-accepted and tolerated by an intended use population of infants during the first 6 months of life and enabled adequate volume consumption, improved WFA z scores, favourable GI tolerance and a high level of parental satisfaction.

#### References:

1. Kansu A, Yüce A, Dalğıç B, Şekerel BE, Çullu-Çokuğraş F, Çokuğraş H. Consensus statement on diagnosis, treatment and follow-up of cow's milk protein allergy among infants and children in Turkey. *Turk J Pediatr.*2016;58(1):1-11

**Disclosure of Interest:** None declared.

#### P412

### MID-UPPER ARM CIRCUMFERENCE AS AN INDICATOR OF NUTRITIONAL STATUS IMPROVEMENT IN SEVERE ACUTE MALNUTRITION CHILDREN AGED 6-59 MONTHS

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**Rationale:** The prevalence of severe acute malnutrition (SAM) in Indonesia remains high, especially in children with pre-existing chronic disease. These children often present with conditions that could interfere with weight measurements during the rehabilitation phase, such as edema or organomegaly. Mid-upper arm circumference (MUAC) is a potential indicator of nutritional status improvement. Therefore, this study aims to investigate MUAC as an alternative parameter for nutritional improvement in children with SAM.

**Methods:** We performed registry analysis of patients admitted in the pediatric ward in Cipto Mangunkusumo Hospital, Jakarta, Indonesia between November 2016 - December 2020. The eligible subjects were severely wasted (Z score <-3) children aged 6-59 months, without conditions that could alter weight measurement and had minimum of 7-day hospital stay. The MUAC and weight increment between admission and discharge were analyzed using bivariate correlation and linear regression analysis.

**Results:** There were 4,746 inpatient episodes, including 1,996 episodes with SAM. Of these, 124 were eligible for further analysis. The median age was 12 months (IQR : 11-31 months) and median length of stay was 16 days (IQR : 9-29 days). Weight increment (g/kg/d) and MUAC increment (mm/d) were independently correlated ( $p<0.001$ , Spearman  $R=0.414$ ). Adequate weight increment of 5-10g/kg/d is equivalent to MUAC increment of 0.319-0.439 mm/d ( $p<0.001$ ,  $R=0.374$ ).

**Conclusion:** MUAC increment is positively correlated with weight increment. MUAC is a useful parameter of nutritional status improvement in SAM patients, fundamentally in patients with conditions that could interfere with weight measurement.

**Disclosure of Interest:** None declared.

#### P413

### UTILITY OF A SPECIALIZED PEPTIDE-BASED ENTERAL FORMULA CONTAINING MEDIUM-CHAIN TRIGLYCERIDES IN PROVISION OF ENTERAL TUBE FEEDING IN CHILDREN WITH CEREBRAL PALSY: DATA FROM PROSPECTIVE OBSERVATIONAL TOLERUP STUDY

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**Rationale:** The study aimed to evaluate the utility of enteral tube feeding (ETF) with specialized peptide-based formula (SPBEF) containing medium chain triglycerides (MTCs) in children with cerebral palsy (CP).

**Methods:** A total of 129 children with CP (mean±SD age: 6.3±3.4 years, 55.8% were boys) who received SPBEF containing partially hydrolysed protein plus MCTs via ETF were enrolled. Data on anthropometrics (body mass index [BMI, kg/m<sup>2</sup>], weight for age [WFA] z score, weight for height [WFH] z scores, triceps skinfold thickness [TSFT] and mid-upper arm circumference [MUAC]), gastrointestinal intolerance symptoms, defecation frequency and stool patterns, parent's assessment on infant feeding and stool patterns and formula satisfaction were recorded at baseline (n=129), 1<sup>st</sup> month (n=118), 3<sup>rd</sup> month (n=108) and 6<sup>th</sup> month (n=103) visits.

**Results:** There were significant improvements in 6<sup>th</sup> month TSFT ( $p=0.002$ ), MUAC ( $p<0.001$ ) and WFH z ( $p=0.001$ ) scores compared with baseline. SPBEF was associated with significant reduction in rate and severity of intolerance symptoms apart from residue ( $p$  ranged from 0.002 to  $p<0.001$ ) along with a significant decrease in type 1 (from 18.6% to 1.9%,  $p<0.001$ ) and a significant increase in type 4 (from 15.5% to 33.7%,  $p<0.001$ ) stool patterns. At 6<sup>th</sup> month, majority of parents were satisfied

with the enteral formula (100.0%), reported no adverse reactions (93.9%) and wished to continue using it (97.9%).

**Conclusion:** Our findings revealed favourable efficacy and safety of using a SPBEF containing MCT in provision of enteral tube feeding in children with CP in terms of improved anthropometrics, amelioration of gastrointestinal intolerance symptoms and normalization of bowel movements along with a high parental satisfaction.

**Disclosure of Interest:** None declared.

#### P414

##### NUTRITIONAL RISK SCREENING AND NUTRITIONAL INTERVENTION IN A PAEDIATRIC SERVICE

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**Rationale:** Hospital malnutrition is a worldwide problem that resulted in the development of different screening tools. *Screening Tool for Risk of Impaired Nutritional Status and Growth* (STRONGKids) is a valid method to apply in paediatric patients<sup>1</sup>. The aim of this study was to evaluate the nutritional risk of the paediatric inpatients in the Algarve University Hospital Center-Portimão unit, detecting who were target to a nutritional intervention and who were actually submitted to that intervention. The weight at admission and before discharge was used as a monitoring parameter of nutritional evolution during hospitalization.

**Methods:** Quantitative observational retrospective longitudinal study using collected data regarding to demographic, clinical and anthropometric data, STRONGKids application, hospitalization days and nutritional intervention implemented, in paediatric patients from 1<sup>st</sup> November 2019 to 30<sup>th</sup> November 2020. Included children from 1 month to 18 years old and hospitalized for more than 24 hours. Statistical analysis in SPSS, version 26, considering statistical significance for  $p < 0,05$ .

**Results:** 319 children (168 female, 151 male) hospitalized in a paediatric service, with a mean age  $6,5 \pm 6,0$  years and mean hospitalization days  $6,0 \pm 4,2$ . The majority were hospitalized because of respiratory disease ( $n=64$ ), cirurgic intervention ( $n=41$ ), renal ( $n=36$ ) and gastrointestinal disease ( $n=36$ ). STRONGKids was applied to 286 children (89,7%), being 188 children (65,7%) identified as low nutritional risk, 92 (32,2%) in medium nutritional risk, and 6 (2,1%) in high nutritional risk. It was also identified a statistically association between the increase in the level of nutritional risk and the affirmative responses given to the 1<sup>st</sup> ( $p=0,004$ ), 2<sup>nd</sup> ( $p=0,000$ ) and 4<sup>th</sup> ( $p=0,005$ ) questions of the screening tool. In the low nutritional risk group ( $n=188$ ) was implemented a nutritional intervention in 114 patients (60,6%) and in the medium and high risk population ( $n=98$ ) to 70 patients (71,4%). The weight evolution during hospitalization was obtained for 231 patients, showing in the low risk group ( $n=148$ ) that 92 patients maintained/gained weight (62,2%) and 56 patients lost weight (37,8%). In the medium risk group ( $n=77$ ), 42 patients maintained/gained weight (54,5%) and 35 lost weight (45,5%), and in the high risk group ( $n=6$ ), 1 patient lost, 1 maintained and 4 gained weight.

**Conclusion:** STRONGKids was applied to the majority of the inpatients (89,7%), showing statistical significance to the 1<sup>st</sup>, 2<sup>nd</sup> and 4<sup>th</sup> questions with an increase risk level. A nutritional intervention was applied to 71,4% of the medium and high risk paediatric patients. Weight measure showed that the medium and high risk patients mostly maintained or gained weight during hospital stay. The goal for the future is to guarantee that all patients will be screening for nutritional risk, allowing to implement a nutritional plan in the first days of hospitalization.

##### References:

1. Santos CA, Ribeiro AQ, Rosa CO, Araújo VE & Castro SC. Nutritional risk in pediatrics by StrongKids: a systematic review. *European Journal of Clinical Nutrition*. 2018

**Disclosure of Interest:** None declared.

#### P415

##### EVALUATION OF THE SCREENING TOOL FOR THE ASSESSMENT OF MALNUTRITION IN PEDIATRICS (STAMP) AMONG HOSPITALIZED CHILDREN (1 MONTH TO 18 YEARS OLD) IN A PRIVATE TERTIARY HOSPITAL IN METRO MANILA, PHILIPPINES

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**Rationale:** Early detection of malnutrition in hospitalized children is of high clinical importance, hence, the need to have a validated pediatric nutrition screening tool. STAMP<sup>1</sup> is a quick, easy to use tool, requiring minimal training to implement but needs further evaluation and validation in the Filipino population.

**Methods:** DESIGN: Cross-sectional study

SETTING: Private tertiary hospital in Metro Manila

PARTICIPANTS: 163 patients, aged 1 month to 18 years old, admitted in non-critical and non-COVID-19 units from January to March 2021 were included in the study.

INTERVENTION: Participants had routine nutrition screening done upon admission. Risks were assigned based on BMI Z scores. Eligible children then underwent a second screening using STAMP. Overall risks were determined based on STAMP scores. All children screened through STAMP had full nutritional assessment (FNA).

MAIN OUTCOME MEASURES: Malnutrition risk as identified by STAMP and confirmed by FNA. Means and standard deviation were computed for continuous variables while numbers and percentages were used for categorical variables. Diagnostic values (sensitivity, specificity, PPV, NPV, odds ratio) were computed for STAMP.

**Results:** 163 children joined the study, 53% male, 47% female, with a mean age of 7.7 years. The estimated prevalence of malnutrition is 46% ( $n=75$ ) using BMI Z scores and 92% ( $n=150$ ) using STAMP. Of the 150 found nutritionally at risk, 49 were classified as medium risk (score 2-3) while 101 were high risk of malnutrition (score  $\geq 4$ ). STAMP had a sensitivity and specificity of 97.7% and 32.3%, respectively. The PPV indicated that 86% of the children who were classified as being at risk of malnutrition were truly malnourished as confirmed by FNA.

**Conclusion:** The evaluation of STAMP presents acceptable diagnostic values for identification of malnutrition risk among children admitted in a private tertiary hospital in Metro Manila. Further studies are recommended to validate STAMP in other acute hospital settings and specific pediatric population. Future studies need to concentrate on improving nutrition screening and assessment and integrate them in routine patient care.

##### References:

1 McCarthy H., *et al.* The development and evaluation of the Screening Tool for the Assessment of Malnutrition in Pediatrics (STAMP) for use by healthcare staff. *J Hum Nutr Diet*. 2012;25(4):311-318.

**Disclosure of Interest:** None declared.

#### P416

##### PREDICTORS OF WEIGHT RESTORATION FOR NASOGASTRIC TUBE FEEDING IN THE TREATMENT OF CHILDREN AND ADOLESCENTS WITH ANOREXIA NERVOSA: AN OBSERVATIONAL STUDY

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**Rationale:** The current guidelines recommend the use of nasogastric tube feeding (NGT) in the treatment of Anorexia Nervosa (AN) in child and adolescents, though the critical treatment elements promoting weight restoration are not widely known (1). Our study aims to investigate

prognostic factors to affect weight recovery in child and adolescent hospitalized for AN, treated with NGT.

**Methods:** Retrospective study involving inpatients with AN, treated with NGT. We investigated correlations between outcomes: admission vs discharge body-mass index (BMI), length of hospital stay (LOS) and potential predictors of outcome (demographics, duration of untreated illness (DUI), severity (admission BMI), diagnoses, early vs late (0-7 vs 8+ days after admission) start of NGT, drugs. Then, models for specific contributions of predictors related with outcomes were assessed with analysis of covariance (ANCOVA).

**Results:** We enrolled 78 (F=77, mean age 14.8±2.1 years) patients. After ANCOVA, higher BMI improvement with NGT was predicted by younger age (F(1,71)=4.91, p=0.030), shorter DUI (F(7,71)=4.99, p=0.029), greater severity (F(1,71)=17.47, p<0.001) and early NGT (F(1,71)=4.71, p=0.033). LOS was predicted by greater severity (rho=-0.231, p=0.042). AN subtypes, comorbidities, different antipsychotics and antidepressants did not predict any outcome.

**Conclusion:** We found a positive correlation between BMI improvement and shorter DUI, early NGT start, younger age and greater severity at the admission, suggesting that these factors might modulate the promptness of the response to the use of NGT. Another statistically significant correlation concerns LOS and severity of disease with longer LOS in the most severe forms of AN. Our Results deserve further evaluation to better define the critical elements promoting weight restoration during NGT.

**References:**

1. Canadian practice guidelines for the treatment of children and adolescents with eating disorders. *J Eat Disord.* 2020

**Disclosure of Interest:** None declared.

**P417**

**IMPACT OF SARS COVID19 LOCKDOWN AMONG CHILDREN**

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**Rationale:** The SARS COVID 19 lock downs have seen a major impact on childhood obesity. The aim was to test the hypothesis that children, when

**Table:**

Comparison between STAMP, Strong Kids and BMI/Age classification of risk of malnutrition in hospitalized children, 2019-2020, Brazil.

STAMP	STRONG KIDS			BMI/Age		
	Low risk	Moderate risk	High risk	Malnutrition	Normal	Overweight
Low risk	174 (73.4%)	63 (26.6%)	0 (0.0%)	2 (0.8%)	201 (84.8%)	34 (14.3%)
Medium risk	60 (22.1%)	204 (75.0%)	8 (2.9%)	9(3.3%)	221 (81.3%)	42 (15.4%)
High risk	11 (6.7%)	92 (56.4%)	60 (36.8%)	38 (23.3%)	103 (63.2%)	22 (13.5%)

Chi-square Test p-value<0,01

removed from structured school activities and confined to their homes during the pandemic, will display unfavourable trends in lifestyle and eating behaviours

**Methods:** A prospective study was conducted from March 2019 to March 2021 in 42 children whose body mass index was >85<sup>th</sup> percentile. The demographic data, 24hour diet recall, food frequency, physical activity and sleep pattern were recorded. SPSS 20 was used to investigate the association between eating patterns, activity and obesity.

**Results:** Children (25 boys &17 girls) from the age group of six to seventeen years were included. Dietary assessment reveals, 61.9%children consumed excess calories,30% children consumed the actual requirement and 7.14% children were taking lesser calories than their estimated average requirement. Protein requirements were met in 54.7% children and 45.2% children consumed less protein. 69.0% children consumed excess fat than their requirement. 42.0% children self reported weight gain during the lockdown; of these, 68.4% had previous excess weight .88.8% children and 81.2% children experienced increased appetite and altered sleep pattern

respectively. 62.5% children reported a reduction in their physical activity levels due to confinement. The difference in food pattern and physical activity were found to be significant (p<0.05) with root of obesity.

**Conclusion:** Factors independently associated with weight gain during the lock downs as per our study were prior obesity, diet pattern, increased appetite, altered sleep pattern and decreased physical activity .There is a significant variations in the amount of calorie , protein and fat consumed. It is recommended that during this time , every child should have a detailed assessment and an individualized diet plan and if parents enforce a healthier lifestyle at home, obesity problems could be avoided.

**Disclosure of Interest:** None declared.

**P418**

**VALIDATION OF SCREENING TOOL FOR THE ASSESSMENT OF MALNUTRITION IN PEDIATRICS - STAMP IN A BRAZILIAN HOSPITALIZED CHILDREN POPULATION**

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**Rationale:** Guidelines recommend the use of malnutrition screening tools to identify risk of malnutrition among the hospitalized children. The aim of this study was evaluating the reliability of Screening Tool for the Assessment of Malnutrition in Pediatrics (STAMP) to determine malnutrition risk of pediatric patients.

**Methods:** Hospitalized pediatric patients (672), 5.6±4.2 years old, from Pediatric Unit at Hospital Universitário UFMA, Brazil were evaluated from April 2019 to May 2020. STAMP<sup>1</sup>, STRONGkids<sup>2</sup> and anthropometry were used to identify malnutrition risk. Kappa coefficient was measured to determine agreement between tools.

**Results:** STAMP showed a significant association between the result obtained in the screening and the anthropometric indices Height / Age (x<sup>2</sup> = 75.246; p <0.001); BMI / Age (79.620; p <0.001); Weight / Age (91.034; p <0.001) and Weight / Height (57.227; p <0.001).Significant moderate agreement was found between the risk classifications found after appli-

cation of the two nutritional risk screening tools (κ = 0.448; p <0.001).

**Conclusion:** A significant association and moderate agreement was identified between STAMP and Strong Kids screening tools and also between anthropometric indicators. The proportion of children classified as at high nutritional risk increases when STAMP is applied in relation to STRONGkids, showing greater sensitivity when comparing the two methods. STAMP prove to be an usefull instrument to evaluate malnutrition in hospitalized brazilian children.

**References:**

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**Disclosure of Interest:** None declared.



## P419

**IMPROVED CLINICAL OUTCOMES WITH AN AMINO ACID FORMULA CONTAINING SYNBIOTICS IN INFANTS WITH COW'S MILK ALLERGY**

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**Rationale:** Cow's milk allergy (CMA) is common and costly. Clinical trials of infants with CMA have shown that use of an amino acid formula containing pre- and probiotics (synbiotics) (AAF-S) may lead to significant reductions in infections, medication prescriptions and hospital admissions, compared to AAF without synbiotics [1]. These effects are yet to be confirmed in real-world settings.

**Methods:** This retrospective matched cohort study examined clinical and healthcare data from The Health Improvement Network (A Cegedim Proprietary Database) from 148 infants with CMA (54% male, mean age at diagnosis 4.69m) prescribed either AAF-S (probiotic *Bifidobacterium breve* M16-V; prebiotics including chicory-derived oligo-fructose and long chain inulin) or AAF. Outcomes including symptoms, infections, healthcare usage (medication prescriptions, healthcare contacts) and time to asymptomatic management without hypoallergenic formula (clinical course of symptoms) were measured from diagnosis (mean observation period 1.19 years for both cohorts). Statistical tests included Fisher's exact or chi squared, where appropriate, for proportional data; Poisson for rates; and Cox proportional hazards regression for clinical course of symptoms. A simple cost analysis, based on published UK healthcare unit cost tariffs and accounting for the cost of the AAF powders, compared healthcare costs between groups, using healthcare usage rates extrapolated over the respective median clinical course of symptoms for each group.

**Results:** AAF-S was associated with lower rates of symptoms (-37%,  $p < 0.001$ ), infections (-35%,  $p < 0.001$ ), medication prescriptions (-19%,  $p < 0.001$ ) and healthcare contacts (-18%,  $p = 0.15$ ) vs AAF. Infants prescribed AAF-S had a significantly higher probability of achieving asymptomatic management without hypoallergenic formula (HAF) (adjusted HR 3.70, 95% CI 1.97–6.95,  $p < 0.001$ ) with a shorter median time to asymptomatic management without HAF (1.35y vs 1.95y). AAF-S was associated with potential cost-savings of £452.18 per infant over the clinical course of symptoms. This may be attributable to the effect of the specific synbiotic on the gut microbiome. Further research is warranted to explore this.

**Conclusion:** This real-world study provides evidence consistent with clinical trials that AAF-S may produce clinical and healthcare benefits with potential economic impact.

**References:**

Sorensen, K; Cawood, AL; Gibson, GR; Cooke, LH; Stratton, RJ. Amino Acid Formula Containing Synbiotics in Infants with Cow's Milk Protein Allergy: A Systematic Review and Meta-Analysis. *Nutrients* 2021, 13 (3), 935.

**Disclosure of Interest:** K. Sorensen Other: Employed by Nutricia Ltd, A. Cawood Other: Employed part time by Nutricia Ltd, L. Cooke: None declared, D. Acosta-Mena Grant / Research Support from: D.A-M. is an honorary Associate Professor at the Institute of Health Informatics, University College London, UK, and an employee of Cegedim RX, who were funded by Nutricia Ltd to undertake the research, R. Stratton Other: Employed part time by Nutricia Ltd.

## P420

**NUTRITIONAL FOLLOW-UP IN CHILDREN AFTER DISCHARGE: ORGANIZATION IN A TERTIARY CARE CENTRE**

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**Rationale:** To further improve the standard of care for patients with a nutritional intervention and/or nutritional follow-up (FU) we aim to evaluate how nutritional FU is organized.

**Methods:** From November 16, 2020 until December 20, 2020 we retrospectively included patients admitted >1 day to the general ward of a tertiary academic children's hospital. Medical charts were reviewed for patient demographics, anthropometric measurements, Screening Tool for Risk on Nutritional status and Growth (STRONGkids) score and nutritional interventions. To investigate the organization of the nutritional FU we collected data on involved health care provider (HCP); dietician and/or speech language therapist (SLT) and/or paediatrician. The setting of nutritional care FU was categorised as primary, secondary or tertiary care setting. Discharge letters were screened for reports of nutritional care.

**Results:** We included 206 (52.4% male) patients with a median age of 4.5 [1.0 – 12.2] years and a median length of stay (LOS) of 4 [3 – 8] days. Malnutrition upon admission was reported in 34 (21.1%) of 161 patients. Pre-hospitalisation 58 (28.2%) patients had a nutritional intervention compared to 74 (35.9%) patients at discharge. At discharge 51.4% of the patients with a nutritional intervention received partial or complete enteral nutrition (tube feeding). In 80 (38.8%) patients nutritional care FU was conducted by a total of 114 HCP, 61 (53.5%) of which were dietitians. FU was mostly conducted by a dietician in the tertiary care (78.7%), by a SLT in the primary care (54.5%) and by paediatricians equally in the secondary and tertiary care (45.2% vs. 51.6%). For 15 (20.3%) patients the discharge letter included complete reports of ongoing nutritional interventions. Higher STRONGkids score, longer LOS and malnutrition at admission led to involvement of more dietitians and/or SLT during hospitalisation, higher frequency of nutritional interventions and nutritional FU.

**Conclusion:** One fifth of the patients were malnourished at admission and 28.2% of patients received a nutritional intervention pre-hospitalisation. Post-hospitalisation the rate of nutritional interventions increased to a third of the patients. FU of nutritional care of patients after discharge from the hospital was done by different HCPs and was conducted in different care settings. Only in a small number of the discharge letters the nutritional intervention was mentioned correctly.

**Disclosure of Interest:** None declared.

## P421

**CAN WE AGREE ON PEDIATRIC PARENTERAL NUTRITION? A QUALITY APPRAISAL OF THE AVAILABLE GUIDELINES**

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**Rationale:** Pediatric patients with a particular condition or underline complications, often require specialized nutritional support, sometimes in the form of intravenous administration. Hence, the use of high quality, evidence-based clinical practice guidelines (CPGs) with the application of conscientious criteria is required. The purpose of this study was to critically appraise published CPGs on management of parenteral nutrition (PN) in pediatric patients.

**Methods:** A systematic research was conducted in PubMed, Scopus and Google Scholar for the identification of relevant CPGs. Nine CPGs were finally included in our study which were evaluated by four appraisers, using the Appraisal of Guidelines for Research and Evaluation (AGREE II) tool.

**Results:** Three CPGs from DGEM, ESPGHAN/ESPEN/ESPR/CSPEN and NICE were characterized as moderate quality and recommended for use with modifications, while the remaining six CPGs from KD-PN, NDHSA, NPNCG, RCPI, SENPE/ SEGHP/SEFH were characterized as low quality and not recommended for use. The highest mean score was reached in domain 4 "clarity of presentation". Domain 3 "rigor of development" and domain 5 "applicability" received the lowest mean scores.

**Conclusion:** Our findings suggest that there is great room for improving quality of CPGs on PN management for pediatric patients. The CPG development groups should focus more on reporting adequate information on the methodological development, describing better implementation strategies and analyzing more extensively potential barriers and facilitators. Furthermore, even most of the problematic areas of CPGs were identified with the AGREE tool, more clarifications may be needed as to

which type of CPGs the AGREE instrument can be applied, as to avoid over- or underestimations of the overall CPG quality.

**Disclosure of Interest:** None declared.

#### P422

### FILIPINO MOTHERS' PERCEPTIONS REGARDING THE QUALITIES OF A STRONG HEALTHY CHILD AND NUTRITION PRACTICES TO ATTAIN THESE PERCEIVED QUALITIES

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**Rationale:** Knowledge of maternal perceptions is needed to plan effective nutrition programs. The study objectives were to characterize mothers' concepts regarding 1) a strong healthy child, 2) perceived health and nutrition practices to obtain a strong healthy child, 3) differences in these concepts based on mothers' demographic characteristics.

**Methods:** Online in-depth interviews were conducted among 26 mothers with children aged 5 to 11 y living in and outside the island of Luzon. Open-ended questions were asked consecutively: What is your definition/perception of 1) a good parent, 2) a strong healthy child, 3) health and nutrition practices for a strong healthy child? Thematic analysis was used to identify common perceptions. Common perceptions were grouped into concepts or themes. Predominant concepts were identified when more than 50% of mothers mentioned these concepts.

**Results:** Mothers' concept of a strong healthy child is one who possesses the following characteristics, in decreasing importance: 1) is physically active and not easily sick; 2) exhibits good physical growth; 3) is mentally stable with a well-balanced personality. All mothers believed that good parenting means taking good physical care of one's children. To achieve a strong healthy child, all mothers (100%) believed that giving them daily vitamin and mineral supplements is most important, followed by a healthy diet (73%). Mothers also believed that feeding processed snacks (e.g., sweet biscuits, potato chips, fruit drinks) help develop a strong healthy child.

**Conclusion:** Interventions are needed to correct erroneous perceptions among Filipino mothers regarding proper nutrition practices to achieve good child health. This is particularly important during a pandemic and will help to ensure the success of other programs aimed at improving the nutritional status of children.

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#### P423

### REFEEDING SYNDROME IN CHILDREN 0 – 59 MONTHS DIAGNOSED WITH SEVERE ACUTE MALNUTRITION IN A SOUTH AFRICAN SETTING

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**Rationale:** Refeeding syndrome (RFS) is life-threatening, but an under-researched complication in the treatment of severe acute malnutrition (SAM). This study aimed to determine the incidence and onset of RFS, characterised by hypophosphataemia, and identify biochemical abnormalities, clinical signs and complications that may be associated with the development of refeeding syndrome in children aged 0 – 59 months diagnosed with SAM in a South African public hospital setting.

**Methods:** A retrospective analytical study was performed on retrievable hospital files of children, 0–59 months, diagnosed with severe acute malnutrition at Rahima Moosa Mother and Child Hospital, Johannesburg from 1/10/2014 to 31/12/2018. Biochemistry and clinical signs and symptoms were compared between patients who developed RFS and those who did not.

**Results:** The incidence of RFS among participants (63% male; median age: 34 months (IQR: 22.4) with SAM was 8.7%, with a mortality rate of 18.2%. Participants who developed RFS stayed in hospital significantly longer (18 vs 12 days) ( $p=0.003$ ) and, on admission, a significantly higher percentage of participants with RFS presented with hypophosphataemia ( $p=0.04$ ), moderate to severe hypokalaemia ( $p=0.0005$ ), hyponatraemia ( $p=0.004$ ),

international normalised ratio  $>1.7$  ( $p=0.049$ ), dehydration ( $p=0.03$ ), and urinary tract infection ( $p=0.04$ ) than those who did not have RFS. Oedema was more prevalent on admission in the RFS-group (63.6% vs 39.1%), though not statistically significant. Overall, 20% ( $n=23$ ) had human immunodeficiency virus, but none of these patients developed RFS.

**Conclusion:** This study identified low levels of electrolytes, elevated international normalised ratio, and the presence of dehydration and urinary tract infection on admission as significantly associated with developing RFS despite the implementation of World Health Organisation (WHO) treatment guidelines in a South African setting.

**Disclosure of Interest:** None declared.

#### P424

### AGE DIFFERENCE AND CONSUMPTION OF SUGAR ADDED BEVERAGES IN DALMATIAN PRESCHOOL CHILDREN

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**Rationale:** Starting from preschool age, the rates of childhood obesity are constantly increasing. One of the main contributors to obesity among paediatric population is higher consumption of commercially available fruit juices and soft drinks. The aim of our study was to question age difference and consumption of sugar added beverages in Dalmatian preschool children.

**Methods:** 598 preschool children, comprising 310 (51.8 %) boys and 288 (48.2 %) girls aged 3 to 7 years old were included. Dietary habits were assessed by food frequency questionnaire completed by dietitian and parents. Also, data about age, gender, body weight, height, waist and upper arm circumference were collected for each child and Z-score was calculated.

**Results:** Statistically significant positive correlation between consumption of soft drinks ( $p<0.001$ ), ice tea ( $p<0.001$ ) and instant vitamin drink ( $p<0.001$ ) with age was found. Also, children with higher intake of a mentioned drinks had higher upper arm circumference ( $R=0.113$ ,  $p<0.01$ ;  $R=0.090$ ,  $p<0.03$ ;  $R=0.084$ ,  $p<0.04$ ) respectively. There were no significant correlations between waist circumference and consumption of sugar added beverages.

**Conclusion:** Those children who often consumed soft drinks, ice tea and instant vitamin drink have higher upper arm circumference, which is closely related to obesity. In addition, higher consumption of these drinks was noticed in children aged 6-7 years in comparison to younger children.

**Disclosure of Interest:** None declared.

#### P425

### INTERVENTIONS FOR POOR NUTRITIONAL STATUS IN PAEDIATRIC CP: RESULTS FROM A DELPHI PANEL

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**Rationale:** A recent literature review shows an association between paediatric cerebral palsy (CP), undernutrition and adverse clinical and economic outcomes. Commercial formulas (CF), Blended Tube Feed (BTF) and Real Food Commercial Formula (RFCF) are available options, although evidence regarding formula selection is scarce. The aim of this study was to supplement the weak literature basis of this topic with expert insight through a Delphi panel.

**Methods:** Eleven experts in paediatric nutrition participated in a 3-round modified Delphi panel, with an additional final discussion conducted in Jan 2021. 16 Statements were elicited from a literature review, spanning aspects of screening, diagnostic, treatment indication, and outcome measurement, which were then evaluated by the expert panel.

**Results:** 8 statements' wording was modified, 2 were eliminated (no consensus and inappropriate concepts). The final consensus was high in all but one (medium-high).

Experts agreed that nutritional evaluation should be conducted by trained medical personnel in all paediatric CP patients. Dysphagia should be evaluated before indicating any specific treatment. Treatment and nutritional intervention should be personalized based on clinical treatment guidelines, to achieve optimal/adequate nutritional status. Nutritional adequacy, safety and patient characteristics are the primary characteristics to consider when choosing a treatment plan to correct nutritional deficiency. Caretakers show interest in BTF solutions, though they may not fully understand whether their nutritional characteristics are appropriate for their child. RFCF is a potential valid alternative/ supplementation to conventional commercial formula or BTF, combining the positive effects of both CF and BTF.

**Conclusion:** This Delphi panel is an effort towards building a more robust evidence-base regarding the selection of optimal nutritional treatment for paediatric patients with CP. However, it also highlights that there is a need for more scientific, systematic, and comparative investigation and studies of pediatric nutritional interventions.

**Disclosure of Interest:** None declared.

#### P426

### NUTRITIONAL ADEQUACY INDICES OF CRITICALLY ILL PEDIATRIC PATIENTS DURING POST-OPERATION PERIOD

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**Rationale:** Optimum nutrition support in critically ill pediatric patients during post-operation period is of particular importance due to the growth and development during this era. Monitoring the efficacy of nutrition support services is necessary to improve the nutritional adequacy of such patients and subsequently clinical outcomes. This cross-sectional study was performed to evaluate the nutritional adequacy indices of critically ill children in post-operative state.

**Methods:** This study was carried out at the Pediatric Intensive Care Unit (PICU) of Akbar children hospital, Mashhad, Iran during February 2019. Nutritional adequacy indices of 34 surgical critically ill children with PICU length of stay >24 hours were studied.

**Results:** The Median time from PICU admission to initiate the nutrition support was 19 hours. The mean values of prescribed goals for energy and protein intake were 74 Kcal/kg/d and 1.9 gr/kg/d, respectively. The mean delivered energy and protein were 54 Kcal/kg/d and 1.8 gr/kg/d, respectively. Furthermore, 29 and 32 patients (85.3% and 94.1 %) achieved to the prescribed goal for energy and protein up to the last day of PICU stay, respectively. Finally, the mean time of the goals achievements in energy and protein deliveries were 3 days, similarly.

Nutrition delivery indices in the studied critically ill pediatric patients

Variables	value
Hours from PICU admission to initiate nutrition support; Median (IQR)	19 (12)
Prescribed goals for daily energy intake; (Kcal/Kg/d); Mean (SD)	74 (15)
Delivered daily energy intake (EN/ PN/ EN+PN); (Kcal/Kg/d); Mean (SD)	54 (12)
Prescribed goals for daily protein intake; (gr/Kg/d); Mean (SD)	1.9 (0.4)
Delivered daily protein intake (EN/ PN/ EN+PN); (gr/Kg/d); Mean (SD)	1.8 (0.3)
Energy goal reached during PICU stay; n (%)	29 (85.3)
Protein goal reached during PICU stay; n (%)	32 (94.1)
Time to reach energy intake goal, in days; Median (IQR)	3 (3)
Time to reach protein intake goal, in days; Median (IQR)	3 (2)

**Conclusion:** The recorded data of this study showed prolonged time to nutritional goals achievements in our PICU. Further immediate decisions are needed to modify our customized nutrition support protocol to improve clinical outcomes in surgical PICU patients.

**Disclosure of Interest:** None declared.

#### P427

### CORRELATION BETWEEN CONSUMPTION OF WHOLE GRAINS AND ANTHROPOMETRIC PARAMETERS IN PRESCHOOL CHILDREN IN DALMATIA COUNTY

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**Rationale:** In comparison to its refined forms, whole grain food is considered to be richer in levels of fibre, vitamins E and B, as well as minerals (Fe, P, Mg and Zn) and phytochemicals. The consumption of whole grain food is associated with reduced risk of type 2 diabetes, CVD and lower body weight. The aim of our study was to investigate possible correlation between consumption of whole grains in preschool children in Dalmatia County and their anthropometric parameters.

**Methods:** 598 preschool children, comprising 310 (51.8 %) boys and 288 (48.2 %) girls aged 3 to 7 years were included in the study. Dietary habits were assessed by food frequency questionnaire completed by dietitian and parents. Also, data about age, gender, body weight, height, waist and upper arm circumference were collected for each child and Z-score was calculated.

**Results:** Significantly negative correlation between waist circumference and frequency of pasta (R=-0.118; p<0.001), rice (R=-0.141; p<0.001) and barley (R=-0.089; p<0.03) consumption was found. Similarly significant negative correlation between upper arm circumference and oat (R=-0.088; p<0.03), whole wheat bread (R=-0.091; p<0.03), rye bread (R=-0.127; p<0.001), rice (R=-0.148; p<0.001) and corn (R=-0.107; p=0.01) intake was found. Therefore significantly positive correlation between consumption of chocolate cereals (R=0.083; p<0.04) and waist circumference was found in this population.

**Conclusion:** The Results of this study showed significant correlation between special types of food and nutritional status in preschool children in Dalmatia County.

**Disclosure of Interest:** None declared.

#### P428

### EFFECT OF NUTRITIONAL FACTORS ON DENTAL CARIES AMONG PRESCHOOL CHILDREN IN NGH, RIYADH

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**Rationale:** Dental caries is a multi-factorial disease which leads to the breakdown of the tooth enamel through an acid produced during bacterial fermentation of food dissolves tooth structure resulting in demineralization of teeth. Diet has an influence on the caries process. Therefore, it is important to understand different dietary choices between individuals and their impact on the development of dental caries. Aim of study to assess the nutritional factors leading to the formation of dental caries among preschool children in NGH, Riyadh, KSA.

**Methods:** In this cross sectional study, sixty, preschool children aged three to five-years who comes to KADC for oral health check-ups or children attending the day care centres under NGH were selected at random for the study. Demographic data and frequency of food consumption were collected by using a questionnaire, Body Mass Index (BMI) was used to assess the nutritional status of the subjects.

**Decay-missing-filled (DMF) index** by WHO was employed to assess the oral health.

The collected data was analyzed using SPSS version 22.

**Results:** According to Age wise distribution of the study subjects were found the majority (61.67%) of the participants of the study were of 5 years of age followed by 4 year old (31.67%).

It was found that 78.3% of the subjects had dental caries. Table 1 details the effect of dental hygiene practices on DMF scores.

**Table 1.**  
Effect of Dental Hygiene practices on DMF Scores

Sl. No.	Variable	Test statistic	Level of significance P value
1.	Thumb sucking and DMF Scores	Fisher's Exact Test	0.568
2.	Brushing teeth	Fisher's Exact Test	0.96
3.	Tooth floss	Fisher's Exact Test	0.96
4.	Nutritional supplements	Fisher's Exact Test	0.744
5.	The periodicity of dental checkups.	Fisher's Exact Test	0.054

**Table 2.**  
Influence of nutritional status on the incidence of dental caries

Sl. No.	Nutritional status as indicated by Body Mass Index	Number of respondents	With dental caries	Without dental caries
1.	Underweight	12 <sub>(20)</sub>	9 <sub>(75)</sub>	3 <sub>(25)</sub>
2.	Normal	46 <sub>(76.6)</sub>	37 <sub>(80.43)</sub>	9 <sub>(19.56)</sub>
3.	Obese	2 <sub>(3.33)</sub>	1 <sub>(50)</sub>	1 <sub>(50)</sub>
4.	Total	60 <sub>(100)</sub>	47 <sub>(78.3)</sub>	13 <sub>(21.67)</sub>

It was observed that the periodicity of dental checkups significantly influenced the DMF Score ( $\chi^2 = 0.054$ ).

Table 2 indicates that pre school children are prone to have dental caries irrespective of the BMI based nutritional status. The prevalence rates ranged from 50% among those with obesity and 80.43% for those with normal BMI.

**Conclusion:** Based on the Results it was recommended to provide periodic dental check ups to pre school children. Since the incidence of dental caries is not dependent on the nutritional status further studies are recommended to find the influence of feeding practices on the development of dental caries.

#### References:

World Health Organization, Oral Health Surveys - Basic Methods. Ed. 5. WHO; 2018 : pp 1-125

**Disclosure of Interest:** None declared.

#### P429

#### ADHERENCE TO THE MEDITERRANEAN DIET AMONG PRESCHOOL CHILDREN IN DALMATIA COUNTY

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**Rationale:** Consumption of food is affected by factors such as food availability, accessibility and choices. Furthermore, these factors may be influenced by geography, demography, socioeconomic status, urbanization, globalization, marketing and consumers. Higher adherence to the Mediterranean-like dietary pattern is associated with reductions in the risk of developing metabolic syndrome and major chronic morbidities, while low adherence to the Mediterranean-like dietary pattern was associated with being overweight and obese. The aim of our study was to question adherence to the Mediterranean diet of preschool children in Dalmatia.

**Methods:** 598 preschool children, comprising 310 (51.8%) boys and 288 (48.2%) girls aged 3 to 7 years were included. Dietary habits were assessed by food frequency questionnaire and KIDMED index completed by dietitian and parents. Also, data about age, gender, body weight, height, waist and upper arm circumference were collected for each child and Z-score was calculated.

**Results:** From the study population 84 (14%) children showed good adherence to the principles of Mediterranean diet according to the KIDMED index, 219 (37%) and 295 (49%) children showed average and poor

adherence to them respectively. Statistically significant correlations between dairy ( $p < 0.03$ ) and fish ( $p < 0.04$ ) consumption with Z-score were found. There were no age, gender and nutritional status differences among the study population in relation to the KIDMED index. From the study population 112 (18.7%) children were either overweight or obese while 58 (9.7%) children were underweight.

**Conclusion:** The Results showed that a small percentage of preschool children adheres to the Mediterranean diet. Possibly, this is the reason that there is a considerable number of overweight and obese children among our study population.

**Disclosure of Interest:** None declared.

#### P430

#### ENERGY EXPENDITURE PREDICTION EQUATIONS IN PAEDIATRIC POPULATION: A SYSTEMATIC REVIEW

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**Rationale:** The determination of energy requirements is of vital importance in the pediatric population, currently various equations have been designed and modified for their prediction. In this study, the equations, their components and metric characteristics that have been designed for the prediction of energy expenditure at baseline and at rest in healthy and sick pediatric patients were identified.

**Methods:** A systematic review (PROSPERO-CRD42021226270) of observational studies published in English was carried out that reported the design of a predictive equation to estimate basal and resting energy expenditure in healthy and sick pediatric populations in the published MEDLINE/PubMed, EMBASE and LILACS databases until January 2021. Data extraction, study evaluation and Results synthesis were performed according to PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis). Risk of bias was evaluated with the Study Quality Assessment Tools NHLBI, NIH.

**Results:** Of a total of 769 studies identified in the search, 39 of them met the inclusion criteria and were analyzed. Eight of them establish predictive equations for the healthy population, seventeen for the overweight and obese population, and fourteen for the pediatric population in specific clinical situations. In the healthy pediatric population, the FAO/WHO and Schofield equations presented the highest coefficient of determination ( $R^2$ ) values, while in the obese population, the Molnár et al equation is recommended for its simplicity and good correlation. Most of the equations using the body weight, height, age and gender as variables. These are considered to be easy to obtain in a doctor's office or any hospital this can be obtained without any expensive instruments. As for body composition, fat free mass and fat mass variable are used, however, these measurements were performed by skinfolds, bioelectrical impedance analysis or DEXA, the latter are not very accessible and may require trained personnel.

**Conclusion:** A great variety of predictive equations of energy expenditure in pediatric population have been published, which are very heterogeneous. This review is a compendium of most of them to be able to make a critical evaluation for their choice in clinical practice.

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#### P431

#### PAEDIATRIC CEREBRAL PALSY AND UNDERNUTRITION: COMPROMISES ARE NEEDED

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**Rationale:** Paediatric cerebral palsy (CP) is associated with feeding difficulties regarding the safety and efficacy of oral nutrition, resulting in deficient nutritional intake and subsequent undernutrition/ poor nutritional status. This may inhibit a child's growth, leading to adverse clinical outcomes and increased costs. The aim of this review was to establish a basis of literature unveiling the links between nutrition, paediatric CP, and adverse outcomes, how these can be modified through nutritional intervention and which intervention options may be optimal.

**Methods:** A systematic literature review was performed and complemented with targeted searches. Quality was assessed according to GRADE guidelines.

**Results:** The review retrieved 400 publications which were filtered to 47 relevant clinical publications, plus 7 economic articles (from 260 targets). An update in April 2021 added 9 publications. Evidence quality was low; no relevant experimental nor randomised studies, neither regarding outcomes of undernutrition specifically in paediatric CP nor its resolution through nutritional intervention, were identified that could be included in this review.

Undernutrition is documented in 29%–58% of paediatric CP patients, due to food processing and swallowing problems. Feeding dysfunction is strongly associated with poor health and nutritional status indicators. Disease-related undernutrition is linked to poor health outcomes (morbidity, mortality, and complication rates), and increased resource use (length of hospital stay).

Options for enteral tube nutrition are commercial formula (CF) and blenderized homemade food tube feed (BTF), and newly available real food commercial formula (RFCF). CF contains more energy and nutrients, and more effectively meets the nutritional requirements of enterally fed patients, which BTFs often do not. BTFs have higher viscosity and are more prone to contamination. However, BTF may better satisfy families' psychological needs. RFCF might offer a compromise, ensuring adequate nutrition.

**Conclusion:** Scarce evidence shows undernutrition is frequent in CP. Adequate nutrition should be ensured through personalising the solutions (including CF, BTF and RFCF). Moreover, a stronger evidence base should be built regarding how and with which interventions to optimally treat children suffering from CP to improve their health outcomes.

**Disclosure of Interest:** None declared.

#### P432

### FOOD HABITS, MENSTRUAL IRREGULARITIES AND BODY COMPOSITION OF ARTISTIC ROLLER SKATERS

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**Rationale:** Artistic roller skating is an aesthetic sport, which training regime and appropriate food intake are crucial for athletes' health, body composition and sport performance. This study aimed to determine the nutritional status and food habits of Portuguese young artistic roller skaters.

**Methods:** Fifty-two female artistic roller skaters with ages between 8 and 18 years old were evaluated during the competitive season. A questionnaire was applied to collect the following data: socio-demographic, training, body composition (by anthropometry - tricipital, bicipital, subscapular, and supra-iliac skinfolds, and bioelectrical impedance) and food habits (by a semi-quantitative food frequency questionnaire) (Silva & Silva, 2015). The EAT-26 test was also applied before training sessions. Informed written consent was obtained from all participants. Descriptive linear regression analysis and Pearson correlation coefficients were performed using SPSS version 25.0. The significance level was 5%.

**Results:** Athletes trained an average of 4 times per week; children trained more hours per week (13.0±0.3hours/week) than adolescent skaters (11.5±0.8hours/week). Most athletes were classified as norm ponderal for their body mass index (between 50th and 85th percentiles), but 29.7% demonstrated low body fat (less than 12%) and 38.9% of the oldest athletes presented menstrual irregularities. The youngest skaters ate more meals a day (5±0.4 meals), more fruits (66.4%) and vegetables (54.1%) and less high-caloric foods (cakes, cookies, pizzas, and hamburgers; 36.8%) than the oldest ones (3.1±1.3, 33.6%, 45.9% and 63.2%, respectively). In addition, children reported more concerning attitudes to food (72.4±5.1 points) than the oldest athletes (71.8±3.6 points).

**Conclusion:** Artistic roller skaters would benefit from nutritional supervision and monitoring in order to enhance health, promote healthy food habits, prevent sports injuries and improve athletic performance.

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Silva M-RG, Silva H-H. Comparison of body composition and nutrients' deficiencies between Portuguese rink-hockey players. *Eur J Pediatr* 2017;176(1):41–50. <https://doi.org/10.1007/s00431-016-2803-x>.

**Disclosure of Interest:** None declared.

#### P433

### GLUCOSE ABNORMALITIES IN CHILDREN WITH CYSTIC FIBROSIS

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**Rationale: Rationales.** Abnormalities of glucose metabolism are an important co-morbidity of cystic fibrosis (CF), leading to cystic fibrosis-related diabetes (CFRD). The relationship between glucose abnormalities and adverse outcomes in CF is complex. Oral Glucose Tolerance Testing (OGTT) is the test recommended for diagnosing CFRD and insulin remains the mainstay treatment. The objective was to present 2 cases with CF and glucose abnormalities.

**Methods:** The authors present two cases diagnosed with CF and glucose abnormalities.

**Results:** Case 1. Boy, 11 years 3 months old, height = 125 cm (-2.98 SD), weight = 22 kg (-2.15 SD), body mass index (BMI) = 14.10 kg/m<sup>2</sup> (2<sup>nd</sup> percentile), with chronic cough and numerous episodes of previous respiratory infections, diagnosed with cystic fibrosis (CF), in chronic treatment with digestive enzymes, has blood glucose values between 117–189 mg/dl, OGTT being normal. In evolution, he presented chronic infection with *S.aureus* and *S. maltophilia*, FEV1 decreased (56–71%), growth failure: at 17 years and 7 months - height = 150 cm, weight = 33 kg, BMI = 14.66 kg/m<sup>2</sup> (below the 1st percentile), glycemia = 273 mg/dl, OGTT: fasting blood glucose = 146 mg/dl, glycemia at 2 hours = 294 mg/dl, glycated hemoglobin (HbA1c) between 7.01–7.53%. He was diagnosed with CFRD, insulin treatment is recommended, which the patient refuses. He died at the age of 18 years and 7 months.

Case 2. Boy, 14 years and 10 months old, height = 164 cm (+1 SD), weight = 51 kg (+1.1 SD), BMI = 19.40 kg/m<sup>2</sup> (percentile 43), diagnosed with cystic fibrosis (CF) at 7 years of age, complicated with CF-liver disease, in chronic treatment with digestive enzymes, alpha-dornase,

ursodeoxycholic acid, presented normal values of blood glucose until the last admission in March 2021. At this admission: HbA1c = 6.7% and OGGT revealed: fasting blood glucose = 125 mg/dl, glycemia at 2 hours = 62 mg/dl, diagnosis established being impaired fasting glucose. We recommended a diet with a carbohydrate intake lower than the intake recommended for the CF patients without glucose abnormalities and the patient will be followed.

**Conclusion:** Nutritional status is of great importance in CF patients and optimising nutritional status is therefore an important goal. CFRD is usually preceded by a spectrum of abnormal glucose tolerance on OGTT, including impaired fasting glucose (IFG), indeterminate glucose tolerance (INDET), and impaired glucose tolerance (IGT). HbA1c should not be used to screen for CF-related glucose abnormalities.

Given the potential impact of CFRD on morbidity and mortality, a reliable biochemical screening test for CFRD is vital. Worsening lung function is clearly associated with glucose abnormalities, and a decline in pulmonary function appears to be related to the severity of glucose intolerance and insulin deficiency. The main goal in CFRD is prevention and improvement of declining respiratory function and nutritional status.

**Disclosure of Interest:** None declared.

#### P434

### 11TH PAEDIATRIC NUTRITION WEEK (2020) – ASSESSMENT OF PATIENT/PARENT SELF-MANAGEMENT WITH RECORDED WEIGHT AT 1-MONTH POST-DISCHARGE

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**Rationale:** Malnutrition in children is more frequent in hospitalisation, due to acute disease or decompensation of chronic disease. Little is known about the appropriation of patient/parent of the nutritional status and the recovery of malnutrition after discharge. We aimed to assess patient/parent self-management and associated factors using recorded weight at 1-month post-discharge.

**Methods:** This observational study included children (0 to 17 years) hospitalised in France from 28/9 to 2/10/2020 in the participating centres, excluding neonatology and intensive care units. Nutritional status was assessed at admission and at discharge. The weight and height of the last known point of the health book were recorded. Data was recorded in the ePINUT internet tool ([www.epinut.fr](http://www.epinut.fr)). The instruction to record the weight at 1-month post-discharge and the user manual of the internet tool was given to the patient/parents. Children with recorded weight at 1-month post-discharge were compared to children and without this data using ANOVA, Chi2 or Fisher exact test. Paired tests were used for comparison of nutritional status over time.

**Results:** This study included 545 children in 34 centres in France. Seventy-six patients/parent (14%) recorded the post-discharge weight. The frequency of a Weight-for-Height Z-score (Z-WFH) < -2SD at admission and at discharge was higher in patients with post-discharge recorded weight compared to patient without this data, respectively 11.8% vs. 5.1%,  $p=0.02$ , and 12.3% vs. 4.6%,  $p=0.02$  ( $n=57$ ). Post-discharge recorded weight was less frequent in children with chronic disease than without chronic disease (44.6% vs. 57.4%,  $p=0.04$ ). Mean age was not different in patients with post-discharge recorded weight compared to patient without this data ( $6.4\pm 6.0$  y vs.  $7.5\pm 5.9$  y, NS), as mean length of stay ( $5.0\pm 6.9$  vs.  $7.5\pm 10.9$ ,  $p=0.11$ ), weight loss  $\geq 5\%$  (3% vs. 2%, NS), and the presence of a nutritional support (29% vs. 35%, NS). Z-WFH was not different before hospitalisation and at 1-month post-discharge (respectively  $0.6\pm 1.9$  vs.  $1.0\pm 2.0$ , NS,  $n=32$ ), and Z-WFH was higher at 1-month post-discharge than at discharge (respectively  $0.6\pm 1.9$  vs.  $0.2\pm 1.9$ ,  $p=0.0055$ ,  $n=57$ ).

**Conclusion:** Our study suggests that nutritional status may not be an issue for patient/parent after discharge (only 1/7). However, a Z-WFH < -2 during hospitalisation increased the occurrence of post-discharge recorded

weight. Children with chronic diseases may have scheduled follow-up, which could explain the less frequent post-discharge recorded data. Nutritional status was not different before and after hospitalisation, while lower during the hospital stay, suggesting a correct post-discharge recovery. Worrying about nutritional status is still an aim, even for most patient/parents.

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#### P435

### NUTRITIONAL STATUS OF CHILDREN WITH UNDERNUTRITION WITHOUT CHRONIC DISEASES

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**Rationale:** Deficiency of nutrients during active growth of children negatively affects the body and the health development.

**Methods:** Eighty one children without chronic diseases and with undernutrition aged 3 months to 17.2 years, 41 boys (50.5%), were examined. The anthropometry was assessed by WHO criteria. Bioelectric impedance analysis ( $n=58$ ) and indirect respiratory calorimetry ( $n=28$ ) were performed. The food intake was assessed in 28 patients.

**Results:** Mild undernutrition was diagnosed in 36 (44.5%) children, moderate – in 30 (37%), severe – in 15 (18.5%) children. The stunting was revealed in 3 (3.7%) children. Decrease of fat mass was found in 53 (91.4%) patients, muscle mass – in 41 (70.7%), active cell mass – in 18 (31%), protein – in 37 (63.8%), minerals – in 39 (67.2%), total body water – in 35 (60.3%) patients. Decrease of the phase angle (<4.4) was recorded in 13 (22.4%) children. Resting energy expenditure was normal in 12 (42.8%) patients. Carbohydrate oxidation rate was decreased in 20 (71.4%) children, fat oxidation rate was increased in 15 (53.6%), protein oxidation rate was normal in 15 (53.6%) children. The food intake was characterized by low energy intake in 21 (75%) children. Deficiency of protein, fat and carbohydrate intake were found in 42.9, 60.7 and 82.1% patients, respectively. Low energy intake due to all macronutrients deficiency was revealed in 35.7% children.

**Conclusion:** Most children with undernutrition without chronic diseases have a decrease in fat and muscle body components, low energy value of diet and imbalance of macronutrients. Changes in resting metabolism were also revealed.

**Disclosure of Interest:** None declared.

#### P438

### ANALYSIS OF CASES OF GASTROSTOMIA IN CHILDREN AT DIFFERENT AGE PERIODS

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**Rationale:** Children with dysphagia have poor or selective appetite and, as a result, progressive malnutrition. In case of progression of symptoms of dysphagia, the question arises of staging a gastrostomy.

**Methods:** An analysis of the database of gastrostomy delivery to children from the compulsory health insurance system for 5 years has been carried

out. The main diagnoses leading to gastrostomy were deciphered. The analysis of surgical methods of gastrostomy, depending on the nosology and age of the patient. According to the method of operative access when setting a gastrostomy, there are: percutaneous endoscopic gastrostomy (PEG), laparotomy (the most traditional in pediatric surgery is gastrostomy according to Shtammy-Sennu-Kader) and laparoscopic techniques.

**Results:** Of the 272 cases of gastrostomy placement, 82 (30.1%; 95% CI: 24.2–37.4%) were through cutaneous endoscopic gastrostomy (PEG) and 190 (69.9%; 95% CI: 60.3–80, 5%) of cases – for traditional gastrostomy. 161 gastrostomy tubes were installed in boys (59.2%; 95% CI: 50.4–69.1%), 111 – in girls (40.8%; 95% CI: 33.6–49.1%) The main diagnoses leading to gastrostomy have been deciphered. Analysis of surgical methods of gastrostomy depending on the nosology and age of the patient. The vast majority of gastrostomies are performed in the first year of life. Mortality in relative numbers in the group of children of the first year of life is lower than in older children. Perhaps the reason for this is the strictly regulated way of feeding children in the first year of life – age-adapted formulas and a greater rehabilitation potential. In the structure of diseases of patients of all ages requiring an ostomy, neurological diseases occupy the first place. In second place are malformations, and in the first year of life this is the main reason for the setting of a gastrostomy. In early childhood, the following (after neurological) reasons for staging a gastrostomy are diseases of the esophagus: foreign bodies and burns. Differences in the ratio of the incidence of PEG and laparotomic gastrostomy in children, depending on age, were revealed. In children of the first year of life, the ratio of PEG to traditional gastrostomy is 1: 3.2, in children 1–3 years old – 1: 1.9, in children 4–7 years old – 1: 1.3, in children 8–11 years old. years – 1: 1, for adolescents 12–17 years old – 1: 3. With increasing age of children, the frequency of PEG increases in comparison with laparotomy gastrostomy. The gold standard for gastrostomy is the minimally invasive method of percutaneous endoscopic gastrostomy (PEG). This technique, in comparison with traditional gastrostomy, is less traumatic, invasive, fewer complications, incl. life threatening

**Conclusion:** In the structure of patients requiring ostomy, the first place is occupied by neurological diseases (from 40 to 80% in different age periods). In second place are developmental defects, and, in the first year of life, this is the main reason for the setting of a gastrostomy. Pathology of the esophagus constitutes a significant group of children requiring gastrostomy, moreover, by the laparotomy method. One third of all cases of gastrostomy staging in infancy and among children of early childhood due to foreign bodies of the esophagus or its burn. The overwhelming majority of gastrostomy (139 people, 51.1%) is performed in the first year of life. Mortality in relative numbers in this group of children is lower than in older children. Perhaps the reason for this fact is a strictly regulated way of feeding children in the first year of life – age-adapted formulas, and a greater rehabilitation potential.

**Disclosure of Interest:** None declared.

#### P440

##### APPLICATION OF THE GERMAN FOOD BASED DIETARY GUIDELINES FOR INFANTS, CHILDREN AND ADOLESCENTS TO ESTIMATE THE CONSEQUENCES OF VEGETARIAN AND VEGAN DIETARY RESTRICTIONS ON VITAMIN B12 INTAKE

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**Rationale:** Vitamin B12 is of increasing interest in pediatrics, not only via known restrictive diets for metabolic diseases, but also via self-chosen restrictive diets in families with healthy children. The aim of this study was to use the German Food-Based Dietary Guidelines (FDGB), namely the "Dietary Scheme" for the first year of life and the "Optimised Mixed Diet"

(OMD) for children and adolescents, to calculate the potential intake of vitamin B12 in the context of a recommended daily diet. Based on these intake data, the influence of vegetarian dietary restrictions on B12 intake should be estimated.

**Methods:** Different scenarios of potential B12 intake were calculated for exclusive milk-feeding (2 months) and for mixed recommended diets based on detailed 7-day menus in the second half of infancy (8 months), childhood (4–6 years) and adolescence (11–14 years) and compared with EFSA's nutrient references. For each of the exemplary age groups, the contribution of the different vitamin B12-containing animal food groups to the total intake of vitamin B12 was calculated.

**Results:** In all scenarios, B12 intake under the recommended mixed diet reached the reference values quite closely; this was also true for exclusive breastfeeding, while under infant formula the reference values were amply met. For breastfed infants of vegan mothers, sufficient B12 content in breast milk depends on maternal supplementation during pregnancy and breastfeeding. In mixed complementary feeding of infants (8 months), whole cow's milk (the use of which is limited to one complementary feeding per day) provides 57.3% to the daily B12 intake. Among OMD (children and adolescents), cow's milk (products) contribute 58.5 % of total B12 intake, meat 16.9 %, fish 16.5 % and eggs 8.1 %.

**Conclusion:** With nutrition according to the German FBGD's, the supply of vitamin B12 is sufficient during the entire growth phase. Cow's milk (products) form the most important food group of the recommended mixed diets. In vegetarian diets, the step from a lacto-vegetarian to a strictly vegan diet requires a great deal of effort to replenish B12-stores. The German FDGB's are a suitable framework to estimate the potential intake of critical nutrients throughout the growth period under different food exclusion scenarios, whether medically necessary or freely chosen.

**Disclosure of Interest:** None declared.

## Nutritional techniques and formulations

### P441

#### ONGOING PH TESTING OF NASOGASTRIC TUBES: A REVIEW OF HOSPITAL INCIDENT REPORTS IN ADULTS.

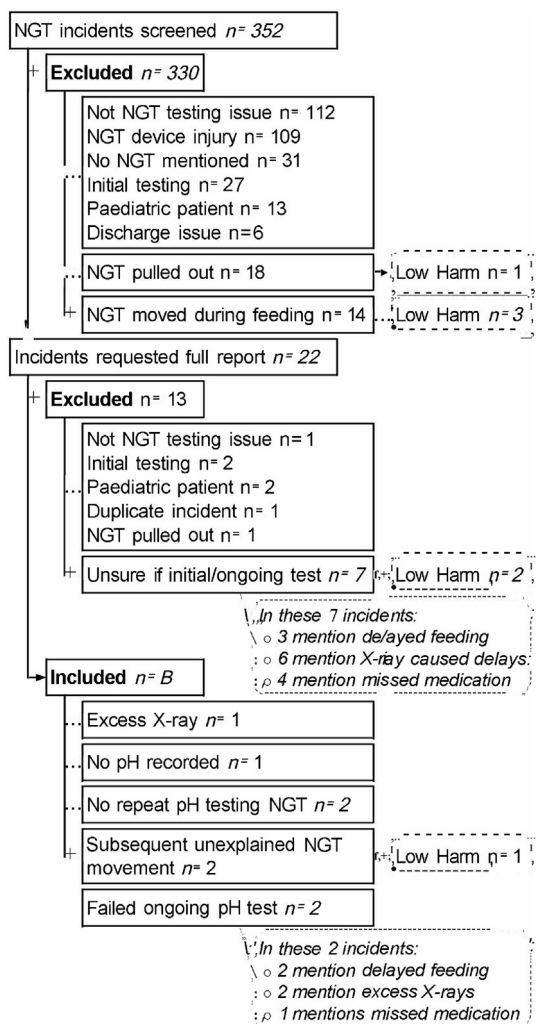
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**Rationale:** It is unknown if pH testing a nasogastric tube (NGT) before every use reduces the risk of adverse outcomes as it is based on expert opinion<sup>(1,2)</sup>. Adverse outcomes such as never events are rare, 95 in 4.5 year period across England, with 790,000 NGTs supplied annually<sup>(1)</sup> making this difficult to observe such incidents in cohort studies. This review of hospital NGT incident data aims to identify incidents related to ongoing pH testing, at a central London hospital which orders approximately 5,000 NGTs annually.

**Methods:** The hospital's Risk Systems Manager searched all incident data from 1-Jan-2014 to 31-Dec-2019 for [Nasogastric OR NG] AND tube. Anonymised short incident descriptions were shared with the authors who compared the incidents to inclusion/exclusion criteria (see figure 1). More detailed incident records were requested for included incidents and compared against the criteria. Incidents were analysed using descriptive statistics. This review considered a service evaluation, so no ethical approval required.

**Results:** See figure 1 for results. The initial search returned 352 incidents. Further description obtained for 22 incidents, with 8 incidents relating to ongoing NGT position testing. 2 NGTs moved without a change in nostril measurement; both identified via X-ray, not pH testing. 1 tube was in the lung and caused low harm. The other was in the oesophagus caused no

harm. There were another 2 recorded incidents of missed medications and/or feed due to failed ongoing pH tests.



**Conclusion:** These Results highlight that NGTs can spontaneously displace and pH testing does not always identify these. It also indicates that failed pH test results can and do lead to delays in feeding and medications. Incident reporting likely captures only a fraction of these adverse outcomes and further primary observational research is required for more accurate representation.

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**Disclosure of Interest:** None declared.

**P442**

**A BENCHMARKING STUDY OF HOME ENTERAL NUTRITION SERVICES**

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**Rationale:** Patients receiving home enteral nutrition (HEN) via an enteral feeding tube often have complex healthcare requirements. There is limited information regarding how HEN care is provided within Australia and New Zealand. This study aimed to investigate the characteristics of HEN services and the provision of nutrition care to individuals receiving HEN within Australia and New Zealand.

**Methods:** A cross-sectional study, surveying lead HEN dietitians for HEN services was conducted from the period 09 July 2019 to 20 September 2019 inclusive. An online survey was used to obtain data relating to the demographics, funding and clinical resources of respondents' HEN services. Services were benchmarked against a HEN service implementation checklist adapted from the Agency for Clinical Innovation (ACI).

**Results:** Responses were received from 107 HEN services, with an estimated combined population of 7122 HEN patients. Services were predominantly Government-funded (n=102, 95.3%) and operated from acute hospitals (n= 57, 53.3%). The reported combined cost of all HEN equipment to the patient ranged from \$0-\$77 per week or \$0-\$341 per month. Fifty-two services were reported to have a dedicated HEN dietitian/coordinator, which was positively associated with the undertaking of quality improvement activities (p=0.019). Mean compliance to the ACI HEN implementation checklist was 70.4% (± 15.7%) with a range of 13.0-98.2%. Mean compliance was significantly higher in services with a HEN dietitian/coordinator than services without one (75.5% (±12.0%) vs 64.3% (±16.6%); p< 0.001).

**Conclusion:** This study provides detailed information regarding the characteristics of HEN services and nutrition care provided to enterally-fed patients across Australia and New Zealand. The majority of HEN services are not adhering to the ACI HEN guidelines and there is considerable variation in cost burden for consumers indicating inequitable delivery of care to patients.

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**P443**

**PERCUTANEOUS ENDOSCOPIC (PEG) VERSUS RADIOLOGIC (PRG) PLACEMENT OF GASTROSTOMY TUBE: INDICATIONS AND COMPLICATIONS AFTER A 25-YEARS EXPERIENCE AT A TERTIARY REFERRAL CENTER**

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**Rationale:** Currently, there is not enough scientific evidence to establish whether radiologic gastrostomy (PRG) is associated with a greater number of complications than endoscopic gastrostomy (PEG). The objective was to compare procedurally related complications between PEG and PRG at a tertiary hospital.

**Methods:** A retrospective cohort study was performed. Adult patients who underwent PEG or PRG and subsequent follow-up in the Nutrition Unit between 1995 and 2020 were included. Statistical analysis for proportions was performed using  $\chi^2$  or Fisher exact test when necessary. Multiple sub-analyses with the different PEG and PRG techniques used over time were also performed.

**Results:** n=896. The most frequent indications were neurological diseases (41.7%) and head and neck tumors(33.6%).

	PEG (n=566)	PRG (n=330)	P
Complications	257(45.4%)	109(33%)	<0.001
Peritonitis	9(1.6%)	7(2%)	0.16
Minor complications			
Exudate	158(27.9%)	59(17.8%)	0.001
Obstruction	7(1.2%)	13(3.9%)	0.008
Stoma dilation	0(0%)	4(1.2%)	0.018
Granuloma	116(20.5%)	40(12.1%)	0.001
Bleeding	1(0.2%)	2(0.6%)	0.558
Infection	20(3.5%)	10(3%)	0.686
Tube dislodgement	66(11.7%)	22(6.6%)	0.15

**Conclusion:** In our series, percutaneous gastrostomy implantation was associated with high rates of minor complications. Although total complications, exudate and granuloma were more common in the PEG group, obstruction and stoma dilation were more common in the PRG group. There were no differences regarding peritonitis, a major complication.

**Disclosure of Interest:** A. Piñar-Gutiérrez Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, R. Vázquez-Gutiérrez Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, J. L. Pereira-Cunill Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, P. Serrano-Aguayo Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, P. Garrancho-Domínguez Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, D. Tatay-Domínguez Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, F. Rodríguez-Pappalardo Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, A. J. Martínez-Ortega Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE, P. P. García-Luna Grant / Research Support from: NONE, Consultant for: NONE, Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE.

#### P444

##### UTILITY OF PEPTIDE-BASED DIETS IN CRITICALLY ILL PATIENTS

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**Rationale:** In critically ill patients, enteral feeding intolerance (EFI; ie, abdominal distention or pain, constipation, diarrhea, nausea and vomiting) may affect morbidity, medical therapies, and feeding adequacy. Study aim was to explore if patient characteristics and EFI differ by enteral tube feeding (ETF) formula.

**Methods:** Clinical and demographic characteristics were reviewed retrospectively for critically ill adult patients receiving ETF for 3+ days from October 2015–2019 in US hospitals (Premier Healthcare Database). Enzymatically hydrolyzed 100% whey protein formulas (WPBD) with  $\geq 50\%$  medium chain triglycerides (Peptamen®) were compared to other hydrolyzed protein formulas (OPBD) and standard intact protein formula (SETF). Statistical comparisons were made between ETF formulas via medians, frequencies, & multivariable logistic regression.

#### Results:

19,679 patients (3242 WPBD, 3121 OPBD, 24593 SETF) from 67 hospitals were included. Overall, patients were 56% male with a mean (SD) age of 64.8 (6.8) years, length of stay 17.7 (13.3) days, and ETF duration of 8 (7.1) days. Rectal catheterization was lower in the WPBD group. EFI was reported in 13% of WPBD, 16% OPBD and 15% SETF patients. EFI odds were higher for patients with sepsis by 11%, hyperglycemia by 36%, critical illness myopathy by 58% and pneumonia by 12% than patients without each diagnosis. Severity of illness, risk of mortality and Elixhauser scores suggested patients receiving WPBD were sicker, yet odds of EFI were 18% higher for OPBD and 15% higher for SETF compared to WPBD, adjusting for covariates.

**Conclusion:** Specialty ETFs are therapeutic modalities of critical care. Higher ETF tolerance was observed in adult critically ill patients receiving WPBD as compared to OPBD and SETF. Use of WPBD in critically ill patients with the highest severity of illness is associated with lower frequency of GI intolerance and may lead to better adequacy of feeding.

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#### P445

##### ABNORMAL LIVER FUNCTION TESTS IN PATIENTS RECENTLY STARTED ON PARENTERAL NUTRITION

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**Rationale:** IFALD (Intestinal Failure Associated Liver Disease) refers to liver injury as a result of one or more factors relating to intestinal failure (IF) including, but not limited to, parenteral nutrition (PN). Little is known about such abnormal liver function tests (ALFT) in patients recently started on PN.

**Methods:** This prospective cohort study aimed at determining prevalence, incidence and factors associated with ALFT in all patients of a Gastroenterology and Nutrition department of a tertiary care hospital who had been started on PN more than 7 days and less than 3 months before. We collected anthropometric and nutritional data, and medical history including hepatotoxic drugs. Liver function tests were obtained on the day of enrolment as well as, when available, from the week preceding the start of PN. Four published ALFT criteria used in the literature (cytolysis, cholestasis, mixed) were calculated and described (chi-2, McNemar, logistic regression).

**Results:** 82 patients were enrolled; PN had been started 21±14 days prior and provided 29±10 kcal/kg/d, including 1.0±0.3 g/kg/d of lipids (Clinoleic™, Baxter in 81). Prevalence of ALFT before and during PN was assessed in 70 and incidence in 49.

ALFT prevalence before PN was 10.7–47.1% and was significantly associated with hepatic/biliary/pancreatic diseases. Median ALFT prevalence on PN was 39.0% (IQR=34.1–44.1%). With all 4 criteria, it did not increase significantly after PN was introduced.

ALFT incidence was 4.1–35.1%, depending on the criterion chosen, with a median value of 25.1% (IQR=15.7–31.7%). Cholestasis was more frequent in severely malnourished patients (50.0 vs. 16.1%, p=0.04) and cytolysis more frequent in IF patients (66.7 vs. 35.3%, p=0.04).

**Conclusion:** Modern PN does not appear to be significantly associated with ALFT. Early ALFT diagnosis after starting PN should first point towards a hepatic/biliary/pancreatic disease, but may also suggest a refeeding syndrome in a severely malnourished patient.

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#### P446

### PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) PULL VS PUSH TECHNIQUE: COMPARISON OF COMPLICATIONS AT A TERTIARY HOSPITAL

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**Rationale:** At present, PEG is the most used technique for gastrostomy implantation. The objective was to compare procedurally related complications between PULL vs PUSH PEG techniques.

**Methods:** A retrospective cohort study was performed. Patients who underwent PEG and subsequent follow-up in the Nutrition Unit between 1995 and 2020 were included. PUSH technique was first performed in our hospital at 2018. Statistical analysis for proportions was performed using  $\chi^2$  or Fisher exact test when necessary.

**Results:** n=566. The most frequent indications were neurological diseases (53,9%) and head and neck cancer(28,4%).

	PEG PUSH (n=54)	PEG PULL (n=512)	P
Complications	6(11,1%)	251(49%)	<0.001
Peritonitis	2(3%)	7(1,3%)	0.209
Minor complications			
Exudate	0(0%)	158(30,8%)	<0.001
Tube dislodgement	2(3%)	64(12,5%)	0.055
Obstruction	0(0%)	7(1,3%)	0.387
Stoma dilation	0(0%)	0(0%)	
Bleeding	1(1,8%)	0(0%)	0.095
Granuloma	1(1,8%)	115(22,46%)	<0.001
Infection	0(0%)	20(3,9%)	0.243

**Conclusion:** A large volume of PEG is performed in our center and neurological diseases are the most frequent indication. In our series, PEG PULL technique showed a high number of complications (49%), but most of them of a "minor" nature. PEG PUSH technique, recently implanted, showed a low percentage of complications (11.1%), although the percentage of peritonitis (3%) was high.

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Speakers Bureau of: NONE, Shareholder of: NONE, Paid Instructor at: NONE, Other: NONE.

#### P447

### SALVAGE OF CENTRAL LINE IN CASE OF CATHETER - ASSOCIATED BLOOD STREAM INFECTIONS (CLABSIS) A PROSPECTIVE OBSERVATIONAL STUDY IN ADULT PATIENTS ON LONG-TERM HOME PARENTERAL NUTRITION (HPN)

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**Rationale:** CLABSIS is a major complication in HPN and frequently leads to central venous catheter (CVC) removal. We developed a salvaging attitude in long term HPN patients due to the necessity of venous preservation. The main objective of this study is to determine the prognosis of CLABSIS.

**Methods:** We followed-up for three months, in an approved HPN centre, a cohort of 250 adult patients receiving HPN with CLABSIS from 2018 to 2020. CLABSIS was defined by a blood culture growth differential [peripheral blood] - [CVC blood]  $\geq$  2h. A therapeutic approach to conserve CVC was established according to the department's protocol. The primary endpoint was conservation of CVC with negative CVC and peripheral blood cultures at 3 months without complications.

**Results:** Data from 30 CLABSISs were collected for 22 HPN patients. The incidence rate of CLABSISs was 0.28 infections/1000 catheter days. Sixteen CVCs were removed immediately, with causes due to the type of germ (staphylococcus aureus: n = 6, candida parapsilosis: n = 4, klebsiella: n = 2), chronic colonization (n = 4) or initial complications (n=4). Among the 14 non-removed CVC, 11 were maintained at 3 months with blood cultures on CVC and peripheral negative for 9 (80%) of them. 3 CVC were removed during the 3 months follow-up (non-CVC-related sepsis n = 2, and resistant pseudomonas aeruginosa n = 1).

**Conclusion:** The incidence rate of CLABSIS in an expert HPN centre remains low. In case of CLABSISs, according to specific protocol, approximately 50% of CVC were removed immediately (essentially due to bacteriological characteristics). In case of CLABSISs and without initial complication, 80% of CVCs can be maintained at 3 months. These Results justify a conservative attitude according to standardized protocol.

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#### P448

### RISK STRATIFICATION, PREVENTION AND OCCURRENCE OF REFEEDING SYNDROME IN ADULTS USING A COMPUTER-BASED TOOL: A PROSPECTIVE COHORT STUDY

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**Rationale:** Refeeding syndrome (RS) is defined as severe fluid and electrolyte shift during oral, enteral (EN) or parenteral nutrition (PN). Prevention includes identification of individuals at risk, controlled nutritional

intake, and vitamin/electrolyte monitoring and replacement. The aim of this prospective cohort study is to assess the occurrence of RS based on computer-based risk stratification and application of a systematic nutrition protocol.

**Methods:** All consecutive, adult patients requiring nutritional therapy with EN or PN outside the ICU were considered. Exclusion criteria included other reasons for electrolyte shifts, other indications for EN or PN apart malnutrition (stroke, acute digestive surgery) and an estimated length of stay (LOS) < 5 days. Imminent and manifest RS was recorded according to predefined criteria. Descriptive statistics were expressed in median (min-max) and %.

**Results:** From 1/02/21 to 1/05/21, 77 patients were screened and 44 were included. Thirty-nine patients (19 women (49%), age: 61 (24-93), body mass index: 20kg/m<sup>2</sup> (14.7-42), serum prealbumin: 0.12 gr/L (0.05-0.3)) completed the study. 17 (43.5%) patients had cancer, 11 (39%) digestive disorders and 2 (5.1%) psychiatric disease. Computer-based risk stratification for RS identified a very high or moderate risk in 32 (82.1%) and 6 (15.4%) patients, respectively. 14 (35.9%) patients had EN, 21 (53.8%) PN and 4(10.4%) had both. Imminent RS was identified in 5/39 (12.8%) patients and managed by electrolyte supplementation and adapting nutrition intake. No patients presented manifest RS. Follow up (FU) was 14 days (8-28). LOS was 17 days (5-42) and 7 patients were still hospitalized at the end of FU. Medical nutrition could be stopped in 16 (41%) patients because of sufficient oral intake. One patient died during the follow-up period.

**Conclusion:** Computer-based risk stratification combined with application of a systematic nutrition protocol may help in mitigating RS.

**Disclosure of Interest:** None declared.

#### P449

### EVOLUTION OF COMPLICATIONS OF PERCUTANEOUS RADIOLOGICAL GASTROSTOMIES (PRG) AFTER THE IMPLANTATION OF NEW PUSH TECHNIQUES

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**Rationale:** PRG is increasingly widespread, having implemented different techniques over time to reduce complications. The aim of our study is to compare the complications arising after the placement of PRG using different techniques: pigtail, balloon and mushroom, which have been replacing each other over the years in our hospital.

**Methods:** A retrospective cohort study was performed. Patients who underwent PRG and subsequent follow-up in the Nutrition Unit between 1995 and 2020 were included. Pigtail technique between 1995-2009. Balloon technique was performed between 2003-2009. Since 2009, mushroom technique is the only one performed in our hospital. Statistical analysis for proportions was performed using  $\chi^2$  or Fisher exact test when necessary

**Results:** n=330. Head and neck cancer was the most frequent indication (40,2%), followed by neurological diseases (20,9%). There were no significant differences in total complications (38,5% vs 39,2% vs 28,7%, p=0.16).

	Pigtail (n=114)	Balloon (n=28)	Mushroom (n=188)	p
Peritonitis	0(0%)	7(25%)	0(0%)	<0.001
Minor complications				
Exudate	30(26,3%)	2(7,1%)	27(14,3%)	0.01
Tube dislodgement	8(7%)	2(7,1%)	12(6,3%)	0.972
Obstruction	2(1,7%)	2(7,1%)	9(4,7%)	0.203
Stoma dilation	0(0%)	1(3,5%)	3(1,5%)	0.128
Bleeding	0(0%)	1(3,5%)	1(0,05)	0.163
Granuloma	17(14,9%)	1(3,5%)	22(11,7%)	0.248
Infection	0(0%)	1(3,5%)	9(4,7%)	0.031

**Conclusion:** In our hospital head and neck cancer is the most frequent indication for PRG. The implantation of mushroom PRG has led to a reduction in the total complications of PRG and the disappearance of procedurally related peritonitis. At present, PRG complications are minor.

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#### P450

### STANDARD ENTERAL NUTRITION FORMULAS COMPARED VS. DIABETIC-SPECIFIC FORMULAS. A COMPARATIVE DESCRIPTIVE ANALYSIS COMPARED WITH DAILY REFERENCE INTAKES FOR THE GENERAL POPULATION

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**Rationale:** The use of standard enteral formulas (SEF) compared to diabetic-specific formulas (DF) is an issue of interest in clinical practice. The aim of the study was to analyse individually the composition of SEF with fiber and to compare them with DF as well as to evaluate the percentage deviation from the recommended daily intakes (DRI) of vitamins and minerals.

**Methods:** Descriptive study of 48 enteral formulas (EFs) ready to be infused by enteral tube or ostomy. Technical data sheets of standard and diabetes formulas were selected from 8 clinical nutrition laboratories. The nutritional composition of the EF per 1,500 kcal infused was calculated and the mean values of 12 vitamins and 15 minerals were calculated and the Results were compared with the DRI for men (age range: 51-70 years). Statistical analysis was performed with SPSS.v.27.

**Results:** Forty-seven enteral formulas were analysed [SEF: 66% and DF: 34%]. Comparing the percentage distribution of macronutrients and fibre between SEF vs. DF, significant differences were found with the percentage (%) of carbohydrates (SEF: 177.8±19.9 vs. DF: 140.9±18.3), total fat (SEF: 32.3 ± 3.9 vs. DF: 41.3 ± 4.7) and monounsaturated fatty acids (MUFA) (SEF: 26.4 ± 8.1 vs. DF: 41.7 ± 9.3), all p<0.001. Significant differences were found with the mean chromium (p=0.01) and vitamin E (D-tocopherol) content (p=0.03). The EFs far exceeded the DRI for vitamins (all vitamins -DRI:> 100%, except vitamin K) and some minerals (Cr, Mn, Fe, Mg, P, Ca, Zn, Cu, I, and Se) in both types of formulae (SEF and DF).

**Conclusion:** Standard enteral formulas (SEF) differ in their composition in terms of the distribution of macronutrients, chromium and D-tocopherol compared with DF. Both types of formulas exceeded the DRIs for all vitamins and 10 minerals when 1500 kcal were infused via enteral tube or ostomy. Further studies are needed to examine the effect of micronutrients in the diabetic patient on long-term enteral nutrition.

**Disclosure of Interest:** None declared.

## P451

**EFFECTS OF DIETARY INTERVENTIONS ON CARDIOVASCULAR OUTCOMES: A NETWORK META-ANALYSIS**

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**Rationale:** The role of dietary interventions in preventing mortality and cardiovascular disease outcomes is unclear. We performed a systematic review and network meta-analysis of existing randomized controlled trials (RCTs) in order to identify the most effective dietary interventions for cardiovascular disease prevention.

**Methods:** We searched several databases without language restrictions, ClinicalTrials.gov, references of reviews, and meetings' abstract material. We included RCTs of assessing efficacy of dietary interventions in adult participants ( $\geq 18$  years) that report effect estimates for all-cause mortality and cardiovascular outcomes of interest (Cardiovascular death, atrial fibrillation, heart failure, myocardial infarction, angina and stroke). For each outcome, we performed network meta-analysis based on the frequentist approach.

**Results:** Twenty trials (100,494 patients) were included in our systematic review. The interventions evaluated in the meta-analyses included 4 types of dietary interventions (Mediterranean diet-MD, low-fat diet, low-protein diet and reduced salt diet). Use of MD was associated with reduced risk of mortality (RR:0.71, CI: 0.56-0.92), angina (RR:0.36, CI: 0.16-0.83), myocardial infarction (RR:0.67, CI: 0.51-0.89) and cardiovascular death (RR:0.57, CI: 0.40-0.82) compared with control diet.

**Conclusion:** Our network meta-analysis identified that MDt might be effective in primary and secondary prevention of cardiovascular disease. These Results are consistent with a benefit of MD on total mortality and cardiovascular mortality.

**Disclosure of Interest:** None declared.

**Geriatrics**

## P452

**THE EFFECT OF DOSE, FREQUENCY AND TIMING OF PROTEIN SUPPLEMENTATION, ON MUSCLE MASS IN OLDER ADULTS BY POPULATION: A SYSTEMATIC REVIEW AND META-ANALYSIS**

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**Rationale:** Protein supplementation has shown to be effective on muscle mass in older adults. However, its effect may be dependent on intervention factors. The aim of this systematic review was to assess if the effect of protein supplementation on muscle mass dependent on the dose, frequency and timing in older adults, stratified by population.

**Methods:** Five databases were searched up to 22/08/2020 for randomized controlled trials describing the effect of protein supplementation on muscle mass in adults aged  $\geq 65$  years. Random effects meta-analyses were performed, stratified by population. Heterogeneity was assessed using the  $I^2$  statistics.

**Results:** Twenty-eight articles were included (2621 participants, 76.5 $\pm$ 4.3 years, 60.8% females) with 19 in community-dwelling, 7 in hospitalised and 2 in institutionalised older adults. Protein supplementation showed a positive effect on muscle mass in community-dwelling older adults (SMD:0.23; 95%CI:0.09-0.38;  $p=0.002$ ;  $I^2:76.3\%$ ), but not in hospitalised and institutionalised older adults. In community-dwelling older adults, no difference was found in the effect dependent on the dose of protein supplementation ( $<30$ g vs  $\geq 30$ g/day). The effect of protein supplementation on muscle mass was dependent on the frequency with a higher significant effect for single dose of supplementation (SMD:0.45; 95%CI:0.01-0.88;  $p=0.044$ ;  $I^2:75.4\%$ ) but no effect with multiple doses (SMD:0.12; 95%CI: -0.00-0.24;  $p=0.051$ ;  $I^2:5.8\%$ ). No difference was found in the effect dependent on the timing of protein supplementation relative to mealtimes. In hospitalised and institutionalised older adults, high interstudy variability and inadequate reporting of intervention characteristics were observed.

**Conclusion:** In community-dwelling older adults, increase of muscle mass by protein supplementation was not dependent on the dose and timing, but the frequency of supplementation, with a single dose of protein supplementation showing the greatest effect size. Findings on hospitalised and institutionalised older adults are inconclusive with limited number of articles.

**Disclosure of Interest:** None declared.

## P453

**SARC-F AND SARC-CALF PERFORMANCE FOR SCREENING SARCOPENIA IN ELDERLY BRAZILIANS**

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**Rationale:** Sarcopenia is a geriatric syndrome related to negative outcomes such as falls; length of hospital stay and mortality. For its diagnosis the EWGSOP2 tool (European Working Group on Sarcopenia in Older People) is done through the evaluation of loss of strength and muscle mass. In clinical practice, there may be difficulties in carrying out these measures. Alternative and simpler tools, like the SARC-F (Strength, Assistance with walking, Rise from a chair, Climb stairs and Falls) and SARC-CALF, have been suggested to identify the risk of sarcopenia in the elderly. Our aim was to establish the sensitivity and specificity of Sarc-f and Sarc-Calf for elderly Brazilians.

**Methods:** We included 259 elderly volunteers aging 70  $\pm$  8 years old, living in the city of São Paulo-BR. All individuals were submitted to body composition assessment and answered the SARC-F and SARC-CALF questionnaires. The diagnosis of sarcopenia followed the criteria established by EWGSOP2, as a gold standard.

**Results:** The prevalence of sarcopenia was 21.6%, 16.6% and 14.7% when considering EWGSOP2, SARC-F and SARC-CALF, respectively. In this population, SARC-F had a sensitivity of 18.2%, specificity of 81.1% and accuracy of 67.2%, while SARC-CALF presented sensitivity of 27.3%, specificity of 91.8% and accuracy of 77.5%. When comparing the diagnosis of sarcopenia by EWGSOP2 and SARC-F, only 10 elderly people were classified as sarcopenic by both criteria (Kappa= -0.008;  $p = 0.273$ ). When comparing the diagnosis of sarcopenia by EWGSOP2 and SARC-CALF, 15 elderly people were classified as sarcopenic by both criteria (Kappa = 0.225;  $p = 0.001$ ).

**Conclusion:** Despite having good specificity, SARC-F and SARC-CALF have low sensitivity to diagnose sarcopenia in elderly Brazilians and low agreement with the diagnosis according to EWGSOP2 criteria.

**Disclosure of Interest:** None declared.

## P454

**IS MNA-SF IS IN A RELATION WITH FALLS?**

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**Rationale:** Malnutrition is a syndrome that increases the risk of falling (1). Mini Nutritional Assessment-Short Form (MNA-SF), which is frequently used to evaluate malnutrition risk for outpatients, also predict the fall risk in geriatric population (2). The study aimed to examine the relationship between fall prevalence and MNA-SF scores.

**Methods:** One hundred nineteen geriatric outpatients were included in the study. Their comprehensive geriatric assessment were performed. Their medical conditions and fall history in the last 1 year were recorded. Nutritional assessment was performed by using MNA-SF. Multilogistic regression analysis was performed to determine the relationship between MNA-SF and fall by controlling the confounding factors.

**Results:** 73 of patients (61.3%) were female. Median age was 76 (IQR: 71–81). Number of patients who fell at least once in the last 1 year was 48 (40.2%). Median MNA-SF score was 11.0 (IQR: 8.0–13.0). In the univariate analysis, fall prevalence increased as the MNA-SF score decreased ( $p = 0.005$ ). As a result of the model created by adjusting age, gender, diabetes mellitus, hypertension, coronary artery disease, cerebrovascular disease, smoking and polypharmacy, each one increase in MNA-SF score caused a 14% decrease in the fall prevalence (OR: 0.87, 95% CI: 0.78–0.99,  $p = 0.04$ ).

**Conclusion:** MNA-SF score can give an idea about fall probability in older adults. When we detect a decrease in MNA-SF score, probability of patient's fall will increase. To reduce the probability of fall, preventing malnutrition and applying nutritional treatment, if developed, may be important interventions.

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**Disclosure of Interest:** None declared.

#### P455

### EFFECTS OF LIFESTYLE INTERVENTIONS ON WEIGHT AND FAT-FREE MASS IN OLDER PEOPLE WITH OBESITY – A SYSTEMATIC REVIEW WITH NETWORK-META-ANALYSES

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**Rationale:** As in younger ages, obesity is highly prevalent in older people and lifestyle-interventions (LSI) are recommended as first-line treatment. We conducted a systematic review of randomized-controlled trials (RCTs) with network meta-analyses (NMA) to describe effects of LSI on body weight (BW) and fat-free mass (FFM) in older people with obesity.

**Methods:** After searching six electronic databases, titles/abstracts and full-texts were screened, data was extracted and the risk of bias (RoB) was rated independently by two reviewers using the Cochrane RoB 2.0 tool. RCTs were considered, if they included participants  $\geq 60$  (mean  $\geq 65$ ) years with obesity (body fat mass  $\geq 35$  (men)/25 (women) %, or waist circumference  $\geq 88/102$  cm, or BMI  $\geq 30$  kg/m<sup>2</sup>), lasted  $\geq 12$  weeks and included nutrition (NUT, e.g. calorie restriction), exercise (EX, e.g. resistance EX), and/or self-management (SM) components that were compared to each other or a control group (CG, e.g. usual care). Frequentist random-effects NMA were applied for BW and FFM.

**Results:** 41 RCTs were included. Compared to CG, multimodal interventions reduce BW, with the strongest effect for those with NUT, EX, and SM components (-6,70 [-10.29;-3.11] kg) (MD [95%-CI]). EX only interventions did not affect BW (-0.41 [-5.15;4.33] kg) (26 RCTs, 8 treatments, 36 pairwise comparisons,  $I^2=0\%$ ). A significant increase of FFM was found for EX compared to CG (3.47 [0.32;6.61] kg), but not for other interventions (18 RCTs, 7 treatments, 23 pairwise comparisons,  $I^2=0\%$ ). For both networks, direct and indirect evidence did not differ significantly. RoB was 'low' or 'some concerns' for most RCTs.

**Conclusion:** In older people with obesity, multicomponent LSI are effective for weight reduction. Reduction of FFM can be avoided by EX – which are mostly combinations of resistance and aerobic exercise.

**Disclosure of Interest:** None declared.

#### P456

### OSTEOSARCOPENIC OBESITY; ULTRASONOGRAPHICALLY DEFINED AND STRONGLY RELATED WITH FRAILITY

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**Rationale:** Osteosarcopenic obesity is a relatively new concept, defined as the combination of three important conditions known to have negative consequences including frailty<sup>1-2</sup>. We aimed to investigate the relationship between frailty and osteosarcopenic obesity compared with its constituent components individually.

**Methods:** We enrolled 160 geriatric patients with BMI  $\geq 30$ . We obtained ultrasonographic measurements of the rectus femoris thickness and cross-sectional area (RFCSA). Osteosarcopenic obesity (OSO) was defined as the combination of low muscle function (defined by a handgrip strength  $< 27$  kg in males and  $< 16$  kg in females)<sup>3</sup>, low muscle mass (RFCSA  $\leq 5.22$  cm<sup>2</sup>)<sup>4</sup> and the clinical diagnosis of osteoporosis<sup>5</sup>.

**Results:** The median age of participants was 72 (IQR=9) years and; 83% (n=137) were of female, and 17% (n=28) were of male. Patients were divided into four categories and 72 (43.6%), 44 (26.7%), 19 (11.5%) and 25 (15.2%) patients were in obese, obese osteoporotic, sarcopenic obese and osteosarcopenic obese groups, respectively. In subgroup analysis, the frequency of frailty was significantly higher in the osteosarcopenic obesity group than all groups ( $p=0.001$ ,  $p<0.001$  and  $p=0.013$ , respectively). Regression analyzed showed that OSO significantly increased frailty status when adjusted for age, sex, comorbidities, basic and instrumental daily living activities scores, handgrip strength, sarcopenia and osteoporosis (Odds Ratio: 4.489; 95% CI: 2.144–9.398;  $P = 0.002$ ).

**Conclusion:** This is the first study defining osteosarcopenic obesity according to ultrasonographic measurements of RFCSA, and the ultrasonographically defined osteosarcopenic obesity is strongly associated with frailty in geriatric patients.

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## P457

**DIETARY INFLAMMATORY INDEX AND ASSOCIATIONS WITH INFLAMMATION AS WELL AS MUSCLE MASS AND FUNCTION IN HEALTHY OLD ADULTS**

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**Rationale:** Inflammation is considered to be a driver of age-related loss of muscle mass and function (sarcopenia). Nutrition might have a regulatory effect on this process. The Dietary Inflammatory Index® (DII) has been developed to quantify the inflammatory potential of an individual diet. We investigated cross-sectional associations between the DII, inflammation, oxidative stress and sarcopenia parameters in healthy older adults (n=79; 72.4±5.5 years).

**Methods:** DII was computed with dietary data collected from 24-h recall interviews. Associations between DII, inflammatory and oxidative stress markers as well as bioimpedance-derived skeletal muscle mass (%SMM) and gait speed [m/s] were determined with Spearman correlations and linear regression analyses.

**Results:** Malondialdehyde (MDA) normalized for poly-unsaturated fatty acid intake significantly correlated with DII (r= 0.443, p<0.001). While correlations indicated that inflammation was not significantly related with the DII in the whole sample (Interleukin (IL)-6: r= 0.187, p=0.099; IL-6/IL-10-ratio: r= 0.111, p=0.328), a significant positive association was evident in a sub-sample characterized as sedentary (n=59; IL-6: r= 0.352, p=0.006; IL-6/IL-10-ratio: r= 0.290, p=0.026). After adjustment for sex, insulin resistance and physical activity, linear regression models confirmed that a higher DII, i.e. a pro-inflammatory diet, was associated with IL-6 (β= 0.029, p=0.026), MDA (β= 0.078, p<.001), %SMM (β= -0.524, p=0.025) and gait speed (β= -0.009, p=0.023).

**Conclusion:** A pro-inflammatory diet is associated with higher inflammation and elevated oxidative stress as well as poorer muscle mass and slower gait speed. Intervention studies are needed to examine whether anti-inflammatory dietary approaches can help to improve muscle mass and function and thus minimize the risk for sarcopenia.

**Disclosure of Interest:** None declared.

## P458

**PARENTERAL NUTRITION DURING THE NOTHING-BY-MOUTH PERIOD OF ASPIRATION PNEUMONIA: A REAL-WORLD DATA ANALYSIS OF DATA FROM JAPAN**

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**Rationale:** Aspiration pneumonia, the most common type of pneumonia among older adults, has a high mortality rate. Treatment is often provided during the time in which patients are ordered to take nothing by mouth (NBM); thus, this study aimed to report real-world clinical data on parenteral nutrition and patient status during the NBM period.

**Methods:** We used data from the Japanese Diagnosis Procedure Combination inpatient database to identify older adult patients who had been admitted to acute-care hospitals with aspiration pneumonia (n = 72,315) and to assess feeding routes (oral, nasogastric, parenteral, etc.) and the adequacy of parenteral nutrition during the NBM period. In addition, the

intervention of both nutritional support team and swallowing rehabilitation was also assessed.

**Results:** In our study, 78% of the subjects were ≥ 80 years old, and 46% of the subjects were female. Malnutrition was common; 47% of the subjects had an extremely low body mass index (< 18.5kg/m<sup>2</sup>). NBM was frequently prescribed for patients with aspiration pneumonia (68%, 40%, and 32% on hospital days 3, 7, and 14, respectively), but the amount of energy provided via parenteral nutrition during the NBM period was extremely poor (median 7.7 [4.3–11.6] kcal/kg/day and 8.7 [4.4–13.5] kcal/kg/day on the days 7 and 14, respectively). On day 7, patients receiving NBM were administered 0 [0–0] g/kg/day of fat and 0.32 [0.00–0.66] g/kg/day of amino acids via parenteral nutrition. In all, 13.4% of the patients received nutritional support team intervention, and 34.9% of the patients underwent dysphagia rehabilitation.

**Conclusion:** The data revealed that older adult patients with aspiration pneumonia received inadequate nutritional support during the NBM period. Therefore, medical professionals involved in the treatment and care of patients with aspiration pneumonia should take extra care in ensuring that the nutritional needs of such patients are met.

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## P459

**PROTEIN SUPPLEMENTATION AMELIORATES FATIGABILITY IN COMMUNITY-DWELLING PRE-FRAIL OLDER WOMEN**

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**Rationale:** Evidence has shown favorable effects on frailty indicators after combination of exercise and protein supplementation. The aim of the study was to compare multi-domain intervention (exergames with protein supplementation) with mono domain intervention (exergames or protein supplementation) on pre-frailty status of older women.

**Methods:** Randomized controlled clinical trial lasting 12 weeks with 90 pre-frail older women (71.2±4.5 years), according to Fried Phenotype, divided into 5 groups: Control (CG); Exergames Training (ETG); Protein Supplementation (PSG); Exergames and Protein Supplementation (ETPSG) and Exergames and Isoenergetic Supplementation (ETISG). Participants took supplementation once a day, 5 days a week. Each dose of protein supplementation (42g) contained 171kcal; 21g whey protein; 224g calcium; 3.3mcg vitamin D; 23mg vitamin C; 2.3g leucine, and 12g essential amino acids (Bemmax®-Prodiel Medical Nutrition) or isocaloric supplement of maltodextrin. Physical training with virtual games (Wii Fit Plus/ Nintendo®), included progressive strength and balance exercises, carried out twice a week. Data were analyzed with mixed-model ANOVA and Bonferroni post hoc (p≤0,05).

**Results:** The average protein intake in the supplemented groups (PSG and ETPSG) was 1.1±0.2g/kg/day. Protein intake increased in the PSG (Med:63.9 vs 82.9g, p=0.006) and ETPSG (Med:58.1 vs 81.5g, p=0.06) post intervention. The pre-frailty status was reversed in ETG (73%); PSG (55.6%) and ETPSG (43.8%). The fatigue/exhaustion was the only frailty criteria that reduced 100% in ETG; 75% in PSG and 100% in ETSG

**Conclusion:** Protein supplementation and/or its association with exergames reversed pre-frailty and reduced fatigue/exhaustion Even if community-dwelling older women are not able to perform exercise, a protein supplementation, i.e. a mono domain intervention, could ameliorate fatigability.

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Prodiect Medical Nutrition Employee, E. Rabito: None declared, A. R. Gomes: None declared.

#### P460

##### ASSOCIATION OF SARCOPENIA AND FALL RISK ACCORDING TO FIVE-TIMES SIT TO STAND TEST IN OLDER ADULTS

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**Rationale:** Sarcopenia is a common geriatric syndrome and well-known risk factor of falls<sup>1</sup>. Muscle ultrasonography (US) is the one of the methods used for diagnosis of sarcopenia<sup>2</sup>. Since falls cause undesired outcomes like disabilities, increased hospitalization and decreased quality of life, prevention of falls is becoming more important. There are some performance tests available to define fall-risk, such as short performance physical battery, timed-up and go test (TUG), and 5-times sit to stand test (5-STST)<sup>3</sup>. In this study, we aimed to evaluate sarcopenia by US in patients at fall-risk.

**Methods:** Seventy-one patient who had no known fall history in last one year were enrolled to the study. Muscle US were executed. Fall risk is defined  $\geq 12$  seconds in 5-STST. Low handgrip strength (HGS) was defined as  $<16$  kg for females,  $<27$  kg for males. Chi square test was performed to obtain the association of categorical variables, and student-t test was used to analyze for continuous variables according to normal distribution.  $P$  value  $< 0.05$  was accepted as statistically significant. Correlation analysis was used to define the strength of the relation.

**Results:** Seventeen patients completed the 5-STST in normal ranges, 48 patients had fall risk. The mean age was 76.6 at fall risk, 70.6 in normal group ( $p < 0.05$ ). Gender distribution were similar in both groups. Low gait-speed and TUG duration were similarly observed, lower HGS was seen at fall-risk ( $p < 0.05$ ). Gastrocnemius muscle was thinner in fall-risk, as the other muscles including Rectus Femoris, Rectus Abdominis and Internal Oblique ( $p < 0.05$ ). RF cross-sectional area was smaller in fall-risk group ( $p < 0.05$ ). RF and IO muscles are weakly but significantly correlated with 5-STST duration (rho coefficient:  $-0.327$ ,  $p$  value:  $0.008$  and  $-0.349$  and  $0.004$ , respectively).

**Conclusion:** In this study, core and lower limb muscles are thinner the patients at fall risk. Even if there is no history of falling, sarcopenia should be considered in patients at fall risk. US is a valuable diagnostic method of sarcopenia.

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**Disclosure of Interest:** None declared.

#### P461

##### MANAGEMENT OF HOME ENTERAL NUTRITION (HEN) DURING THE SARS-COV-2 PANDEMIC: IRCCS INRCA ANCONA HEN SERVICE FOR GERIATRIC PATIENTS

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**Rationale:** At the onset of the SARS-CoV-2 emergency in Italy, home care and health services were interrupted. Information on approaches adopted by HEN services during the emergency is essential to learn from this experience how to provide the best care during on-going and future emergency states.

**Methods:** INRCA HEN service for geriatric patients (81,1 $\pm$ 9,7 years) provides to its patients directly at their homes feeding formulas and devices, a monthly follow up home visit and interventions for the

management of the HEN related complications. At the onset of the Covid, home visits were interrupted from March to June 2020 and replaced by phone and video contacts. For tube replacements, patients were redirected to hospital emergency room or to outpatient visits. In October 2020, a phone survey was performed to assess the overall satisfaction of caregivers with the service. In-depth interviews were carried out to gather information regarding the satisfaction with the service during the Covid.

**Results:** Forty-eight caregivers who participated in the study expressed very high median satisfaction with different core and peripheral activities of INRCA HEN service. Home visit was confirmed as the most important element of the service. Nevertheless 89% of caregivers appreciated that it was initially stopped in order to ensure patient's security. Caregivers complained about the difficulties in managing tube replacements due to the difficulty and riskiness of transporting elderly patients, for their general conditions and for the possibility of contacting the virus.

**Conclusion:** HEN services, especially those for frail, geriatric patients, must guarantee that all activities are performed at patient's home. The exchange of information on different experiences of HEN services during SARS-CoV-2 is essential to develop emergency protocols based on best practices.

**Disclosure of Interest:** None declared.

#### P462

##### USUAL PROTEIN INTAKE OF NURSING HOME RESIDENTS WITH (RISK OF) MALNUTRITION - EFFECTS OF AN INDIVIDUALISED NUTRITIONAL INTERVENTION: AN ENABLE STUDY

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**Rationale:** Nursing home (NH) residents with (risk of) malnutrition are at particular risk of poor protein intake (PI). The aim of this analysis was to describe aspects of usual PI (total amount/day (d) and meal, sources/d and meal) and to analyse the effect of an individualised intervention on these aspects.

**Methods:** PI of NH residents with (risk of) malnutrition and inadequate dietary intake was assessed by 3-day-weighing records at the beginning and the end of a 6-week usual care phase (UCP) and a subsequent 6-week intervention phase (IP). Additional 29 $\pm$ 11 g/d from a protein-energy drink and/or protein creams were offered, mainly at breakfast and lunch, to compensate for individual energy and/or protein deficiencies. PI at 4 meals (incl. snacks) and from 12 protein sources was analysed. PI is presented as mean  $\pm$  standard deviation of 6 assessment days per phase. Differences between UCP and IP were tested with t-test for paired samples.

**Results:** PI of 40 NH residents (75% female, age 85 $\pm$ 8 y) per d and per meal during UCP and IP is shown in table 1. Mean PI was 0.70 $\pm$ 0.18 g/kg body weight (BW)/d during UCP and increased to 1.00 $\pm$ 0.23 g/kg BW/d when residents received the intervention. Mean energy intake was 1373 $\pm$ 346 kcal during UCP. Main protein sources were dairy products (12 $\pm$ 8 g/d), starchy foods (7 $\pm$ 3 g/d) and meat/meat products (7 $\pm$ 5 g/d). Breakfast was the meal with the lowest (86% of PI from dairy products and starchy foods), and lunch the meal with the highest variation in sources (8 sources contributed more than 5% to PI). The intervention did not change PI from usual sources, but increased total intake per d and per meal (see Table 1). **Conclusion:** Daily and per meal PI was very low in NH residents with (risk of) malnutrition and inadequate dietary intake, highlighting the importance of effective intervention strategies. An individualised intervention, mainly offered at breakfast and lunch, successfully increased PI in total and at all meals without compromising daily and mealtime protein intake from usual food sources.

**Disclosure of Interest:** None declared.

#### P464

##### STATE OF THE ART WHILE MANAGING DIABETES IN OLDER ADULTS: EIGHT CASE STUDIES WITH FOCUS ON SGLT-2 INHIBITORS AND METFORMIN

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**Rationale:** Sodium-glucose co-transporter-2 (SGLT-2) inhibitors have been recently introduced for type 2 diabetes treatment with significant cardiovascular, renal benefits. Yet, they have frequently been refrained in older adults. Metformin is regarded the firstline diabetes therapy in all ages; still it is associated with weight loss and frailty in older adults. We aimed to outline our experience with three oldest-old patients with high cardiovascular risk managed with SGLT-2 inhibitors, and five patients with anorexia/weight loss managed by metformin cessation.

**Methods:** We outlined demographics, comorbidities, geriatric syndromes,

defined as TSH <0.34 while fT4>1.12 ng/ dL and/or fT3> 4.37 ng / L. Sub-clinical hyperthyroidism was defined as TSH <0.34, while fT4 and fT3 were within the normal reference range (0.61–1.12 ng/ dL for fT4; 2.6–4.37 ng/ L for fT3). Gender, age, current diseases, medications, habits, height, and weight of the participants were recorded. SARC-F questionnaire was used for sarcopenia risk assessment. Handgrip strength measurement and chair stand test were used for the assessment of muscle strength. SMMI measurement with bioelectrical impedance analysis and calf circumference measurement were used for the evaluation of muscle mass. 4-m gait speed test was performed for the assessment of physical performance.

**Results:** Twenty-six patients with hyperthyroidism were included in the study. The median age of the patients was 44.9 (21–76); 16 patients (61.5%) were female and 10 (39.5%) were male. Handgrip strength and calf circum-

	Protein intake (PI) [g]			p-value	
	Usual care phase	Intervention phase		Usual care vs. Intervention phase	
	from usual sources	from usual sources	from intervention	from usual sources	from usual sources and intervention
Day	41 ± 10	46 ± 17	18 ± 10	0.43	<0.001
Breakfast	10 ± 5	10 ± 5	6 ± 6	0.94	<0.001
Lunch	13 ± 6	13 ± 5	7 ± 5	0.35	<0.001
Dinner	13 ± 5	14 ± 5	2 ± 2	0.59	0.011
Snacks	5 ± 2	5 ± 2	3 ± 3	0.67	<0.001

functional status and diabetes duration, and presented the changes in frailty by noting preintervention and post-intervention frailty scores. We outlined benefits and side-effects related to SGLT-2 inhibitors, and the deprescription reasons and rescription practices of metformin therapy. We gave details on baseline and current diabetes treatment, overall medication regimen and current status of the patients.

**Results:** Among the case studies with SGLT-2 inhibitors, two patients were frail and reversed to pre-frailty status after SGLT-2 intervention while the third patient was and remained robust. All patients had clinical improvements with better blood pressure and glucose control. Among the case studies treated with metformin, all were frail before the cessation of metformin. Four reversed to pre-frailty and one became robust after intervention.

**Conclusion:** The findings of our case studies suggest considering SGLT-2 inhibitors in patients with accompanying heart failure/high cardiovascular risk factors and cessation of metformin in those with malnutrition/malnutrition risk. These approaches have potential to improve frailty and inappropriate medication use in diabetic older adults.

**Disclosure of Interest:** None declared.

#### P465

##### ASSESSMENT OF SARCOPENIA IN PATIENTS NEWLY DIAGNOSED WITH OVERT AND SUBCLINICAL HYPERTHYROIDISM

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**Rationale:** Sarcopenia is a progressive and generalized skeletal muscle disease associated with adverse health outcomes. Thyroid dysfunctions have been shown to affect skeletal muscle physiology. In the present study, we aimed to evaluate the association between hyperthyroidism and sarcopenia.

**Methods:** Thirteen patients with overt hyperthyroidism and 13 patients with subclinical hyperthyroidism presenting to Marmara University Internal Medicine outpatient clinic between February 2020 and August 2020 were included in the study. Thirty people without thyroid dysfunction were selected as the control group. Written informed consent was obtained from all participants. Patients with an active infection, rheumatological/ inflammatory disease, diabetes mellitus, drug use affecting body composition and thyroid functions, pacemaker, limb disability, prosthesis, and pregnancy were excluded from the study. Overt hyperthyroidism was

found to be significantly lower in the overt and subclinical hyperthyroidism group, compared to the control group ( $p = 0.007$ ;  $p = 0.008$ , respectively). The presence of sarcopenia was significantly higher in the overt and subclinical hyperthyroidism group compared to the control group ( $p = 0.007$ ). The probability of sarcopenia was increased in the overt hyperthyroidism group compared to the subclinical hyperthyroidism group (OR: 2.44, 95% CI: 0.26–31.87). Higher levels of fT4 increased the likelihood of sarcopenia in hyperthyroid patients (OR: 6.0, 95% CI: 0.59–79.23). 88.2% of the patients with normal fT4 values had no sarcopenia (95% CI: 63.6%–98.5%).

**Conclusion:** There is a significant association between sarcopenia and hyperthyroidism, which is a common endocrine disorder. Clinicians should be aware that sarcopenia may occur secondary to hyperthyroidism and try to take preventive action.

**Disclosure of Interest:** None declared.

#### P467

##### HEALTHCARE PROFESSIONALS' PERCEPTIONS OF MALNUTRITION MANAGEMENT AND ORAL NUTRITIONAL SUPPLEMENT PRESCRIPTION IN THE COMMUNITY: A QUALITATIVE STUDY

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**Rationale:** Protein-energy malnutrition (PEM) is under-recognised in the community despite being common in older adults. The views of multi-disciplinary team members are not well represented in the literature, therefore this qualitative study aimed to explore the opinions of healthcare professionals (HCPs) working in the primary care and community settings about the management of malnutrition and oral nutritional supplements (ONS) prescribing.



**Methods:** Twelve healthcare professional (HCP) focus groups with 75 participants were conducted: community dietitians (n=17), registered dietitians working in industry (n=5), community and residential care nurses (n=22), physiotherapists (n=12), pharmacists (n=9), occupational therapists (n=6) and speech and language therapists (n=4). Focus group discussions were audio-recorded and transcribed verbatim. The data were coded and analysed using thematic analysis to develop key themes, and illustrative quotes were extracted.

**Results:** Similar views on malnutrition management existed across professions. 'Gaps in Primary Care Management' was the first key theme wherein HCPs identified resource and communication limitations. Barriers included limited or no dietetic services, limited home care services, and poor communication between general practitioners and wider primary care team members which resulted in inappropriate or delayed treatment. The second key theme, 'Challenges with ONS use in the Community', encapsulated several issues HCPs experienced with ONS usage including inappropriate prescribing and lack of monitoring of treatment goals. Conflicts of interest regarding industry dietitians assessing and treating older adults in residential care settings was highlighted by participants who worked within the health service.

**Conclusion:** This study highlights that more emphasis is needed to identify patients when they are at risk of malnutrition to avoid severe malnutrition presentations currently seen. Community dietitians for older people are required to address many of the issues raised including the need for awareness, education and training, resources, and malnutrition care pathway structures.

**Disclosure of Interest:** None declared.

#### P468

### DIETARY, LIFESTYLE AND ANTHROPOMETRIC DETERMINANTS OF SARCOPENIA AMONG SAUDI FEMALE GERIATRIC POPULATION

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**Rationale:** Sarcopenia has high health, personal, social, and economic burdens when untreated. Therefore, a better understanding of the pathogenesis of the disease could decrease the likelihood of its occurrence and its morbidity and mortality rates.

**Methods:** A cross-sectional study of elderly females recruited from health care centers and community centers in Riyadh, Saudi Arabia. Sarcopenia was identified using the Asian Working Group criteria for Sarcopenia. Food frequency questionnaires and 24 hour recall were used to assess dietary habits in addition to a lifestyle and physical activity questionnaire to examine lifestyle habits and physical activity level. Anthropometric measurements: body weight (kg), height (cm), body mass index BMI (kg/m<sup>2</sup>), waist circumference (cm), hip circumference (HC), Midarm circumference (MAC), Midarm muscle area (MAMA) conicity index and abdominal volume index (AVI) were taken for all participants. Muscle mass was measured by bioelectrical impedance analyzer (Tanita BC-418) while handgrip was used to evaluate muscle strength. Muscle performance was examined using the timed up-and-go test. Vitamin D and Irisin levels were measured as well as lipid profile. Binary logistic regression is used to independently assess the factors associated with sarcopenia.

**Results:** Study population were 131 females with the total mean age of 65.9 ± 5.5 years. Twenty-six of total participants were sarcopenic while 105 were non-sarcopenic (prevalence of sarcopenia was 19.85%). Binary Logistic regression demonstrate that anthropometric measures, BMI(OR=0.79, 95% CI 0.71-0.89, p<0.001), WC (OR=0.91, 95% CI 0.86-0.96, p<0.001), HC(OR=0.91, 95% CI 0.86-0.96, p<0.001), MAC(OR=0.75, 95% CI 0.64-0.87, p<0.001), MAMA(OR=0.90, 95% CI 0.85-0.95 p<0.001), and AVI(OR=0.79, 95% CI 0.69-0.91, p=0.001) are strong sarcopenia predictors in addition to plasma irisin level(OR=0.97,95% CI 0.95-0.99 p=0.002). While no associations were found regarding physical activity, dietary and lifestyle habits.

**Conclusion:** In elderly females, anthropometric measures could be used as predictors of sarcopenia. Additionally, plasma irisin level might be used as a biomarker for sarcopenia.

**Disclosure of Interest:** None declared.

#### P469

### IMPACT OF SOCIAL ISOLATION ON THE FRAGILITY AND QUALITY OF LIFE OF ELDERLY

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**Rationale:** The social isolation imposed by the COVID-19 pandemic caused a change of regret in the routine and lifestyle of the world population. The reduction of physical contact and social relationships, which were imposed as a safety measure, can lead to emotional overload, changes in habits and social life, increased risk of developing emotional disorders, impacts on quality of life and even mobility and mobility Physical health.

**Methods:** We included 256 patients with a median age of 73.51 ± 7.28 years who participated in our study in 2018, and who were received for frailty and quality of life, and who answered current research questions in May and June of 2020, during the recommendation of social distance, through telephone contact. For the assessment of frailty, the five questions of the self-reported frailty instrument were reapplied and the elderly were classified according to their score, being 1 = robust, 2 = pre-frail, > 3 fragile. To reassess the quality of life, the WHOQOL-bref quality of life tool was used, which classifies by domains, physical, psychological, social relations and environment, and which classifies the score for each domain from 0 to 100.

**Results:** There was a worsening in the score of the statistically significant frailty tool during social isolation among the elderly (p <0.001), and a transition between the frailty statuses, where the elderly stop being pre-frail and become frail. In the WHOQOL-bref quality of life questionnaire, there was a statistically significant decline in relation to the analysis of physical physicians (60.32 ± 9.97 vs 56.17 ± 10.17; p <0.001), in relation to the first assessment. Domain 4 environment (66.16 ± 12.88 vs 68.97 ± 12.35; p <0.001) showed improvement in relation to the first evaluation.

**Conclusion:** Social isolation can impact the worsening of frailty and quality of life in the elderly, especially in factors such as social life and the environment.

**Disclosure of Interest:** None declared.

#### P470

### COMPARATIVE ANALYSES OF SINGLE- AND MULTI- FREQUENCY BIOELECTRICAL IMPEDANCE ANALYZERS FOR DETERMINING BODY COMPOSITION IN YOUNG VERSUS OLDER ADULTS

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**Rationale:** Bioelectrical impedance analysis (BIA) is a widely preferred method to evaluate skeletal muscle mass (SMM) for confirmation of sarcopenia in older adults. There are a variety of BIA instruments available with different modalities, such as single- and multi-frequency bioelectrical impedance analyzers, for determining body composition. Age related dermatological changes might potentially effect the conductivity, which might result in differences in analyses between devices with different modalities. Effects of aging on BIA analyses with different modalities remain to be investigated. In this study, we aimed to compare single- and multi-frequency bioelectrical impedance analyzer for determining body composition in young versus older adults.

**Methods:** 42 healthy subjects aged between 18 and 60 and 40 geriatric patients aged 60 and over, were included in the study. Body composition was measured by both single-frequency 50 khz BIA (Tanita BC 418) and multifrequency BIA (InBody S10) with different frequencies between 5 and

1000 khz, consecutively. Fat free mass (FFM), fat mass (FM) of the participants were assessed.

**Results:** In the young population, there were no significant differences between analyses obtained from the single- and multi-frequency BIA devices, in terms of FFM, FM. However, in the older adults' group, results obtained from the single-frequency BIA device differed significantly from the multi-frequency one. Fat mass analyzed by single-frequency BIA device was significantly lower than measured by multi-frequency device. In contrast, fat-free mass measured by single frequency device was significantly higher compared to analyses obtained from multi-frequency BIA device (Table 1).

**Conclusion:** Body composition analyses might significantly vary in older adults depending on the device used. Therefore, modality of the device used, i.e. single- or multi-frequency BIA, might influence sarcopenia categorization of an older adult. Absence of differences between devices in young adults suggest that age-related changes might be responsible for obtaining different Results depending on the modality. Further studies are needed to investigate if this is due to age-related dermatological changes resulting in altered conductivity.

**Disclosure of Interest:** None declared.

#### P471

### THE IMPACT OF COVID-19 ON THE NUTRITIONAL STATUS OF INSTITUTIONALIZED ELDERLY PEOPLE: A STUDY CONDUCTED IN A RESIDENTIAL STRUCTURE FOR THE ELDERLY PEOPLE, IN PORTUGAL

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**Rationale:** In 2019, the pandemic caused by the new coronavirus (SARS-

Older adults (n=40)	Multifrequency-BIA	Single frequency-BIA	P-value
FFM (kg)	40.8 (29.5-71.9)	45 (32.4-75.7)	<0,001
FM (kg)	30.1 (11-42.8)	25,7 (10.7-40.9)	<0,001

Represents median (range) values

FM:Fat mass, FFM:Fat free mass

CoV-2), characterized by a severe acute respiratory infection (COVID-19) affected, with greater severity, the elderly population. The elderly people are more prone to comorbidities such as malnutrition. An adequate nutritional status is essential for an effective response of the organism, in the fight against any infection. The aim of this study was to assess the impact of COVID-19 on the nutritional status of a group of institutionalized elderly people in a residential structure in Portugal.

**Methods:** Using a nutritional status assessment tool – Mini Nutritional Assessment (MNA) and anthropometric measures (weight and height), the nutritional risk and status of the group in study was assessed, before and after an outbreak of COVID-19.

**Results:** Fourteen individuals with an average age of 77 ± 12 years were included. Prior to the outbreak of COVID-19, the average body weight was 68.2 ± 13.0 Kg and the Body Mass Index (BMI) was 25.8 ± 4 Kg/m<sup>2</sup>. Zero individuals were malnourished. Nine of these elderly people showed eutrophy and five were at risk of malnutrition - due to difficulties related to mobility and/or neuropsychological causes. After the outbreak of COVID-19, the average weight decreased to 66.3 ± 12.0 Kg and the BMI dropped, on average, to 25,1 ± 4 Kg/m<sup>2</sup>. Three elderly people registered a weight increase, three maintained their weight and the remaining elderly (n=8) had an average weight loss of 4,9 ± 3,0 Kg. Concerning to MNA, two elderly people were considered malnourished, seven were at nutritional risk and

five were in adequate nutritional status. All elderly people reported moderate to severe loss of appetite, during the outbreak period.

**Conclusion:** Although a nutritional intervention was carried out, this study concludes that the outbreak of COVID-19 had a negative impact, both on appetite and on weight maintenance in the acute phase of infection, and consequently in the maintenance of the nutritional status of elderly people.

**Disclosure of Interest:** None declared.

#### P472

### FACTORS ASSOCIATED WITH THE ELDERLY QUALITY OF LIFE: DIETARY PATTERN, BODY COMPOSITION AND COGNITION

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**Rationale:** Physical and psychological factors, social and environmental relations are known as domains of quality of life. These may be influenced by metabolic and physiological changes that appear in old age, like change in diet, sarcopenia, inflammation, dysbiosis, cognitive decline and frailty. Therefore, the challenge is to contribute for elderly people to live their own lives with the highest possible quality.

**Methods:** We included 295 patients aging 69 ± 7.48 years old included in our study from 2018, and evaluated them for quality of life, dietary pattern, frailty, sarcopenia and cognition beside collecting clinical data. The World Health Organization Quality of Life-Bref (WHOQOL-BREF) instrument was used to assess quality of life, classified by the domains: physical, psychological, social relations and environment where each domain is scored from 0 to 100. Consumption diet was assessed the software Virtual Nutri Plus after data collected by the gold standard method, 7-day food record. Sarcopenia was evaluated by the European Consensus (EWGSOP2), frailty by Fried's phenotype classifying the elderly as non-frail, pre-frail or fragile and cognition was assessed by the Mini Mental State Examination

**Results:** There was a significant association between frailty, gait speed and calcium intake in all domains (p <0.001). In addition, handshake strength was associated with three of the four domains, namely: physical, psychological and environmental while cognitive decline was associated to the physical, social relations and environmental domains. Multiple diseases have been associated with the domain of social and psychological relationships. The consumption of copper and calcium from diet was associated with the physical domain and polypharmacy with the psychological.

**Conclusion:** The factors most influencing the quality of life of the elderly were frailty, gait speed and calcium intake. But cognition, polypharmacy, multiple diseases, consumption of copper and phosphorus were also associated with the elderly quality of life. Therefore, we suggest that these factors should be evaluated and considered to outline strategies for promoting and maintaining elderly health.

**Disclosure of Interest:** None declared.

#### P473

### CONSIDERING OF NUTRITIONAL MANAGEMENT IN HOSPITALIZED OLDEST-OLD PATIENTS

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**Rationale:** Older people(over 65 years) and oldest-old people(over 80 years) categorize respectively in WHO definition, and ESPEN geriatrics guideline say 30kcal/kg is appropriate calorie for older people including oldest-old people adjusting for individual conditions. In our study, age was related to nutritional improvement at discharge that oldest-old inpatient group's nutritional improvement rate was significantly lower than that of older inpatient group. (P=0.00722, chi-square test) Japan's aging rate is the highest in the world,hence we need to consider whether to do another nutritional management for oldest-old patients or not.

**Methods:** 175 inpatients undergoing rehabilitation aged 65-100 years were divided into two groups of older patient group aged 65-79 years(n=75) and oldest-old patient group aged 80 years or older (n=100), and investigated

retrospectively about the relationship calorie intake and nutritional condition between April 2019 and March 2020 at Katano Hospital.

**Results:** Average calorie intake in nutritional improvement cases assessed by geriatric nutritional risk index (GNRI) showed statistically no significant difference in older patient group (mean calorie: 33 kcal/kg) or in oldest-old patient group (mean calorie: 35 kcal/kg). Similarly, showed no significant difference in weight gain cases in both groups. Compared nutritional improvement group (mean calorie: 35 kcal/kg) with non-nutritional improvement group (mean calorie: 30 kcal/kg) in oldest-old patient group, nutritional improvement group is significantly higher in calorie intake than non-nutritional improvement group ( $P=0.00768$ ,  $t$  test). On the other hand, compared nutritional improvement group (mean calorie: 33 kcal/kg) with non-nutritional improvement group (mean calorie: 29 kcal/kg) in older patient group, there was no significant difference in calorie intake between the two groups.

**Conclusion:** Oldest-old people is desirable to take 30 kcal/kg to make an improvement of nutritional condition as well as older people. In particular, in the case of oldest-old people, when nutritional management is carried out for the purpose of improving nutrition, it is considered that providing a higher amount of nutrition is more likely to lead to nutritional improvement. For the elderly, obtaining better ADL after acute treatment is the key to discharge and which is also socio-economically beneficial. Whether or not nutrition can be improved by the time of discharge and lead to better ADL acquisition is an issue that affects the patient's prognosis.

**Disclosure of Interest:** None declared.

#### P474

### INVESTIGATION OF CHANGES IN THE BODY COMPOSITION AND HEALTH CONSCIOUSNESS IN OLDER ADULTS WHO UNDERWENT NUTRITIONAL AND PHYSICAL ASSESSMENT, PARTICULARLY IN THOSE WITH DECREASED MUSCLE STRENGTH AFTER LEUCINE AND EXERCISE INTERVENTION

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**Rationale:** According to the National Health and Nutrition Survey of Japan, 16.8% of individuals aged  $\geq 65$  years are in a suspected condition of undernutrition (body mass index [BMI]  $\leq 20$  kg/m<sup>2</sup>, a threshold for significant increases in the risks of long-term care dependence and overall mortality). In cooperation with City K, we conducted a nutritional assessment and education workshop with older adults on the essential amino acid leucine, which is necessary to maintain muscle health. This study aimed to investigate changes in the body composition and health consciousness in older adults with decreased muscle strength after intervention.

**Methods:** The present study included 62 residents of City K aged  $\geq 65$  years who participated in a workshop of a health science course in July 2019 and provided their consent. The MNA® scores (Mini Nutritional Assessment), grip strengths, and walking velocities of the subjects were evaluated as outcome measures. Subjects who had decreased muscle strength repeated the measurement 1 month after nutritional supplementation (leucine 1200 mg) and exercise guidance.

**Results:** Of the 62 older adults aged  $\geq 65$  years, 30.6% had a BMI of  $\leq 20$  kg/m<sup>2</sup>. There was a significant difference in BMI between subjects in a good nutritional condition ( $22.3 \pm 2.9$ ) and subjects at risk ( $19.2 \pm 1.8$ ) ( $p < 0.01$ ). The grip strength and walking speed results revealed that 8.1% of the subjects with BMI  $\leq 20$  kg/m<sup>2</sup> and 12.9% of the subjects with BMI  $> 20$  kg/m<sup>2</sup> had decreased muscle strength. Five of the 12 women with grip strength  $< 20$  kg continued the nutritional supplementation and exercise for 1 month. While no changes occurred in the subcutaneous fat thickness, their grip strength, walking speed, and MNA® scores increased.

**Conclusion:** Nutrition and exercise intervention after nutritional assessment increases diet-related health consciousness in older adults.

#### References:

The National Health and Nutrition Survey in Japan, 2019 Ministry of Health Labour and Welfare

**Disclosure of Interest:** None declared.

## Qualitative design studies

### P475

### AN ELECTRONIC DECISION TREE TO GUIDE PHYSICIANS IN PRESCRIBING PARENTERAL NUTRITION IN HOSPITALISED PATIENTS: DEVELOPMENT, VALIDATION AND PROOF OF CONCEPT

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**Rationale:** International guidelines state that clinical decision support enhances appropriate prescribing of parenteral nutrition (PN), leading to increased quality of care and cost savings. We aimed to develop, validate and analyse an electronic PN decision tree (ePNDT) embedded in our electronic health record.

**Methods:** Six nutrition experts validated the content of the ePNDT (assessing the risk of malnutrition, indication and suggestion of a ready-to-use PN mixture based on clinical risk factors). The Item-Content Validity Index (I-CVI; acceptable threshold of  $\geq 0.78$ ) for every item of the tree, Scale-CVI/Universal Agreement (S-CVI/UA; threshold of  $\geq 0.80$ ) and Average Scale-CVI (S-CVI/Ave; threshold of  $\geq 0.90$ ) were calculated. The ePNDT was implemented on nine pilot hospital wards (220 beds). A process validation was performed by determining the percentage of agreement between research pharmacists and physicians. As a proof of concept, the proportion of patients for which the ePNDT had an actual impact (difference between what the physician would prescribe before using the tree and what was prescribed after using the tree) on the prescription behaviour of physicians was calculated, besides the potential impact and the proportion of avoided PN.

**Results:** For 116 out of 120 items included in the ePNDT, the I-CVI was 1. The S-CVI/UA and S-CVI/Ave were 0.97 and 0.98, respectively. The ePNDT was used to initiate PN in 85 patients. Process validation revealed 78% agreement. A potential and actual impact on the prescription behaviour was seen in respectively 79% and 50.7% of the patients. PN initiation could not be avoided.

**Conclusion:** Our ePNDT has an excellent content and good process validity. Preliminary Results revealed a substantial impact on the prescription behaviour. However, initiation of PN could not be avoided, probably because the pilot wards are used to prescribe PN. We will now implement this ePNDT hospital-wide. Future research will focus on reducing PN initiation, length of stay and costs, and on clinical outcomes.

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### P476

### EFFECT OF MALNUTRITION AND NUTRIENT ADEQUACY ON THE LENGTH OF HOSPITAL STAY AND DISCHARGE OUTCOME OF NON-CRITICALLY ILL COVID PATIENTS IN A TERTIARY HOSPITAL

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**Rationale:** The effect of malnutrition, and nutrient adequacy on the length of stay and discharge outcome was examined in this study.

**Methods:** A total of eighty-three non-critically-ill covid patients admitted in a tertiary care hospital from May 2020 to December 2020 was randomly selected and their medical records were reviewed to gather the data necessary to achieve the primary intent of the study.

**Results:** Descriptive results revealed the age range of patients was from nineteen to ninety-five years of age, in which majority are either married or widowed male patients. The prevalence of malnutrition and nutrient inadequacy were recorded to be at more than ninety percent (90%) for both. Pre-existing comorbidities is present in ninety-six percent (96%) of the patients, while more than eighty-five percent (85%) of these patients stayed in the hospital for more than seven days with twenty-six (or 31%) mortalities. Using multivariate analytical tool, particularly logistic regression with bootstrapping ( $\alpha = 0.05$ ), high Modified Subjective Global Assessment (MSGa) score and grade, nutrient inadequacy (i.e. calories < 75%; protein < 75%) and pre-existing comorbidities were implicated to have significant association with discharge outcome, while no significant association was revealed between the same metrics and length of stay.

**Conclusion:** Nutritional support in the management of non-critically ill covid patients is essential, and hence recommending to revisit appropriate institutional clinical protocols.

**Disclosure of Interest:** None declared.

#### P477

##### EXPERIENCES OF THE COVID-19 PANDEMIC: A SURVEY OF PATIENTS ON HOME PARENTERAL NUTRITION

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**Rationale:** The COVID-19 pandemic has had an unprecedented impact on patients on home parenteral nutrition (HPN). HPN patients have had to endure sweeping changes to their personal lives and medical care following governmental advice to “shield”, disruption in PN supply and the implementation of virtual consultations. We evaluated the patients’ perspectives of these changes and their experiences of the pandemic overall.

**Methods:** An online survey was disseminated to our centre’s cohort of HPN patients. The survey assessed anxieties & concerns, information seeking behaviours and the effect of changes to their HPN care.

**Results:** 35 patients completed the questionnaire giving a response rate of 29%. 70% reported worsening quality of life scores during the pandemic with 40% reporting high levels of anxiety and depression. Patients accessed a range of information sources for advice on protecting themselves including official letters from the HPN centre & government, online resources, television reports etc. There was no single information source that significantly alleviated concerns compared to others. Most patients were reassured by information accessed (83%) however patients expressed frustration at inadequate information (20%) and conflicting information from various sources (23%). Most patients (85%) had a blood test whilst shielding with patients reporting average scores for safety at 8.8 out of 10. The vast majority of patients (91%) undertook telephone consultations where over a quarter (29%) felt these were as good as face to face encounters. 53% were keen to continue telephone clinics after the pandemic.

**Conclusion:** Telephone consultations were well received and the option for continuation should be offered post-pandemic. HPN providers should bolster psychological support services available to patients and review communication channels with patients to avoid conflicting information and alleviate anxiety.

**Disclosure of Interest:** None declared.

#### P478

##### PREDICTIVE MODELS FOR PROTOCOL EVALUABLE RATES

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**Rationale:** Various factors affect attrition in trials including non-compliance to the protocol, premature discontinuation of intervention, and early dropout. To ensure adequate power, prior to terminating enrollment, an evaluation of the likely attrition rate at the end of the trial is made. In most cases, such assessment occurs early in the study when few subjects have completed. Therefore, the objective of this project is to obtain an accurate estimate of the evaluable rate based on limited observed data.

**Methods:** Bootstrap samples from 5 historical 4-months infant growth monitoring studies (GMS), conducted over 2007 to 2020, were randomly selected with replacement in order to 1) develop predictive models for evaluable rates, 2) establish reference evaluable rates and 3) test the effect of enrollment order. If enrollment order is not significant, simulation assumptions could be simplified. The predictive models were evaluated using goodness of fit (predicted - final study evaluable rates). The effects of enrollment order on evaluability were tested using logistic regression. Statistical analyses were done using SAS® 9.4 and SAS® Enterprise Guide 7.1 (SAS Institute Inc, Cary, NC).

**Results:** Results of bootstrapping showed that effects of enrollment order on evaluability were not significant (all  $P > 0.21$ ). Moreover, predictive models based on linearly regressing on a simple estimator of the evaluable rate,  $p_n = \text{number of subjects evaluable in the first } n \text{ subjects enrolled} / n$ , were adequate and more accurate than using  $p_n$  alone. Goodness of fit showed that 80% of the differences (final - predicted) were within 5.2% using the first 10 enrolled and 80% of the differences were within 5.0% using the first 20, 30, 40, or 50 subjects enrolled. GMS studies with 2 arms typically require 200 enrolled subjects to obtain 128 evaluable subjects.

**Conclusion:** Using simulation, an accurate estimate of the evaluable rate in GMS can be made based on the early experience in a trial.

**Disclosure of Interest:** Y. Choe Other: YC is an employee of Abbott Nutrition, G. Baggs Other: GB is an employee of Abbott Nutrition.

#### P479

##### IMPACT OF NUTRITIONAL STATUS ON QUALITY OF LIFE IN INDIVIDUALS WITH IRRITABLE BOWEL SYNDROME: A QUALITATIVE STUDY

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**Rationale:** Irritable bowel syndrome (IBS) is a functional and chronic gastrointestinal bowel disorder affecting 10–25% of the population. Most patients report that their IBS symptoms are affected by the foods they consume. Therefore, patients with IBS avoid eating foods that are associated with reduced quality of life, and this causes negative emotions related to the development of nutrition in patients. This study aims to explore how nutrition, which is the cause of reduction in the quality of life, affects the quality of life of patients with IBS.

**Methods:** Twenty semi-structured in-depth face-to-face interviews were conducted in Ankara, Turkey from November 2018 to June 2019. Twenty patients with IBS (13 women, 7 men) with a mean age of 39 (23–59) years were interviewed. The mean IBS duration was 16 (0–60) months. The interview lasted between 45 and 60 min. They were recorded and later transcribed verbatim. Interviews were evaluated with the interpretive phenomenological analysis.

**Results:** Four main themes emerged from the analysis. These themes are 1. Thoughts and experiences about treatment alternatives, 2. Effects of eating habits on appetite, 3. Feelings, thoughts and experiences about the recommended diet, 4. The effect of the disease on daily life. We determined the interest and knowledge levels of the individuals regarding the medical nutrition therapy of IBS were insufficient. Therefore, patients use communication tools such as television and social media instead of health professionals and do not question their reliability individually. Moreover, the patients reported felt intense stress about medical nutrition therapy due to they do not know the exact source of the illness. They stated negatively affected their family, work, and social life.

**Conclusion:** The Results suggest that increasing medical nutrition therapy knowledge may contribute to improved quality of life in patients with IBS. The need for health education initiatives to improve nutritional knowledge in the IBS population is important for a healthier population. Quality of life

determinants can assist healthcare professionals achieve their goals in IBS treatment education.

**Disclosure of Interest:** None declared.

#### P480

### NUTRITIONAL EDUCATION FOR MEDICINE STUDENTS BASED ON THE ESPEN CONSENSUS: A PILOT STUDY IN BRAZIL

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**Rationale:** Nutritional education in medical schools has been shown to be heterogeneous and deficient, requiring students to know the bases of an adequate Nutritional Therapy in the various stages of life and in the disease<sup>1</sup>. After all, a poor diet is responsible for more deaths than any other risk factors<sup>2</sup>. Studies have observed in many parts of the globe that most medicine students feel unprepared regarding nutritional education to provide adequate nutritional care<sup>3</sup>. We adapted the curriculum of our medical course according to the ESPEN Recommendations (Nutrition Education in Medical Schools-NEMS) one year before this study.

**Methods:** Observational study took place, voluntary, with students enrolled in the 8th, 9th, 10th, 11th and 12th periods of the medical course. Students' satisfaction with the quality and quantity of their current nutritional education was assessed, the perception of the student body regarding its preparation in nutritional care and the relevance of nutrition in its future medical practice.

**Results:** There were low medical students' (n=71) support to the questionnaire partly due to the difficulties arising from the Pandemic by SARS-CoV-2. 66% of students said they knew the role of macronutrients, but only 33% the role of micronutrients. More than 90% of the students consider the content of enteral and parenteral nutrition important and were considered sufficient/complete by about 60% of the students, as well as the content of hospital malnutrition. In general, more than 90% of students consider the discipline of Nutrology to be very important or essential and related to the other contents of medical training.

**Conclusion:** The data show that the objectives of the Nutrology discipline are being achieved, but Nutrition education to medical students needs to be improved, and our university's initiative aims to increase students' interest and their training in this area. Subsequent studies should evaluate the effect of the NEMS Project on our medical school.

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### Perioperative care

#### P481

### RECORDING AND EVALUATING THE ADHERENCE OF PREOPERATIVE FASTING GUIDELINES

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**Rationale:** Preoperative fasting aims at prevention of aspiration during anaesthesia induction. Prolonged fasting deteriorates patient's metabolic

state and reduces patient comfort. Although the duration of preoperative fasting is clearly described, adherence to the guidelines seems poor. This study assessed preoperative fasting guideline compliance for electively scheduled surgical patients.

**Methods:** In this single centre, prospective, cohort study patients and/or their caregivers, in case of young children, were asked about their preoperative fasting times on their arrival at the theatre complex. Additional information was retrieved from the electronic patient file: patient characteristics, surgical specialism, surgical pathway (clinical- or day case surgery), planned operating time (first or later), scheduled and actual starting time of surgery.

**Results:** Prolonged preoperative fasting (>8 hrs) occurred in 94.8% of the 757 included patients. Median (IQR) preoperative fasting time for all patients was 14.1 hrs (12.2-16.0) for solids, and 9.8 hrs (3.8-13.2) for clear fluids. In 610 adults the preoperative fasting time for solids was 14.2 hrs (12.5-16.2), and 10.5 hrs (4.6-13.5) for clear fluids; in 147 children it was 13.3 hrs (9.0-15.2) for solids, and 3.6 hrs (2.4-10.0) for clear fluids. Preoperative fasting times for solids and clear fluids differed significantly between adults and children. In all patients, risk factors for prolonged fasting included age, scheduled first of the day, and surgical delay affected preoperative fasting time; whereas surgical specialism, and surgical pathway had no influence.

**Conclusion:** This study shows excessive preoperative fasting times in all electively scheduled surgical patients, indicating poor implementation of fasting guidelines in routine clinical practice.

**Disclosure of Interest:** None declared.

#### P482

### IMPLEMENTATION OF ANAESTHETIC FASTING GUIDELINES IN UPPER ABDOMINAL ENDOSCOPY TO SHORTEN FASTING TIMES: A CONTROLLED PILOT STUDY

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**Rationale:** Fasting before endoscopy is required to ensure a clear view on the mucosa and prevent aspiration. However, patients stop eating and drinking too early leading to erroneously prolonged fasting times. This study examines how evidence-based fasting guidelines can be carried out by patients before endoscopy and how these can impact fasting times, gastric visibility and patients' comfort.

**Methods:** A prospective non-randomized controlled pilot study was performed among outpatients planned for endoscopy. Control group (CG) patients received usual care. Patients in the intervention group (IG) were actively instructed to eat until six hours and drink until two hours before endoscopy as is suggested in the anaesthetic guidelines. Outcomes were patients' perspective towards the instructions, fasting times, gastric visibility and patients' comfort.

**Results:** From 109 included patients, 42 (37%) received evidence-based fasting instructions in preparation of the endoscopy. Patients' perspectives on fasting, their experiences discomfort, professional support, and biological rhythm influence the applicability of the fasting instructions. Fasting times from solid foods and clear liquids were 3:14hrs (95%CI 0:04-4:24 hrs) and 5:22 (95%CI 3:57-6:46) shorter in IG compared to CG. Length of fasting from solid foods was more frequently adequate (i.e., less than eight hours) in the intervention group compared to the usual care group (n=12, 29% versus n=5, 8%). Length of fasting from clear liquids was more frequently adequate (i.e., less than four hours) in the intervention group compared to the usual care group (n=26, 62% versus n=4, 6%). Gastric visibility was better in the IG compared to CG in terms of 27.0ml less residual volume (95%CI 9.1-45;), 27% less attempts of flushing (95%CI 8-46), and 1.92 points lower Mucosal Visibility Score (MVS) (95%CI 0.831-3.013) indicating better visibility of the gastric mucosa. No significant differences were found patients' comfort.

**Conclusion:** Fasting times were prolonged, but significantly shorter in instructed patients. Patients are willing to apply the instructions when they see the benefits and when it fit in their biological rhythm. Endoscopic quality may improve when patients are not exposed to prolonged fasting. Future studies should incorporate these eating and drinking recommendations in preparation of anaesthetic procedures and address patients' involvement for optimal preparation.

**Disclosure of Interest:** None declared.

#### P484

### FEASIBILITY STUDY AT TOOLS TO SELF-MANAGE PHYSICAL ACTIVITY AND NUTRITIONAL INTAKE IN COLORECTAL CANCER SURGERY

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**Rationale:** The use of digital technologies, such as self-managing physical activity trackers (PATs) and digital food records (DFRs), is promising for improving perioperative physical activity and nutritional intake. This study aimed to assess feasibility, usability and acceptability of a PAT and DFR in patients scheduled for colorectal cancer (CRC) surgery.

**Methods:** This observational cohort study was conducted at a large training hospital between November 2019 and 2020 in CRC patients between 18-75 years old who were able to use a smartphone or tablet. Excluded were; patients i) not mentally competent; ii) not proficient in Dutch; iii) not planned for elective surgery; or iv) following a protein-restricted diet. Participants used a PAT (Fitbit Charge 3) from 4 weeks before until 6 weeks after surgery. In the week before surgery (preoperative) and the fifth week after surgery (postoperative), participants also used a DFR for one week. They shared their experience regarding usability [System Usability Scale (SUS), range 0 to 100] and acceptability [Net Promoter Score (NPS), range -100 to +100].

**Results:** 28 patients were included (57% male, age 61 ± 8 years), 27 shared their experience. Preoperative PAT-scores were for SUS median 85 (IQR: 73-90) and for NPS +65. Postoperative scores were 78 (IQR: 68-85) and +67, respectively. The DFR scores were NPS +37 and -7 preoperative and postoperative, respectively.

**Conclusion:** The use of a PAT is considered feasible, usable and acceptable in the perioperative period by CRC patients in this study. Postoperatively the use of the DFR decreased.

**Disclosure of Interest:** None declared.

#### P486

### VARIATIONS IN PERIOPERATIVE NUTRITION CARE IN UPPER GASTROINTESTINAL CANCER: FINDINGS FROM THE AUSTRALIA WIDE NOURISH POINT PREVALENCE STUDY

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**Rationale:** Prevention of malnutrition and provision of nutrition support are strongly recommended for patients with upper gastrointestinal (UGI) cancer to optimise outcomes. This study determined the perioperative nutrition intervention received across 27 Australian hospitals.

**Methods:** Data on nutritional status (using subjective global assessment) and perioperative nutrition intervention were collected from UGI cancer patients undergoing curative resection. Fisher's exact test was used to

determine differences in access to care between surgery types, clinical characteristics and nutritional status.

**Results:** Between September 2019 and May 2020, 200 participants were included (age 67 ± 10, 59% males, 42% pancreatic, 33% oesophageal, 25% gastric resections). Only 59% received dietetics input preoperatively. Patients undergoing pancreatectomy were less likely to receive preoperative dietetics care than oesophagectomy/gastrectomy (43% versus 73% p<0.001), whilst those undergoing neoadjuvant therapy were more likely to access dietetics care than those who did not (7% vs 44%, p<0.001). Although more malnourished patients received nutrition support than well-nourished patients (57% vs 39%, p=0.014), 43% of malnourished patients did not receive any nutrition support. Dietetics follow up was arranged for 91%; 50% within 2 weeks of discharge, 21% within 2-4 weeks, 8.5% within 4-8 weeks, 0.5% >8 weeks, 11% unspecified timeframe.

**Conclusion:** Perioperative nutrition support practices are inadequate and highly varied across health services despite recommendations outlined in practice guidelines. Improved nutrition support and standardisation of services across is required.

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#### P487

### NUTRITIONAL STATUS AND NUTRITION IMPACT SYMPTOMS IN PATIENTS UNDERGOING RESECTION FOR UPPER GASTROINTESTINAL CANCER: FINDINGS FROM THE AUSTRALIA WIDE NOURISH POINT PREVALENCE STUDY

I. Deftereos<sup>\*1,2</sup>, J. Yeung<sup>2,3</sup>, E. Isenring<sup>4</sup>, V. Carter<sup>5</sup>, N. Kiss<sup>6</sup>. on behalf of The Nutritional Outcomes of patients Undergoing Resection for upper gastrointestinal cancer in AuStralian Hospitals (NOURISH) Point Prevalence Study Group<sup>1</sup>Nutrition and Dietetics, Western Health, Melbourne, Australia; <sup>2</sup>Department of Surgery, The University of Melbourne, St Albans, Australia; <sup>3</sup>Department of Surgery, Western Health, Footscray, Australia; <sup>4</sup>Nutrition and Dietetics, Bond University, Robina, Australia; <sup>5</sup>Nutrition and Dietetics, Western Health, Footscray, Australia; <sup>6</sup>Institute for Physical Activity and Nutrition, Deakin University, Burwood, Australia

**Rationale:** This study investigated nutritional status at the time of curative upper gastrointestinal (UGI) cancer resection, as well as presence of preoperative nutrition impact symptoms, and associations with length of stay (LOS).

**Methods:** A prospective point prevalence study was conducted at 27 Australian tertiary hospitals between September 2019 and May 2020. Subjective global assessment and weight were performed within 7 days of admission. Patients reported on preoperative weight changes and nutrition impact symptoms lasting longer than two weeks using a purpose-built data collection tool. Fisher's exact and Mann Whitney U tests were utilised.

**Results:** Two hundred patients participated with a mean age of 67 years ± 10 and majority (59%) males. There were 42% pancreatic, 33% oesophageal and 25% gastric resections. Malnutrition prevalence was 42% (95% CI 35-49%), whilst 49% lost ≥5% weight in 6 months, with no differences between surgical procedures (p=0.864 and p=0.943 respectively). The prevalence of preoperative gastrointestinal nutrition impact symptoms was 45%, with poor appetite and early satiety being the most reported (37% and 23%, respectively). Patients who were malnourished had an increased LOS compared with well-nourished participants (14 days, IQR 8,18 versus 10 days, IQR 8,14; p=0.046). Patients with unintentional weight loss of ≥5% in 6 months also had an increased LOS compared with those with ≤5% (14 days, IQR 8, 19.3 versus 10 days IQR 8,14; p=0.007).

**Conclusion:** Despite increasing recognition of the importance of preoperative nutritional intervention, high proportion of patients present with malnutrition or clinically significant weight loss, which are associated with increased LOS. Further research is required regarding the dietetics

interventions currently received prior to UGI surgery and the impact on clinical outcomes.

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#### P488

### A GLOBAL SURVEY OF NUTRITION SUPPORT PRACTICES IN PATIENTS HAVING CYTOREDUCTIVE SURGERY AND HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY

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**Rationale:** The use of cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) to treat peritoneal malignancies originating from gastrointestinal and gynaecological organs is expanding worldwide. The nature of the disease and the extent of the procedure can have significant nutritional consequences. The importance of perioperative nutrition care has been identified, however there is no consensus on best practice. The purpose of this study was to identify the current nutrition support practices in international centres performing CRS and HIPEC.

**Methods:** In October 2020 an online survey was sent to experienced CRS and HIPEC centres selected by recent high volume publications. Survey questions covered clinician and institution demographics, formal nutrition care pathways, pre-operative nutrition care, post-operative nutrition support and post-discharge care.

**Results:** Eighty-two centres were contacted. Survey responses were received from 42 institutions across 20 countries (51%). Most respondents were dietitians (71%) and 88% of institutions indicated they had a dedicated dietitian. Nutrition assessments were frequently completed: 50% of centres completed nutrition assessments pre-operatively and >85% post-operatively. Specific criteria was used to identify pre-operative malnutrition and implement nutrition support in 58% of centres.

Post-operative nutrition support varied widely between centres; 44% reported using routine early parenteral nutrition (PN), 37% reported commencing enteral nutrition (EN) within 5 days, 38% reported commencing a free fluid diet within 48hours. There were no significant associations between CRS and HIPEC indication or volume of operations performed ( $p>0.05$ ). Centres in Europe, Canada and the Asia/Pacific were more likely to implement routine EN or PN compared to those in the United States and South America ( $p=0.007$ ).

**Conclusion:** Nutrition assessment and support has been integrated into the care of patients undergoing CRS and HIPEC globally however variation in practice is evident. Further research should focus on identifying the best timing and type of nutrition support to improve patient outcomes.

**Disclosure of Interest:** None declared.

#### P489

### THE EFFECT OF PERIOPERATIVE IMMUNONUTRITION ON SURGICAL COMPLICATIONS AND QUALITY OF LIFE IN PATIENTS WITH HEAD AND NECK CANCER

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**Rationale:** This intervention study, which was planned as a prospective randomized controlled, was conducted to compare the effects of perioperative nutritional support with immunonutrition and standard enteral products on postoperative complications and quality of life in patients with head and neck cancer (HNC).

**Methods:** Between April February 2019 and February 2021, the study was conducted in Erciyes University Faculty of Medicine and Kayseri City

Hospital Otolaryngology and Head Neck Surgery Clinic with 34 hospitalized patients with a diagnosis of HNC. Five days before surgery and 10 days postoperatively, immunonutrition support was given to the intervention group ( $n=17$ ), and standard enteral nutrition support was given to the control group ( $n=17$ ). Five days before surgery, 10th and 40th postoperative days; body analyzes were made, food consumption records were taken, Nutritional Risk Score (NRS) -2002 and quality of life scales (EORTC QLQ-C30, EORTC QLQ-H & N35) were applied, biochemical parameters, complications, length of hospital stay and nutritional support has been recorded.

**Results:** Although there was no difference in energy intake between the intervention and control groups on the preoperative and 10<sup>th</sup> postoperative day, protein intake was significantly higher in the intervention group on the 10<sup>th</sup> postoperative day ( $p<0.001$ ). In terms of anthropometric measurements, there was no significant differences between groups and within periods ( $p>0.05$ ). The NRS-2002 scores of the intervention and control groups increased on the 10<sup>th</sup> postoperative day ( $2.65\pm 1.37$ ,  $3.18\pm 1.13$ , respectively) compared to the preoperative period ( $2.0\pm 1.28$ ,  $2.65\pm 1.37$ , respectively), and decreased again on the 40<sup>th</sup> day ( $2.06\pm 1.30$ ,  $2.71\pm 1.31$ , respectively,  $p>0.05$ ). Serum albumin levels decreased on the 10th postoperative day compared to the preoperative period, both in the intervention group ( $3.86\pm 0.51$  mg/dL) and in the control group ( $3.60\pm 0.41$  mg/dL,  $p<0.05$ ). A significant decrease was found in the CRP levels of the intervention and control groups on the 40<sup>th</sup> day compared to the 10<sup>th</sup> postoperative day ( $p<0.05$ ). Function scales, physical, role, and cognitive function scores of the intervention group on the 40<sup>th</sup> postoperative day were higher than the control group ( $p<0.05$ ). In the postoperative period, there was no significant difference between the groups in terms of complications, length of hospital stay, and nutritional support ( $p>0.05$ ).

**Conclusion:** In conclusion, compared to the perioperative standard enteral nutritional support, immunonutrition support provides an improvement in some components of quality of life scales. However, it has been shown that studies with longer follow-up and larger samples are required to observe its effect on complications.

**Disclosure of Interest:** None declared.

#### P490

### FOOD PREFERENCE OF PATIENTS SHORTLY AFTER SURGERY AT THE POSTOPERATIVE ANAESTHESIA CARE UNIT

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**Rationale:** Although most patients are able and allowed to eat and drink shortly after surgery, in the Postoperative Anaesthesia Care Unit (PACU) few patients do so. To facilitate postoperative intake at the PACU, we assessed food preference of patients shortly after surgery.

**Methods:** In this prospective, observational pilot study, adult patients scheduled for elective surgery with general anaesthesia filled out the Macronutrient and Taste Preference Ranking Task (MTPRT) online (on an iPad) at the PACU. In addition, questions using Likert 5-point scales (ranging from dislike to extremely liked) were asked about separate taste preferences, food texture preference, and temperature preference.

**Results:** 57 patients in the PACU ranked high carbohydrate (median 3.0, with IQR [2.0-3.0]), high-fat (2.6 [2.3-2.8]), and low energy (2.7 [2.3-3.6]) products high (MTPRT ranking score cut off at 2.5; above 2.5 liked and below less liked); in contrast protein products (2.1 [1.6-2.6]) were ranked low. Sweet products (2.8 [2.5-3.1]) were preferred over savoury ones (2.2 [1.9-2.5]).

Postoperative patients had a wide variety in taste preference: sweet (median [IQR] 3.0 [2.0-4.0]), salt (3.0 [2.0-4.0]), and savoury (4.0 [2.3-4.0]) were liked, whereas bitter (2.0 [1.0-3.8]) and sour (2.0 [1.0-3.0]) were less liked. Of the food textures, patients liked crispy (3.0 [2.0-4.0]), soft (4.0 [2.3-4.0]), and juicy (4.0 [3.0-4.0]), whereas dry (2.0 [1.0-3.0]), creamy (2.0

[1.0-3.0]), spicy (2.0 [1.0-3.8]), and fizzy (2.0 [1.0-3.0]) products were less favoured. Both hot (4.0 [3.0-4.0]) and cold (4.0 [3.0-5.0]) food products were appreciated.

**Conclusion:** At the PACU, shortly after surgery, patients favoured a wide variety of food products with different taste and product characteristics. In the near future the available food products at the PACU should be adjusted to patients food preference.

**Disclosure of Interest:** None declared

**P493**

**INFLUENCE OF PERIOPERATIVE FASTING TIME IN PATIENTS UNDERGOING ORTHOPEDIC SURGERIES**

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**Rationale:** Prescription of extended preoperative fasting is common in clinical practice. On the other hand, food intake a few hours before surgery has shown benefits to the patient, but have low adherence by health services. The aim of this study was to investigate the effects of perioperative fasting time on postoperative recovery and hospital length of stay in patients undergoing elective orthopedic surgery.

**Methods:** Longitudinal study (40), 56.8±17.6 years old. A structured questionnaire was applied containing sociodemographic, anthropometric, clinical, lifestyle data and also item related to surgery and perioperative fasting. The preoperative fasting time was considered abbreviated when it was less than 4 (four) hours and postoperative fasting was considered adequate when the diet was reintroduced within 24 hours. Gastrointestinal post-operative complications were considered. The data were analyzed using the SPSS Statistic® program, with a significance p-value <0.05.

**Results:** Most patients were not classified with nutritional risk by NRS-2002, were overweight by Body Mass Index, had low hemoglobin and hematocrit values, and reduced handgrip strength. The mean post-operative hospital stay was 4.2±5.0 days. The predicted pre and post-operative fasting were higher than the performed (p=0.000). In major surgeries, the abbreviated preoperative fasting was related to a shorter postoperative hospital stay (p=0.005). The perioperative fasting time did not affect the prevalence of postoperative complications.

**Table** Operative fasting, postoperative hospital stay and postoperative complications in patients undergoing major orthopedic surgeries at a university hospital. São Luís, Maranhão, 2019.

Preoperative fasting		Abbreviated fasting		Conventional fasting		Total		p-value
Preoperative fasting		f	%	f	%	f	%	
Length of hospital stay								
Hospital discharge until 2 <sup>nd</sup> Day After Surgery		12	63.2	2	12.5	14	40.0	0.005*
Hospital discharge after 2 <sup>nd</sup> Day After Surgery		7	36.8	14	87.5	21	60.0	
Postoperative fasting		Adequate fasting		Prolonged fasting		Total		p-value
Postoperative fasting		f	%	f	%	f	%	
Length of hospital stay								
Hospital discharge until 2 <sup>nd</sup> Day After Surgery		12	37.5	2	66.7	14	40.0	0.005*
Hospital discharge after 2 <sup>nd</sup> Day After Surgery		20	62.5	1	33.3	21	60.0	

\* Fisher's Exact Test p-value<0.05.

**Conclusion:** The practiced fasting was longer than the scheduled. Patients who abbreviated preoperative fasting had shorter hospital stays. It is necessary to adhere to protocols that reduce the operative fasting time for hospital services.

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**Disclosure of Interest:** None declared.

**P494**

**EVOLUTION OF BODY COMPOSITION BEFORE AND AFTER A CARDIAC REHABILITATION PROGRAM**

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**Rationale:** The cardiac rehabilitation program (CR) consists of a plan of controlled physical exercise and diet review that is performed in patients after cardiac surgery for valvular or coronary artery disease. There are few studies that objectively analyze the changes that occur in body composition due to training with aerobic exercise and resistance exercise. The objective of the present study is to assess the changes in the body composition of a cohort of patients before and after a cardiac rehabilitation program.

**Methods:** Material and methods: Patients in a 12-week cardiac rehabilitation program are included. A prior assessment and at the end of the CR program is carried out, which consists of: anthropometric (bicipital skin fold, body mass index (BMI), arm and calf circumference), hand grip, impedance and muscle ultrasound. Statistical test: Wilcoxon signed rank test. Study approved by the local ethics committee. C.P. - C.I. PI20 / 608.

**Results:** Results: 10 patients with an average age of 57.8 (6.8) were collected, 80% men, 50% operated for coronary artery disease and the other 50% for valvular heart disease. We observed a significant increase in hand strength by hand grip (p: 0.035), biceps muscle thickness by ultrasound (p: 0.038), Free Fat Mass by impedance (p: 0.009) and reduction in BMI (0.036)

Parameter	Basal	Post Rehabilitation	p
Hand Grip	35,06 (11,16) Kg	37,08 (10,92) Kg	0.035
Biceps thickness	24,58 (5,37) Kg	26,24 (5,97) Kg	0.038
Finger flexor muscle thickness	33,89 (6,23) Kg	37,79 (6,24) Kg	0.08
Free Fat Mass	60,79 (11,6) Kg	61,02 (10,78)	0.009
IMC	29,31 (4,85) Kg/m <sup>2</sup>	28,52 (4,84) Kg/m <sup>2</sup>	0.036

**Conclusion:** The cardiac rehabilitation program improves muscle mass and strength with reduction of body weight. Anthropometry failed to detect these changes, but it did detect impedance and muscle ultrasound.

**Disclosure of Interest:** None declared.



## P496

## AN ENHANCED RECOVERY PROGRAMS AFTER THORACIC ESOPHAGEAL CANCER SURGERY FOR PATIENTS OVER 75 YEARS OLD

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**Rationale:** Data on enhanced recovery programs after thoracic esophageal cancer surgery for patients over 75 years old are sparse. The aim of this study was to evaluate the impact of an enhanced recovery after surgery (ERAS) program in patients with elderly patients who underwent a transthoracic esophagectomy.

**Methods:** Between April 2012 and December 2015, 35 patients who underwent a transthoracic esophagectomy were put enrolled into the ERAS program for high risk patients (Group H). Patients over 75 years old were defined as high risk group. This group was then compared with a group of 107 patients who had a standard risk (Group S). The program was started on the first postoperative day (POD 1). Mobilization and enteral nutrition were initiated on the first postoperative day (POD 1). The outcome measures comprised the mortality rate, morbidity rate, the average postoperative days when the patients started walking and enteral nutrition, postoperative pneumonia, anastomotic leak, and length of postoperative hospital stay and readmission rates within 30 days. This was a retrospective study. Differences between groups were examined for statistical significance using the chi-square, Fisher's exact test or the Mann-Whitney U-test.

**Results:** The morbidity, mortality, anastomotic leak, postoperative pneumonia and readmission rates were 6%, 43%, 14%, 6% and 0%, and 0%, 42%, 16%, 8% and 1%, in Groups H and S, respectively ( $p < 0.01$ , n.s., n.s., n.s., and n.s.). The average postoperative days when the patients started walking and enteral nutrition in Groups H and S were 1.3, 1.0 and 1.2, 1.0 days, respectively (n.s., and n.s.). The length of postoperative hospital stay was reduced in Group H in comparison to that in Group S (average 25.2 versus 20.8 days;  $p < 0.01$ ). There were no adverse event in this protocol.

**Conclusion:** Groups H was inferior in hospital stay and mortality rate, compared with group S. However, there were no statistical differences in morbidity rates including postoperative pneumonia. Even in high risk patients, an ERAS protocol is managed safely and is effective for the prevention of postoperative complications.

**Disclosure of Interest:** None declared.

## Nutritional assessment

## LB-001

## ASSOCIATION BETWEEN PHASE ANGLE, MALNUTRITION AND CLINICAL OUTCOME IN HOSPITALIZED PATIENTS

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**Rationale:** Low values of phase angle (PA) are associated with worsening of the disease, worse prognosis, reduced lean mass and longer length hospital stay<sup>1</sup>. The study's purpose was correlate reduced PA with malnutrition and clinical outcome in hospitalized patients at nutritional risk.

**Methods:** To obtain PA, the results of the BIA test performed with the BCM-Fresenius were used within 72 hours of the nutritional risk classification. The Mann-Whitney test was used for non-parametric quantitative variables. The cutoff point of the PA was determined by the Youden Test and was evaluated by the construction of the ROC curve. The predictive validity of the PA was assessed by logistic regression. The project was approved by the Research Ethics Committee.

**Results:** 1012 patients were evaluated, 55% (557) of whom were male, with a median age of 71.8 [61.0; 82.1] years and a median body mass index (BMI) of 22.7 [20.6; 26.0] Kg / m<sup>2</sup>. The cutoff point of the reduced PA that identifies reduced muscle mass was 4.30° for the total population (Sensitivity = 74.8%; Specificity = 41.4%) and for men (Sensitivity = 70.7 %; Specificity = 46.9 %) and 3.76° for women (Sensitivity = 60.9 %; Specificity

= 55.8 %). Patients with reduced PA are older (61.8 [23] vs 76.4 [19] years;  $p < 0.001$ ), had a longer length hospital stay (14 [20] vs 11 [15];  $p < 0.001$ ) and less BMI (24.1 [6.0] vs 22.3 [4.8] kg / m<sup>2</sup>;  $p < 0.001$ ). Those who had prolonged hospital stay (> 11 days) were almost twice (OR = 1.65; 95% CI 1.26 - 2.15) more likely to have reduced PA. Of the total 53 (5.2%) died. Those who died were almost 5 times (OR = 4.71; 95% CI 1.85-11.95) more likely to have reduced PA.

**Conclusion:** The reduction in PA increased the chance of malnutrition, prolonged hospital stay and mortality. Thus, the determination of cutoff points for PA represents a good marker for identifying malnutrition and clinical outcome in patients at nutritional risk.

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**Disclosure of Interest:** None declared.

## LB-002

## GUT MICROBIOTA DIVERSITY IN GLIM-DEFINED MALNOURISHED ACUTELY ILL OLDER ADULTS

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**Rationale:** Malnutrition is a common clinical condition in hospitalised older adults. The gut microbiota has suggested a bidirectional regulatory feature in health and diseases. We explored the gut microbiota diversity in malnourished (MN) and well-malnourished (WN) older patients classified by the GLIM criteria.

**Methods:** 108 acutely ill older adults in the emergency ward of a Brazilian hospital were included in this cross-sectional analysis. Patients were screened by the MNA-SF, and those at risk were diagnosed by the GLIM criteria. The 16S rRNA gene was sequenced from rectal swab samples. The  $\alpha$  diversity was measured by the Pielou, Simpson and Shannon indexes. The  $\beta$  diversity was investigated by the PERMANOVA analysis Bray method. Groups were compared using the Wilcoxon rank-sum test.

**Results:** 50.9% of participants were malnourished. The microbiota composition between WN and MN patients was significantly different ( $F = 3.92$ ,  $R^2 = 0.036$ ,  $P = 0.009$ ). MN people displayed a significantly less diverse microbiota and higher evenness than WN (Table 1). From the most abundant phylum in the sample, the *Firmicutes* ( $P = 0.047$ ) and *Bacteroidetes* ( $P = 0.011$ ) were significantly different between WN and MN individuals, and a trend was observed for *Proteobacteria* ( $P = 0.052$ ).

**Conclusion:** Acutely ill older adults exhibited a different gut microbiota

**Table 1**  
Diversity indexes

Index	Wellnourished	Malnourished	p
N (%)	53 (49.1)	55 (50.9)	
Simpson	0.50 ± 0.13	0.55 ± 0.11	<b>0.040</b>
Pielou	0.25 ± 0.07	0.28 ± 0.07	<b>0.024</b>
Shannon	0.95 ± 0.22	1.02 ± 0.21	0.079

composition according to their nutritional status, suggesting a less diverse gut microbiota in malnourished people, which may influence, or be influenced by, the pathophysiology of malnutrition. More studies are necessary to confirm our findings.

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**Disclosure of Interest:** None declared.

### LB-003

#### TIMING FOR DETECTION AND ASSESSMENT OF NUTRITIONAL RISK IN A TERTIARY HOSPITAL

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**Rationale:** Quick identification and evaluation of adult malnourished patients improve clinical outcomes, but little information is available about the daily compliance of these actions in large hospitals. Aim: To describe the timing for detection and assessment of nutritional risk in a tertiary hospital.

**Methods:** This is a cross-sectional descriptive study of nutritional risk data extracted from electronic health records of adults discharged from January to December of 2019 at the Fundación Valle del Lili University Hospital (Cali, Colombia).

**Results:** Of the 26,878 discharges that were eligible for inclusion, 14,022 were excluded because the length of hospitalization was less than 48 hours, leaving 12,658 discharges for analysis (56% women). The median age and duration of hospitalization were 37 years (15–62) and 4 days (3–8). Nutritional risk screening was done by nurse members in 91% of discharged adults. The time transpired from hospital admission until nutritional screening was 8.5 hours (3.4–15.2). Of the screened adults, 20% were found at nutritional risk by Malnutrition Screening Tool, and 100% of these were fully assessed by a registered dietitian in a median time of 15 hours (3.3–22.2).

**Conclusion:** Early nutritional risk detection and assessment were achievable in a high percentage of patients at admission to a tertiary hospital.

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**Disclosure of Interest:** None declared.

### LB-005

#### CONCURRENT AND PREDICTIVE VALIDITY OF GLIM CRITERIA AND AND/ASPEN CRITERIA FOR MALNUTRITION DIAGNOSIS AMONG HOSPITALIZED CARDIAC PATIENTS

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**Rationale:** Malnutrition is prevalent among hospitalised cardiac patients due to multiple co-morbidities and inflammation conditions. In recent decade, the Global Leadership Initiative on Malnutrition (GLIM) and the Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition (AND/ASPEN) have proposed respective criteria for malnutrition diagnosis, however studies on their validity are limited. This study aimed to identify the concurrent and predictive validity of GLIM and AND/ASPEN criteria for malnutrition diagnosis among hospitalised cardiac patients.

**Methods:** Prospective study was conducted among adult/elderly hospitalised patients with cardiac diseases in general wards. Nutrition status was assessed with GLIM criteria, AND/ASPEN criteria and Subjective Global Assessment (SGA) within 48 hours of admission. Quality of life (QOL) was evaluated using the Medical Outcomes Short Form 12 (SF-12) questionnaire. Patients were followed up to gather outcomes of length of hospital stay (LOS) and unplanned readmission, incidence of infection and mortality 90-days after discharge. Concurrent and predictive validity were determined.

**Results:** A total of 276 patients (61±11 years, 76.4% males) were evaluated. The prevalence of malnutrition was 41.7%, 54.0% and 58.3% by GLIM, AND/ASPEN and SGA, respectively. GLIM showed substantial accuracy (AUC=0.77, 95%CI 0.70-0.82; 63.4% sensitivity; 88.7%

specificity) and fair agreement with SGA (k=0.49). AND/ASPEN had good accuracy (AUC=0.96, 95%CI 0.93-0.98; 92.5% sensitivity; 100.0% specificity) and good agreement with SGA (k=0.91). After adjusting for confounders, malnutrition diagnosed by GLIM decreased QOL by 2.1 (95%CI 1.25-3.52) times, increased the risk of readmission by 5.2 (95%CI 3.00-9.30) times, infection by 3.7 (95%CI 2.12-6.70) times and mortality by 5.1 (95%CI 1.37-19.14) times. Malnutrition diagnosed by AND/ASPEN increased the risk of readmission by 32.4 (95%CI 14.45-73.01) times, infection by 13.9 (95%CI 6.58-29.59) times and mortality by 5.3 (95%CI 1.10-26.11) times.

**Conclusion:** Both the GLIM and AND/ASPEN criteria demonstrated good validity in diagnosing malnutrition and predicting clinical outcomes of hospitalised cardiac patients.

**References:**

de van der Schueren MA. et al. *Clinical Nutrition*. 2020 Sep;39(9):2872-80.

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### LB-008

#### MALNUTRITION PREVALENCE IN ADVANCED CANCER PATIENTS IN BELGIUM

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**Rationale:** Unintentional weight loss and malnutrition are common among cancer patients. Malnutrition has been associated with impaired health-related quality of life, less well-tolerated chemotherapy regimens and shorter life duration. In Belgium there is a lack of epidemiological data on malnutrition in oncologic patients at advanced stages of the disease.

**Methods:** Malnutritional assessment data were collected through a prospective, observational study in 328 patients who started a neoadjuvant anticancer therapy regimen or who started 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> line anticancer therapy for a metastatic cancer via 3 visits according to regular clinical practice (baseline visit (BV) maximum 4 weeks before start therapy, 1<sup>st</sup> Follow up visit (FU V1) +/- 6 weeks after start therapy, FUV2 +/- 4 months after start therapy).

**Results:** Prevalence of malnutrition at BV was high: 54.5% had a NRS<sub>≥</sub>3 and increased during the study period (FUV1: 73.2%, FUV2: 70.1%). Prevalence of malnutrition based on physician assessment (PA) remained stable over the study period but was much lower compared to NRS evaluation (14.0% - 16.5%). At BV, only 10% had a nutritional plan and 43.9% of the patients received ≤70% of nutritional needs, percentage increased during FU period (FUV1: 68.4%, FUV2: 67.6%). Prevalence of sarcopenia and cachexia (screening tools) were respectively 12.4% and 38.1% at BV and did not vary a lot during the study period. Figures were also higher compared to PA. There were modifications in cancer treatment at FUV1 (25.2%) and at FUV2 (50.8%). The main reasons for these modifications at FUV1 were adverse events and tolerability.

**Conclusion:** Prevalence of malnutrition and cachexia was high in cancer patients and underestimated based on the PA. Better detection of nutritional deficit and adjusted nutritional intake could lead to better clinical outcomes in cancer patients.

**References:**

No references

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#### LB-009

##### AN EVALUATION OF THE NUTRITIONAL REQUIREMENTS OF POST-OPERATIVE COLORECTAL PATIENTS

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**Rationale:** Early nutrition is a key aspect of the ERAS pathway, and post-operative nutritional support is vital in maintaining nutritional status during the catabolic post-operative period. The evidence for early resumption of oral intake along with oral nutritional supplements after surgery, is now realised to be safe and vital for optimising post-operative outcomes as part of the ERAS Pathway (1). The aim of this study is to evaluate the nutritional requirements of post-operative patients and to determine if current hospital practices are in line with the ERAS recommendations.

**Methods:** Data was collected prospectively on postoperative colorectal patients. Patients were eligible if they were receiving oral diet only, including oral nutritional supplements. Patients had 3 days of completed calorie assessments or were able to give a 24-hour dietary recall. Nutritional requirements were calculated using the ESPEN guidelines.

**Results:** 9 patients (67% male) with an average age of 60 years were eligible to take part in the audit. 78% of patients were commended on light diet on day 1 post-surgery, whilst the remaining 22% commenced on day 2 and day 4. Over the 3-day audit, no patient achieved 100% of their nutritional requirements. 43-79% was the average calorie targets achieved, whilst protein targets were much lower ranging from 24-44%. Despite good dietary tolerance and daily surgical reviews, patients remained on the light diet for an average of 6 days (+/- 3 days). Dietary supplements were not routinely commenced postoperatively, only 33% were prescribed dietary supplements.

**Conclusion:** Nutrition is a key aspect of the ERAS pathway. Education for all ward staff on the importance of good nutrition and nutrition practices could prove beneficial. The optimisation of the ERAS protocol and the implementation of a dietary supplement pathway is an option to explore to help patients achieved their nutritional requirements post-operatively.

#### References:

(1) Gustafsson, UO., Scott, MJ., Hubner, M., et al., (2018) Guidelines for perioperative Care in Elective Colorectal Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations: 2018. *World Journal of Surgery*, 43, pp. 659-695.

**Disclosure of Interest:** None declared.

#### LB-010

##### ASSESSMENT OF MALNUTRITION IN OLDER PATIENTS WITH ACUTE STROKE BY DIFFERENT NUTRITIONAL SCREENING TOOLS AND GLIM CRITERIA

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**Rationale:** We aimed to investigate the malnutrition rate in older patients with acute stroke by using different nutritional screening tools and the Global Leadership Initiative on Malnutrition (GLIM) criteria, and compare the agreement rates between them.

**Methods:** 121 older patients hospitalized for acute stroke were underwent screening for nutritional risk at the time of admission by Malnutrition Universal Screening Tool (MUST), Nutritional Risk Screening-2002 (NRS-2002), and Subjective Global Assessment (SGA) tests. Patients were evaluated by using GLIM criteria to diagnose malnutrition. GLIM criteria have three phenotypic criteria (low body mass index, low body weight, reduced muscle mass) and two etiologic criteria (reduced food intake, inflammation or disease burden). Muscle mass of the patients was assessed by using calf or middle upper arm circumferences (CC and MUAC, respectively), and reduced level of them, at least one of both measurements, was considered as reduced muscle mass.

**Results:** The mean age of the patients was 76±9 years and 69% of them were female. Median level of NIHSS was 7 (range, 0-24). According to SGA, 69% of the patients were at risk for malnutrition (SGA: B or C). All patients were at high risk of malnutrition when assessed by MUST and 86.8% of the patients at risk of malnutrition according to the NRS-2002 score. 17.4% of the patients were diagnosed with malnutrition using GLIM criteria. A fair agreement was observed between NRS-2002 and SGA levels. All nutritional screening tools had high area under curve levels.

**Conclusion:** Older patients with acute stroke are at high risk of malnutrition and nearly one of each five patients is at malnutrition. All screening tools seem to have good performance to detect malnutrition among this study population.

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Başıbüyük GÖ et al A comparison of the different anthropometric indices for assessing malnutrition among older people in Turkey: a large population-based screening. *J Health Popul Nutr.* 2021 Mar 30;40(1):13.

**Disclosure of Interest:** None declared.

#### LB-011

##### MYOSTEATOSIS AND NLR AS PREDICTORS OF POOR OUTCOMES IN PATIENTS WITH COVID-19

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**Rationale:** Body composition and inflammatory disturbance are associated with worse prognosis for COVID-19<sup>1</sup>. In this study we evaluated myosteatosis and Neutrophil-Lymphocyte ratio (NLR) as prognostic factors for COVID-19.

**Methods:** Medical records of patients hospitalized between May 1st, 2020 and July 31st, 2020 with a positive SARS-CoV-2 reverse transcriptase-polymerase chain reaction assay who underwent computed tomography (CT) scan were retrospectively reviewed. CT-derived body composition measurements and laboratory tests performed at diagnosis were used to calculate the skeletal muscle attenuation (SMA) and NLR. Youden index

method was used to determine cutoff points for SMA and NLR, and their prognostic values were assessed via univariate and multivariate logistic regression analyses and the Kaplan–Meier curve. Study approved by our local IRB (CAAE: 36276620.2.0000.5404).

**Results:** A total of 202 patients were included. The median age was 59 years, 58% of patients were men and 45% required ICU. A total of 45 (22.4%) patients died. Low SMA was associated with high death rates (HR: 3.55; 95% CI: 1.45 – 8.69,  $p=0.005$ ) and high NLR had higher risk of overall mortality (OR 4.20; 95% CI: 1.39 – 12.70,  $p=0.011$ ). The presence of myosteatosis and high NLR simultaneously was also significantly associated with death (OR 27.62; 95% CI: 2.83 – 269.34,  $p=0.004$ ).

**Conclusion:** In our cohort, both myosteatosis and high NLR were associated with higher risk of death.

#### Reference:

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**Disclosure of Interest:** None declared.

### LB-012

#### COMPARISON OF MEASURED ENERGY EXPENDITURE USING INDIRECT CALORIMETRY VS SIMPLE WEIGHT-BASED EQUATION IN INDIVIDUALS WITH TYPE 2 DIABETES

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**Rationale:** To assess the appropriate energy expenditure requirement (EER) for individuals with diabetes, one commonly used predictive equation in clinical practice was compared with indirect calorimetry (IC).

**Methods:** Cross-sectional study in outpatients with type 2 diabetes. Clinical and laboratorial variables, body composition by electrical bioimpedance were evaluated. The resting energy expenditure (REE) was measured by IC (QUARK RMR, Cosmed, Rome, Italy) and theoretical REE was estimated using a predictive equations simple weight-based equation (25 kcal/kg/day). Dietary intake was evaluated by a food frequency questionnaire (FFQ). Data were analyzed using Bland–Altman plots and paired t-tests

**Results:** This study evaluated 61 individuals with type 2 diabetes [50% female;  $63.1 \pm 5.2$  years old, diabetes duration of 11 (1–36) years and A1C test  $7.6 \pm 1.2\%$ ]. The body composition contained a fat free mass of  $35.2 \pm 11.8$  kg and a fat mass of  $29.1 \pm 8.8$  kg. The energy intake by FFQ was  $1826.9 \pm 628.1$  Kcal/day, the REE by IC was  $1644.6 \pm 310.6$  kcal/day and the REE by the simple weight-based equation (25 Kcal/day) was  $2066.4 \pm 369.4$  Kcal/day. When compared the values (Kcal/day) by equation with IC a wide bias was observed in all individuals with type 2 diabetes (421.7 Kcal/day; 11.8% of the difference) as well as in women (403.3 Kcal/day; 8.3% of the difference) and men (439.4 Kcal/day; 8.2% of the difference)

**Conclusion:** In individuals with type 2 diabetes, the simple weight-based equation overestimates REE by approximately 400 Kcal/day. In this group, other predictive equations should be used in the evaluation of REE

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Steemburgo T, et al. *Arch Endocrinol Metab*. 2019; 63(1):53–61.

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**Disclosure of Interest:** None declared.

### LB-013

#### NASAL BRIDLE A USEFUL, SAFETY AND EFFECTIVE TOOL OUR EXPERIENCE

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**Rationale:** Tube feeding (TF) is the most widely used route of enteral nutrition (EN). Accidental and self-withdrawal, especially in agitated patients or patients with endotracheal intubation, is a frequent complication to avoid. The nasal bridle (NB) is an alternative method to containment measures. Our aim was to review the efficacy and safety of BN in a population of patients requiring EN by tube.

**Methods:** Retrospective observational study in habitual practice conditions. Outcomes measured were demographic and clinical conditions of patients admitted to the hospital (1/2/2020 to 05/13/2021) who required EN by tube, with history of repeated removals and NB placement and related complications. Nurses of the Nutrition Unit placed all the NBs. Statistical analysis was performed using SPSS 26.0.

**Results:** 51 patients (18 F / 32 M) with a mean age of 73 years (37–96). Their pathologies were Stroke (29.4%); cognitive impairment (21.6%), encephalopathies (7.8%), cancer (15.7%), COVID 19 (9.8%), others (16.6%). Main indications for EN by tube were oropharyngeal dysphagia (54.9%), refusal to ingest (17.6%), orotracheal intubation (7.8%), among others. Only one patient presented pressure ulcers in the nasal septum, not other complications. NB was withdrawn in 7.8% of the cases due to a change in the digestive access (gastrostomy), 21.6% recovered oral route, 9.8% due to ignorance in its management (emergency service and nursing home). We found significant differences between accidental and self-withdrawing tube removals before and after NB placement ( $2.59 \pm 1.512$  vs  $0.24 \pm 0.596$ ;  $p < 0.05$ ).

**Conclusion:** The nasal bridle is a safe and effective technique for clamping TF, which avoids their pulling out and relevant associated complications. The training of health professionals is essential for its proper use.

#### References:

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2. Lynch A, Tang C, Jegannathan L, Rockey J. A systematic review of the effectiveness and complications of using nasal bridles to secure nasogastric tubes. *Aust J of Otolaryngol* 2018;1-8

**Disclosure of Interest:** None declared.

### LB-014

#### AN INVESTIGATION INTO THE NEED AND FEASIBILITY OF A VOLUME-BASED ENTERAL FEEDING PROTOCOL ON NEUROSURGICAL WARDS

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**Rationale:** Adequate nutritional intake is vital in the recovery process for neurosurgical patients and enteral feeding is often required to achieve this. The purpose of this study was to assess if patients on neurosurgical wards miss feed targets due to interruptions in feeding times and the potential feasibility of introducing volume-based feeding to optimise nutritional intake for this patient group i.e. setting a goal volume to receive over a 24-hour period rather than the traditional rate-based approach.

**Methods:** A retrospective audit was completed to compare recommended enteral feed volumes with the actual volume received for 10 neurosurgical patients across a 14-day period. Questionnaires were provided to nursing staff on neurosurgical wards and dietetic staff to assess opinions on the benefits or concerns surrounding the introduction of volume based enteral feeding.

**Results:** It was found that on average patients received 89% of recommended feed volumes during the study period, with daily targets achieved ranging from 0–120%. Causes for the various interruptions in feeding times included fasting, issues confirming nasogastric tube (NGT) position, patients undergoing procedures/investigations and dislodged NGTs. Nursing and dietetic staff agreed that volume based enteral feeding would be beneficial, however, concerns were raised regarding tolerance and confusion around recalculating rates.

**Conclusion:** Neurosurgical patients who rely on enteral nutrition support are receiving inadequate nutrition due to interruptions in feeding times.

Volume based enteral feeding may be beneficial in overcoming this, however, a robust protocol and adequate training for nursing staff would be essential to optimise its efficacy and safety.

#### References:

Mackay, L., Morgan, A. and Bernstein, B., 1999. Factors Affecting Oral Feeding with Severe Traumatic Brain Injury. *Journal of Head Trauma Rehabilitation*, 14(5), pp.435–447.

**Disclosure of Interest:** None declared.

#### LB-015

### SUITABILITY OF THREE DIETARY ASSESSMENT TOOLS IN THE BACKGROUND OF DENTAL MEDICINE

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**Rationale:** Nutritional studies are getting increasingly important in dentistry (1). This analysis aimed to investigate the suitability of three dietary assessment tools within a short-term Mediterranean Diet (MedD) intervention.

**Methods:** 37 participants (20 female) were allocated to a test group (MedDG, n=18) receiving four dietary counselings on MedD in six weeks, and a control group (CG, n=19) who continued their habitual diet. Relative bleeding on probing (BOP%) served as oral inflammatory parameter at week 2 (T1) and 8 (T2). The diet patterns were assessed by: 1. Mediterranean Diet Adherence Screener (MEDAS) (T1, T2), 2. DEGS-food-frequency-questionnaire (FFQ) (T1, T3), 3. 24h dietary recall (24dr) (T2). FFQ and 24dr were compared for differences at T2 regarding intake of total energy (E), carbohydrates (C), fat (F), protein (P), fibre (FB) and Vitamin C (VC). Statistics were the following: U-Test between mean MedDG and CG at T2, and mixed model (rel. BOP reduction); FFQ and 24dr comparison by Bland-Altman-Analysis.

**Results:** MedDG showed a higher MEDAS score compared to CG (MEDAS T2: 11.89±1.90 (MedDG), 7.22±2.99 (CG), p<0.0001) accompanied by a higher BOP reduction in comparison to controls (BOP  $\Delta$ T1-T2: -11.07±7.60 (MedDG), -3.47±10.09 (CG), p=0.046). Comparison of FFQ and 24dr revealed significant differences in intake size for several nutrients, yet comparing the groups both tools showed comparable alterations of E, F, P and FB intake.

**Conclusion:** All tools were suitable to monitor diet behavior within this study. MEDAS correlated with the clinical results, implicating that if diet adherence but not nutrient intake assessment is concerned, MEDAS was a suitable and easy evaluable tool. For analysis of nutrient intake FFQ and 24dr were both suitable. MedD seems to improve oral health.

#### References:

1 Sanz, M., Herrera, D., Kerschull, M., Chapple, I., Jepsen, S., Beglundh, T., Sculean, A., Tonetti, M. S., & EFP Workshop Participants and Methodological Consultants. (2020). Treatment of stage I-III periodontitis-The EFP S3 level clinical practice guideline. *Journal of Clinical Periodontology*, 47 Suppl 22, 4–60. <https://doi.org/10.1111/jcpe.13290>

**Disclosure of Interest:** None declared.

#### LB-016

### NUTRITIONAL STATUS OF NEWLY DIAGNOSED PAEDIATRIC PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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**Rationale:** Inflammatory bowel diseases (IBDs) are traditionally associated with underweight and different micronutrient deficiencies. Nowadays the incidence of obesity is rising worldwide, which increases its rates in patients with IBD, as in general population, being an additional risk factor for complications and poor disease prognosis. The aim of our study was to assess the nutritional status of newly diagnosed patients with IBD and to analyze its association with disease type and extent.

**Methods:** We reviewed the data records of all patients with newly diagnosed IBD treated in our department in the period April 2012–April 2021. Nutritional status was assessed using a gender-specific Body Mass Index (BMI)-for-age. Underweight was defined as BMI less than the 5th percentile for age, healthy weight as BMI  $\geq$ 5th and <85th percentile for age, overweight as BMI  $\geq$ 85th and <95th percentile for age and obesity was defined as BMI above the 95th percentile for age. Disease type and extent were classified according to the Paris classification for children and adolescents with IBD.

**Results:** A total of 85 children with newly diagnosed IBD were included in the final analysis: 42 with ulcerative colitis (UC) and 43 with Crohn's disease (CD), 45 boys and 40 girls, median age 15 years (range: 2–17 years). Abnormal nutritional status was identified in 40.0% of our patients. Underweight was detected in 29.4% of them (16.5% with UC and 12.9% with CD), 4.7% (3.5% with UC and 1.2% with CD) were diagnosed as being with overweight, and 5.9% (3.5% with UC and 2.4%) as being with obesity. Children with underweight were more likely to have more extended and more severe disease.

**Conclusion:** The assessment of nutritional status at IBD diagnosis is an essential step for identifying clinically relevant malnutrition, providing an individualized treatment and improving the clinical outcomes.

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2. Pavelock N, Masood U, Minchenberg S, Heisig D. Effects of obesity on the course of inflammatory bowel disease. *Proc (Bayl Univ Med Cent)*. 2019 Feb 1;32(1):14–17

**Disclosure of Interest:** None declared.

#### LB-017

### BAPEN SURVEY OF MALNUTRITION PREVALENCE AND NUTRITIONAL CARE IN ADULTS IN THE UK

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**Rationale:** Malnutrition is under-recognised and undertreated, affecting around 3 million people in the UK<sup>1</sup>. A national survey was undertaken, to build an up to date picture of the scale of malnutrition and use of nutritional care across hospital and community settings in the UK.

**Methods:** A BAPEN online, malnutrition screening survey of patients was undertaken during UK Malnutrition Awareness Week (1<sup>st</sup>–31<sup>st</sup> October 2020). The survey completed by health care professionals included recording patient characteristics (location, setting, age, gender, primary diagnosis), malnutrition risk using the Malnutrition Universal Screening Tool ('MUST') and nutritional interventions (oral, enteral, parenteral).

**Results:** 1183 patients were surveyed (mean age 74y; mean BMI 24.7kg/m<sup>2</sup>; 54% female) from hospitals (76%) and community settings (24%). Overall, 28% were at high risk (HR) of malnutrition, with community settings having a higher proportion (33% HR in community, 27% HR in hospital). Nearly all HR patients (97%) had a nutritional care plan which either included at least one food-based intervention (80%), oral nutritional supplements (64%), enteral feeding (13%) and/or parenteral nutrition (4%). In those 'at high risk' dietetic counselling (81%) and snacks (73%) were the most common food-based intervention, with ready-made liquid ONS (1–1.5kcal/ml (40%) and >2kcal/ml (41%)) the most popular oral nutritional supplements. Additionally, of those receiving enteral feeding most (56%) received 1–1.5kcal/ml tube feed.

**Conclusion:** This survey found the prevalence of malnutrition risk remains high across different health care settings in the UK. Of those at high risk of malnutrition, nearly all had a nutritional care plan and food-based interventions were the most commonly used.

**References:**

<sup>1</sup>Elia, M and Russell CA, on behalf of BAPEN. 2009. Combating Malnutrition: Recommendations for Action.

**Disclosure of Interest:** E. Beggs: None declared, A. Cawood Other: Nutricia Ltd, E. Holmes: None declared, R. Stratton Other: Nutricia Ltd.

**LB-018**

**ADIPOSE TISSUE RADIO-DENSITY: A PREDICTOR OF POOR OUTCOME IN PATIENTS WITH COVID-19**

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**Rationale:** Adipose tissue radiodensity is emerging as a new valuable prognostic biomarker<sup>1,2</sup>. In this study we aim to evaluate the association of adipose tissue radiodensity with COVID-19 prognosis.

**Methods:** Patients hospitalized between May 1st, 2020 and July 31st, 2020 with laboratory diagnosis of COVID-19 who underwent computed tomography (CT) scan were enrolled and medical records were retrospectively reviewed. Subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT) radiodensities were obtained from the CT-derived measurement at the first lumbar vertebra (L1). SAT and VAT cut-off were determined using Youden method, and their prognostic values were assessed via univariate and multivariate logistic regression analyses. Study approved by our local IRB (CAAE: 36276620.2.0000.5404).

**Results:** Of 202 patients included in this study, the median age was 59 years, 58% of patients were men and 45% required ICU. A total of 45 (22.4%) patients had died. High SAT and VAT radiodensities were associated with death (OR 3.22; 95% CI: 1.33 – 7.78, p=0.009 and OR 1.46; 95% CI: 0.62 – 3.44, p=0.392, respectively).

**Conclusion:** In this cohort, SAT high radiodensity was associated with higher risk of death.

**References:**

1. Ebadi M, Moctezuma-Velazquez C, Meza-Junco J, Baracos VE, Duni-chandHoedl AR, Ghosh S et al. Visceral adipose tissue radiodensity is linked to prognosis in hepatocellular carcinoma patients treated with selective internal radiation therapy. *Cancers (Basel)*. 2020; 12: 356.

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**Disclosure of Interest:** None declared.

**LB-019**

**USE OF THE PEDIATRIC YORKHILL MALNUTRITION SCORE SCREENING TOOL IN DETERMINING THE MALNUTRITION RISK OF HOSPITALIZED CHILDREN**

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**Rationale:** This study aims to use the Pediatric Yorkhill Malnutrition Score (PYMS), which is a nutritional screening tool, in determining the malnutrition risk, which is very important to hospitalized children.

**Methods:** This cross-sectional and descriptive study was carried out in 128 pediatric patients aged between 13-200 months in different clinics in Bezmialem Vakıf University Medical Faculty Hospital. Participants' demographic information, anthropometric measurements (body weight, height, upper-middle arm circumference), food frequency questionnaire, and PYMS tool were administered. Z-scores were calculated for malnutrition assessment based on anthropometric measurements and compared with the frequency of food consumption and PYMS result.

**Results:** According to the PYMS results of the hospitalized children included in the study, a low risk of malnutrition was found in 29.7%, moderate in 15.6%, and high in 54.8%. A correlation was found between the PYMS result and anthropometric measurement z-scores. In addition, it has been shown that there are statistically significant differences between weight for age, BMI z-scores for age, and PYMS result and that especially the comparison can be associated with severe malnutrition determined in terms of BMI for age z-score. On the other hand, the frequency of consumption of protein-rich foods and refined carbohydrates was found to be effective on PYMS results.

**Conclusion:** Hospitalized children are at high risk of malnutrition associated with malnutrition. Significant differences and relationships were found between the PYMS tool and anthropometric measurements. To prevent hospital malnutrition, it is very important to develop nutritional screening procedures and to use a tool such as PYMS.

**References:**

Pars, H., Açıkğöz, A., & Erdoğan, B. D. (2020). Validity and reliability of the Turkish version of three screening tools (PYMS, STAMP, and STRONG-kids) in hospitalized children. *Clinical Nutrition ESPEN*, 39, 96–103. <https://doi.org/10.1016/j.clnesp.2020.07.011>

**Disclosure of Interest:** None declared.

**LB-020**

**PREVALENCE OF UNDERNUTRITION IN NEWLY DIAGNOSED PAEDIATRIC PATIENTS WITH INFLAMMATORY BOWEL DISEASE**

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**Rationale:** Undernutrition is a relatively common condition in patients with inflammatory bowel disease (IBD), especially in Crohn's disease, that results from an imbalance between the body's supply and demands for nutrition. There are four broad sub-forms of undernutrition: wasting, stunting, underweight, and deficiencies in vitamins and minerals. The aim of our study was to assess the prevalence of some undernutrition manifestations in newly diagnosed patients with IBD.

**Methods:** We reviewed retrospectively the data records of all patients with newly diagnosed IBD treated in our department in the period April 2012-April 2021 and analyzed the following features: prevalence of underweight, prevalence of stunted growth, prevalence of anaemia and prevalence of hypoalbuminaemia. Underweight was defined as gender-specific Body Mass Index (BMI) less than the 5th percentile for age. Stunted growth was defined as low height-for-age. Anaemia was defined according to the World Health Organization criteria for anaemia in children and adolescents, and hypoalbuminaemia was defined as a serum albumin level of less than 32 g/l.

**Results:** A total of 85 children with newly diagnosed IBD were included in the final analysis: 42 with ulcerative colitis (UC) and 43 with Crohn's disease (CD), 45 boys and 40 girls, median age 15 years (range: 2-17 years). Underweight was identified in 29.4% of our patients (16.5% with UC and 12.9% with CD) and stunted growth was established in 8.2% of them, all with CD. More than two-thirds of study participants were diagnosed as being anaemic (30.6% of the patients with UC and 37.6% of the patients with CD) and hypoalbuminaemia was detected in 18.8% of the cases (8.2% with UC and 5.9% with CD).

**Conclusion:** Different subtypes of undernutrition are prevalent in patients with newly diagnosed IBD and may affect their general health status and quality of life. Timely assessment and management are crucial to guide therapy and improve disease course.

**References:**

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**Disclosure of Interest:** None declared.

**LB-021**

**INFLUENCE OF MEDITERRANEAN DIET ON SURVIVAL FROM COVID-19 DISEASE**

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**Rationale:** Evaluate the effects of the Mediterranean Diet (MD) on mortality from COVID-19 disease in hospitalized patients with severe disease.

**Methods:** Retrospective descriptive study that included all patients with diagnosis of COVID-19 who were nutritionally assessed during the period from January to March 2021. The data included clinical and demographic information (sex, age, BMI, Nutritional-status, diabetes, hypertension, ICU eligibility, Charlson index, HDL, LDL, Cholesterol, IL6, Ferritin and D-dimer). Adherence to MD was evaluated using the Predimed questionnaire. Patients were followed after discharge for one month. Bivariate analysis was performed to evaluate differences according to MD adherence using non-parametric statistical tests. Statistical analyses were performed by Cox regression; hazard ratios (HRs) for associations of MD adherence with mortality were estimated. BMI, sex and age were included in the Cox model as potential confounders. Level of significance was regarded as  $p$  value < 0.05. The data were analyzed with the SPSS program.

**Results:** 89 patients were recruited. Median (SD) age was 72.4(22.3) years, 29.7% were woman. 58 patients (65.2%) had adequate adherence to MD (PREDIMED score  $\geq 8$ ). Mortality of patients was 48.4% in non-adherent MD, and 25.9% in MD-adherent. There was no statistically significant difference in the basal characteristics and nutritional biomarkers between both cohorts, except for HDL. MD-adherence was significantly associated with a reduced overall mortality HR[95%CI]: 0.47[0.22-0.99]. These results remained statistically significant after adjustment for age, sex, and BMI.

**Conclusion:** MD-adherent patients had a significant higher survival compared to non-adherent. Our study has a small sample size and observational design, so causal relationship between lower mortality and MD cannot be concluded, but the hypothesis of its protective effect deserves to be studied in more detail.

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**Disclosure of Interest:** None declared.

#### LB-022

#### BODY COMPOSITION AND BONE MINERAL STRENGTH IN FEMALE ADOLESCENT PATIENTS WITH ANOREXIA NERVOSA

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**Rationale:** Anorexia nervosa (AN) is characterized by a severe restriction of energy intake with low body weight reflecting depletion in body compartments.<sup>1</sup> As a consequence some associated complications arise, particularly at the bone - low bone mineral strength.

**Methods:** Descriptive cross-sectional study in female patients with anorexia nervosa followed at pediatric hospital. Body composition was measured by Air Displacement Plethysmography (Bod Pod®), and bone mineral strength was accessed by quantitative ultrasound (Sunlight omniscence®). Clinical data was collected from electronic health records. Statistical analysis was performed.

**Results:** A total of 29 female patients aged 11 to 17 years were evaluated. The mean Fat Mass was 19.5±7.1Kg, while Fat Mass Index (FMI) was 3.6kg/m<sup>2</sup> and Fat Free Mass Index (FFMI) was 14.7kg/m<sup>2</sup>. After classification according to age and gender patients had FMI z-score between -1.33 and -0.67; FFMI z-score between -0.67 and 0, and a BMI z-score between -1 and 0. Regarding bone strength, z-score was 0.7±1.1 in the tibia and 0.2±0.8 in

the radius. In radio only 2 patients had z-score under -1 where in tibia were 9, and from those 3 had z-score lower than -2.

There was a correlation between amenorrhea duration and disease duration. No significant associations were found between with bone strength.

**Conclusion:** Longer time on amenorrhea has a negative impact on bone density.

#### References:

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**Disclosure of Interest:** None declared.

#### LB-023

#### MALNUTRITION ASSESSMENT CORRELATED TO FRAILTY SYNDROME IN THE ELDERLY

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**Rationale:** Malnutrition is an important public health problem that is frequently not diagnosed earlier among the institutionalized elderly people, especially with frailty syndrome. The development of malnutrition and loss of functional ability in the elderly can be prevented by evaluation of malnutrition risk.

**Methods:** The research was planned to be descriptive, correlational, with a total of 50 elderly participants, aged >65 years, the mean value - 73.44±0.38 years. A lot of questionnaires were administered to gather data on demographic characteristics, malnutrition risks, frailty instruments. The nutritional status was determined according to Mini Nutritional Assessment (MNA) and Frailty syndrome - by Fried criteria. The results were analyzed in the software program Statistics 7.

**Results:** According to examination of MNA score - 40% of the questionnaires were found to have malnutrition risks and 22% being malnourished. The results of the fragility screening by Fried criteria, robust elderly were 14%, pre-fragile elderly - 6% and fragile elderly were 80%. The interrelation of malnutrition syndrome with frailty syndrome and its severity was established by determining the significant correlations of mean values of the MNA score with the criteria of fragility Fried: general weakness ( $r=-0.62$ ;  $p<0.05$ ), fatigue ( $r=-0.59$ ;  $p<0.05$ ), reduced physical activity ( $r=-0.63$ ;  $p<0.05$ ), reduced walking speed ( $r=-0.53$ ;  $p<0.05$ ) and weight loss ( $r=-0.29$ ;  $p<0.05$ ), but the highest correlation was established between the severity of fragility syndrome, assessed by the Clinical Frailty Scale with mean values of the MNA score ( $r=-0.70$ ;  $p<0.05$ ). A statistically negative significant difference was determined between MNA and Frailty index ( $r=-0.70$ ;  $p<0.05$ ).

**Conclusion:** The institutionalized elderly have an increased risk of malnutrition being associated with frailty syndrome and Frailty Index, affecting life quality.

#### References:

no references

**Disclosure of Interest:** None declared.

#### LB-024

#### ARE CARDIO-METABOLIC LATE-EFFECTS MODIFIABLE THROUGH A LOW-FAT DIET IN LONG-TERM SURVIVORS OF PEDIATRIC ALLOGENEIC STEM CELL TRANSPLANTATION?

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Sports; <sup>3</sup> Institute of Clinical Medicine, Copenhagen University, Copenhagen, Denmark

**Rationale:** Increasing survival rates in allogeneic hematopoietic stem cell transplantation (HSCT) has led to an increased focus on the late-effects of the treatment, including early onset metabolic syndrome (MetS). While lifestyle factors such as nutrition play a role in the development of MetS in the general population, total body irradiation (TBI) are a significant risk factor among HSCT-survivors. We have limited insights into the role of dietary factors in this group. The aim of this study was to describe the diet of long term survivors of pediatric HSCT and to explore associations with MetS.

**Methods:** Patients undergoing HSCT in Denmark before the age of 18 (1980-2018) and were >18 years of age at the inclusion were eligible. 85 patients completed a 3-day dietary record and results were compared with Nutrition Recommendations<sup>1</sup> and with previous reports on diets in the background population. Median age 31 years (19-53) and follow-up time 22 years (7-37). Both malignant and benign diseases. Conditioning were TBI-based (53%), BuCy (28%) or other (19%).

**Results:** Overall intake of macro- and micronutrients was within the recommendations, except the distribution of fatty acids. A high number of patients had a higher intake of saturated fat (SF), and lower intake of mono and poly unsaturated fat than recommended. Also it showed a low intake of vitamin D and in females also iron. 23 patients (27%) had MetS, corresponding to the prevalence in the background population at 50-80 years. Of those 22 (95%) were treated with TBI, confirming TBI as a dominant risk-factor ( $p < 0.0001$ ). Total fat intake was higher in patients with MetS (85 vs 71g/day ( $p < 0.005$ ) and 37E% vs 34E% ( $p < 0.02$ )) and these patients had also a higher intake of SF (27 vs 22g/day ( $p < 0.04$ )). Patients treated with TBI having MetS had a higher intake of fat than TBI-treated patients without MetS (84 vs 66g/day ( $p < 0.002$ ) and 37E% vs 32E%, ( $p < 0.01$ )) and also SF (27 vs 21g/day ( $p < 0.02$ )).

**Conclusion:** This study suggest that HSCT and the use of TBI induces a state of hypersensitivity to the harmful effects of fat in the diet, indicating the importance of an individualized diet to reduce metabolic late effects of HSCT and cardio-metabolic disease later in life.

#### References:

1. Nordic Council of Ministers (2014) Nordic nutrition recommendations. 5th edn, Cph, DK.

**Disclosure of Interest:** None declared.

#### LB-025

### THE RELATIONSHIP BETWEEN DENTAL CARIES, FOOD INTAKE AND BODY COMPOSITION IN SCHOOL-AGE CHILDREN

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**Rationale:** The aim of this study is to evaluate the relationship between dental caries, food intake and body composition in school-age children

**Methods:** The study was conducted on 210 children, 105 boys and 105 girls, aged 6-12 years, without mental and / or physical disorders. Oral examinations of the children were performed by pediatric dentists. Teeth brushing and nutritional habits of children were questioned with the questionnaire and the 24-hour food records were taken to determine the food consumption of the children. Waist circumference and hip circumference measurements of children were taken by the researcher; body weight and body compositions of children were evaluated with Tanita BC-601F body analyzer.

**Results:** DMFT values were found to be lower in children who consumed milk, buttermilk and white cheese daily, but this differences were not statistically significant ( $p > 0.05$ ). While the number of permanent decayed teeth in children who consume cheese daily was higher than children who do not consume cheese daily ( $p < 0.05$ ). Body weight and waist circumference are found to be positively correlated with DMFT and negatively correlated with dmft. BMI was found to be positively correlated with DMFT; negatively correlated with dmft ( $p < 0.05$ ).

**Conclusion:** In this study, dental caries was found to be associated with both food consumption and body mass index in school-age children. There is a negative correlation was found between the daily total dairy

consumption and DMFT index ( $p < 0.05$ ). A positive correlation was found between DMFT and dmft indexes with daily total sugary food consumption ( $p < 0.05$ ). In permanent dentition, a positive correlation was found between BMI and dental health indicators. In primary dentition, a negative correlation was found between BMI and dental health indicators ( $p < 0.05$ ). In children, consumption of sugary foods should be reduced and consumption of milk and dairy products should be increased.

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Costacurta M, Di Renzo L, Bianchi A, Fabiocchi F, De Lorenzo A, Docima R. Obesity and dental caries in paediatric patients. A cross-sectional study. Eur J Paediatr Dent. 2011;12(2):112-16.

**Disclosure of Interest:** None declared.

#### LB-027

### COMPARISON BETWEEN FOUR MID-TERM DIETARY PATTERNS TO BE USED IN POSTMENOPAUSAL WOMEN

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**Rationale:** Confirmatory data pointed out that unbalanced diets promote the onset of cardiovascular disease (CVD) which sharply increases in postmenopausal women (PMW). So far, no specific dietary patterns in CVDs prevention in PMW have been identified and we struggled to find comparisons between dietary patterns in PMW which have been shown to be useful in preventing CVDs.

**Methods:** Based on a literature search, we identified four 1800 kcal/day dietary patterns – Mediterranean (MED), DASH, Low-Carb (LC), Low-Fat (LF) diet - adjusted by mean age and energy intake for Italian women. Each diet was divided into five daily meals, with weighted main foods, substitutions and frequency of consumption. We performed the breakdown of each dietary pattern into macro- and micronutrients, according to composition tables conceived for Italian food, where data were expressed as % of food consumed after eliminating the scrap.

**Results:** Across all dietary patterns, the daily lipid intake was in line with the European guidelines for CVDs prevention with the exception of LC diet, which was slightly higher in saturated fatty acids (10.9%), though offset by a higher level of MUFA (22.7%). Daily naturally occurring sugars intake was lower in LC (13.3 %) or slightly higher in MED (16.4%) and DASH (16.9 %) diets than the Italian Suggested Dietary Target (SDT <15%), while that intake was higher in LF diet (19.5%) however with higher fiber intake (37 g/die). Across all diets, daily SDT for fiber intake (>25 g) was reached. Daily calcium intake was in line with the Italian Population Reference Intake for PMW (1200 mg) but higher than the Italian food consumption survey<sup>1</sup> (3900 mg/day); potassium intake was close to the upper value of the Italian Adequate Intake (3900 mg/day). Sodium intake, provided by foods, water and salt, was close to the SDT (2000 mg/day) with minimum value in DASH (1667mg/day) and maximum in LF (2395mg/die), much lower than the national surveys<sup>2</sup> (3320 mg/day).

**Conclusion:** The four dietary patterns identified provide a broader picture than single nutrient analysis, which allows to determine the most effective nutritional intervention in reducing the incidence and progression of CVDs in PMW. A unique definition of LC and LF diet is desirable, as well as uniformity in the definition of “portion” in MED and DASH diet.

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**Disclosure of Interest:** None declared.

#### LB-029

### BLOOD GLUCOSE PROFILE OF KRIDA WACANA CHRISTIAN UNIVERSITY STUDENTS, JAKARTA, INDONESIA

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**Rationale:** Blood glucose levels are associated with concentration, cognitive function and mental health, especially for students during the learning process. Morning blood glucose levels can be affected by breakfast and nutritional status. The purpose of this study was to measure blood sugar levels in the morning of Krida Wacana Christian University students.

**Methods:** Design study was descriptive, cross sectional survey, and purposive sampling. Inclusion criteria was healthy medical students. Exclusion criteria were diabetes melitus, hiperuricemia and taking corticosteroid drug. The demographic data included age, sex, breakfast, and body mass index (BMI) to assess nutritional status. Blood glucose was measured in the morning at 07.30-09.30, using glucometer.

**Results:** We included 63 students, age  $21,6 \pm 0,8$  years, 71,5% women:28,5% men. The number of students who had breakfast (50,8%) and not (49,2%); nearly the same. Based on BMI, 6,3% underweight, 42,9% normal weight, and 15,9% overweight 34,9% obesity. Median blood glucose level was 95 mg/dL (78-168 mg/dL). Normoglycemia was found in 73% students, with blood glucose levels 92 mg/dL (78-122 mg/dL). There were no students with hypoglycemia, on the contrary many had hyperglycemia, 27% with median blood glucose levels 145 mg/dL (141-168 mg/dL). We did additional statistical analyzes to examine the relationship between blood glucose levels with nutritional status, the result showed there was no significant relationship between both variables.

**Conclusion:** Our findings indicate, that most of the students had normal blood glucose levels. But many students categorized as hyperglycemia.

**References:**

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**Disclosure of Interest:** None declared.

## Nutritional epidemiology

### LB-031

#### AN EVALUATION OF EMOTIONAL STRESS AND NUTRITIONAL STATUS OF REFUGEE ORPHAN CHILDREN

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**Rationale:** This research aimed to determine the relationship between post-traumatic stress disorders and the nutritional status of refugee orphan children who are victims of war or migration.

**Methods:** For the research, the study consisted of 32 boys and 52 girls, aged 6-10 years, living in İstanbul who had to immigrate from Syria to Turkey. held with 84 asylum seekers and orphan participants in total. The demographic characteristics of the participants were recorded, the Post Traumatic Stress Disorder (PTSD) scale was applied for anthropometric measures of stress, and dietary records and anthropometric (weight, height, and upper-middle arm) measurements were taken to evaluate their nutritional status.

**Results:** In the food consumption record evaluation in the study, it was determined that the micronutrient intakes of the participants were insufficient, and on the other hand, the carbohydrate intake of 79% of the participants, the protein intake of 50%, and the fat intake of 55% of the participants were below the desired values. In addition, it was observed that 98.8% of the participants had low dietary fiber consumption. When the participants' anthropometric measurements z-scores were compared with their PTSD results, a statistically significant difference was found between the participants' stress status and BMI z-score according to age ( $p < 0,05$ ). On the other hand, it was observed that 39.3% of the participants were overweight or obese according to the BMI z-score for age. In addition, a statistically significant, very weak ( $p < 0,05$ ,  $r = -0,244$ ) and negative

correlation was found between the Z-score of weight for age and the result of PTSD.

**Conclusion:** Inadequate consumption of macro and micronutrients as a result of losses and traumas, inadequate nutrition or refusal to eat, inadequate dietary fiber, and high obesity as a result of empty-calorie intake will be factors that negatively affect the development of children. Considering all these problems, it is seen that improving the nutritional status of refugee and orphan children has an important place in the development of health.

**References:**

Yayan, E. H., Düken, M. E., Özdemir, A. A., & Çelebioğlu, A. (2020). Mental health problems of Syrian refugee children: post-traumatic stress, depression and anxiety. *Journal of pediatric nursing*, 51, e27–e32.

**Disclosure of Interest:** None declared.

## Carbohydrate and lipid metabolism

### LB-032

#### MOLECULAR AND BIOINFORMATICS ANALYSIS OF MIR29B IN LIVER DISEASES

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**Rationale:** Liver is the largest solid organ which is more susceptible to get diseases, including Non-alcoholic fatty liver disease (NAFLD), hepatitis, haemochromatosis, liver cancer. MicroRNAs(miRNAs), the small single strand non-coding RNA, involved in a variety of biological processes by regulating gene expression at transcriptional or translational levels. MiR29b has been regarded as a potential antifibrotic agent by regulating several key pathological pathways. Thus, this study will provide a comprehensive understanding of the molecular role of miR29b in physiological and pathological processes, which will add knowledge on the therapeutic potential of miR29b in ameliorating liver diseases.

**Methods:** RNA-seq and GSEA analysis were utilised to identify the significant pathway under the regulation of miR29b. STAM mice model was used to induce simple steatosis, NASH and fibrosis which are the different stages of NAFLD. Liver tissues from these mice were collected for histological analysis and gene or protein level detection by q-RT-PCR and Western blotting. Mice were treated with polymeric micelles carrying miR29b1 to determine its therapeutic effect in the progression of NAFLD.

**Results:** RNA-seq data process and pathway analysis revealed that lipid metabolism related pathways were predominately upregulated by miR29b. According to our previous data from bioinformatics analysis, miR29b has been proven to be intimately involved in the lipid metabolism pathway. However, little is known about the underlying molecular mechanism for association between altered expression miR29b and development of steatosis/fatty liver. In this study, we found that miR-29b was significantly decreased during the pathogenetic stages from liver steatosis to fibrosis. Further mechanism investigations revealed that miR29b degraded IRS1 via directly targeting its 3'UTR. Besides, mice injected with miR29b micelles led to downregulation of fatty acid synthesis through IRS1-related pathway and enhanced  $\beta$ -oxidation.

**Conclusion:** Lipid metabolism pathway was significantly upregulated by miR29b. MiR29b ameliorated hepatic lipid accumulation via directly targeting IRS1-regulated lipid metabolism and upregulating  $\beta$ -oxidation.

**References:**

Fujii, M et.al. (2013) Medical molecular morphology, 46(3), pp.141-152.

**Disclosure of Interest:** None declared.

## Protein and amino acid metabolism

### LB-033

#### PROTEIN DIGESTION PROFILES OF COMPACTED NUTRITIONAL DRINKS

## PROVIDING DIFFERENT PROTEIN BLENDS AND ENERGY DENSITIES IN OLDER ADULTS

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**Rationale:** Nutritional supplements providing fast-digestible, high-quality proteins, preferably in a small volume because of low appetite, can support protein intake and muscle protein synthesis of older adults. The objective of this study was to evaluate postprandial amino acids, glucose and insulin profiles in blood after consumption of highly concentrated nutritional drinks with different protein blends and energy densities.

**Methods:** Six iso-nitrogenous, compacted, nutritional drinks (15 g protein in 100–107 ml) were studied containing: casein (C) protein; a blend of casein:-whey hydrolysate in 2:1 ratio with low and high energy density (CWH-L and CWH-H, 88 and 257 kcal respectively); whey (W) protein; whey with low or high energy density (W-L and W-H, 90 and 200 kcal respectively). Post-prandial serum (E)AA, glucose and insulin profiles were evaluated in 12 healthy older adults (age 72.2 ± 4.6 years, 50% male). The data were statistically analyzed using mixed models and pair-wise compared.

**Results:** The peak in serum TAA, EAA, and leucine concentrations was significantly higher for CWH-L compared with C and CWH-H (all p < .001). Intake of whey-based products resulted in significant increases in serum TAA, EAA, and leucine concentrations, although the peaks for W-H were significantly lower when compared with W and W-L (all p < 0.014). All the casein and whey-based products stimulated insulin release; W resulted in higher insulin levels compared with C.

**Conclusion:** Consumption of nutritional drinks of about 100 ml containing 15 g CWH protein blend or whey protein resulted in fast and high increases of post-prandial serum (essential) amino acid levels in older adults. Low energy density contributes to the rise in amino acids required to induce muscle protein synthesis.

### References:

This trial is registered at Netherlands Trial Register as trial NL8951.

**Disclosure of Interest:** S. Verlaan Other: Employee of FrieslandCampina, J. Schloesser Grant / Research Support from: Grant from FrieslandCampina, I. Thijs-Verhoeven Other: Employee of FrieslandCampina, A. Hartog Grant / Research Support from: Grant from FrieslandCampina.

## Vitamins, antioxidants and minerals

### LB-034

#### CLINICAL AUDIT ON MICRONUTRIENT SUPPLEMENTATION FOR COVID 19 PATIENTS, A SINGLE CENTER STUDY

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**Rationale:** High dose supra-physiological micronutrients supplementation was recommended by Covid 19 management guidelines previously. However, current ESPEN guideline on nutritional management of Covid 19 patients (1) has suggested to provide only recommended dietary intake of micronutrients for Covid 19 patients without micronutrients deficiencies, since high dose micronutrients supplementation did not improve outcome.

**Methods:** This audit was done as a cross-sectional study at all medical wards of national hospital, Kandy, Sri Lanka. Audit standards were set up according to the ESPEN covid 19 management guideline (1). Relevant data was collected by inward management records of all covid 19 patients, after taking administration permission.

**Results:** Total 73 patients (male-54.8% with mean age of 62.7years, female-45.2% with mean age of 65.2 years) were recruited to this study. They had following co-morbidities (DM-32.9%, Hypertension-31.2%, dyslipidemia-

9.6%, renal impairment 19.2%). Vitamin D -5000 mg/day was given to 26.0% patients. Vitamin C 1000 mg/day was given to 43.8% of patients. Vitamin A >= 5000 IU/day was given to 31.3% of covid 19 patients with renal impairment. Mean vitamins intake were as follows [(D 1700 IU (>2 times RDI), vitamin C 600mg (>6 RDI)] and found to higher than the RDI. Vitamin A- 5000 IU/day (> 2 RDI) was given to covid 19 patients with renal impairment, despite the risk of vitamin A toxicity. 8.2% patients were not given any micronutrients.

**Conclusion:** Supraphysiological high dose vitamin C, D and A supplementations have been frequently seen in covid 19 patients without clinical deficiencies. Micronutrient supplementations should be adjusted to match their co-morbidities and requirements to prevent adverse effects.

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**Disclosure of Interest:** None declared.

### LB-035

#### MONITORING ENTERAL MICRONUTRIENT INTAKE AMONG PATIENTS WITH CORONAVIRUS DISEASE 2019 (COVID-19) USING A PRACTICAL COMPUTER SOFTWARE

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**Rationale:** Delivery of micronutrients among COVID-19 patients has been among the highlights of nutrition interventions for the past year. Monitoring micronutrient intake in tube feedings formulas will help clinicians assess the need to shift formulas or adjust dosages of medications and other oral or intravenous nutritional supplementation among COVID-19 patients.

**Methods:** This retrospective study utilized a practical Microsoft Excel calculator where all locally available nutritional formulas and contents were encoded. Caloric dose prescribed and delivered to each COVID-19 patient on tube feeding was determined and automatic retrieval of electrolytes, trace elements and multivitamins were determined. Mean and standard deviation was computed and compared with recommended daily intake.

**Results:** Among a total of 90 COVID-19 patients hospitalized between January 2021 to June 2021, 61 (68%) were admitted in the ICU, with an average of 1384 kcal ±313 and 59 ±14 grams protein initiated upon admission. Majority of patients received a standard polymeric formula. Mean and standard deviation of micronutrient intakes from tube feeding revealed the following: Sodium (858mg, ±328), Potassium (1528 mg ±724), Calcium (1060 mg, ±466), Zinc (14 mg, ± 3.3), Copper (2mg ± 0.6), Selenium (83 µg ±25.4), Iron (17± 6.21), Vitamin A (1075µg ± 434), Vitamin B1 (2 mg, ±0.6), Vitamin B6 (4mg ± 1.83), Vitamin C (158 mg, ±55.6), Vitamin E (38 mg ±15.8), Vitamin D (17µg ±9.41), and Folic acid (489 µg ±170.5). Most of the micronutrients exceeded the recommended daily intake.

**Conclusion:** Monitoring micronutrient intake among COVID-19 patients on enteral tube feeding is feasible and must be a constant part of the nutrition intervention hospital policies.

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**Disclosure of Interest:** None declared.

## Critical care

### LB-036

#### USE OF AN ELECTRONIC VOLUME BASED FEEDING PROTOCOL TO IMPROVE NUTRITION DELIVERY IN CRITICAL CARE

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**Rationale:** Nutritional deficits in critically ill patients have been shown to lead to increased morbidity, mortality and length of stay(1). During the intensive care unit (ICU) admission breaks to feed are common; patients are often nil by tube for procedures and investigations(2). Volume based feeding (VBF) has been suggested as a strategy to reduce deficits with nursing staff adjusting feed rates to achieve target feed volume(3). We implemented an electronic VBF protocol to calculate calorie deficits and feed rates. Patients start on a high protein polymeric feed at 40ml/h on day 1 with an increase to target volume on day 2.

**Methods:** Enteral nutrition (EN) intake was audited in 32 adults in ICU post implementation of the electronic VBF protocol. Data was compared to 42 patients prior to protocol launch. Data was collected for duration of EN to a maximum of 14 days for consecutively admitted patients. Patients were excluded if they received EN for <4 days or received concurrent oral/parenteral nutrition.

**Results:** Prior to launch of the eVBF protocol patients received a mean of 86% of prescribed calories. Post launch patients received 98.2% of target calories. Protein delivery increased from 79% of 90.6% of target. With eVBF 25 patients met >95% of calorie target; 10 patients met >95% of both protein and calorie goal.

**Conclusion:** An electronic VBF protocol ensures patients receive prescribed energy targets from EN. Improvements were shown in protein delivery however as our protocol calculates energy deficits but not protein deficits, protein targets are not fully met. Due to calories from non-nutritional calorie sources e.g. propofol / citrate in many ICU patients and low protein/energy ratio of available enteral feeds, it is challenging to meet protein requirements without protein supplements. An electronic feed protocol is able to ensure adequate feed and calorie provision but regular dietetic review is needed to optimise protein intake.

#### References:

1. Nicolo et al. Clinical outcomes related to protein delivery in a critically ill population. *JPEN* 2015.
2. Caesar et al. Nutrition in the acute phase of illness. *N Engl J Med*.2014
3. Heyland et al. Implementing the PepUp protocol in critical care units in Canada. *JPEN*2015.

**Disclosure of Interest:** B. Jenkins Grant / Research Support from: NIHR, A. Rogers: None declared, S. Lawson: None declared.

### LB-037

#### EFFECTS OF DIFFERENT LIPID EMULSIONS ON SERUM ADIPOKINES, INFLAMMATORY MARKERS AND MORTALITY IN CRITICALLY ILL PATIENTS WITH SEPSIS: A PROSPECTIVE OBSERVATIONAL COHORT STUDY

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**Rationale:** Intravenous lipid emulsions in parenteral nutrition may cause different metabolic responses and immune effects in critically ill patients with sepsis. The aim of this study is to investigate the effects of different lipid emulsions on changes in concentrations of adipokine and cytokine and their relationship with mortality in patients.

**Methods:** Patients enrolled in this prospective, single-center, observational cohort study, were estimated to require more than ten days of

parenteral nutrition. They were treated with soybean oil-based or olive oil-based parenteral lipid emulsions. Adipokine and cytokine concentrations of septic patients were determined at enrollment and ten days after, in accordance with the diagnostic criteria of SEPSIS-3. The concentrations levels were measured in an enzyme-linked immunosorbent assay.

**Results:** Over a 25-month period, 145 patients were assessed for eligibility and consequently, 40 patients were analyzed. On admission, both groups had comparable physiological scores, comorbidities, malnutrition risk, anthropometric measurements, metabolic/hematologic biomarkers and concentrations of adipokines and cytokines ( $p>.05$ ). Serum leptin, resistin, and cytokines (IL-6, IL-10, IL-1 $\beta$  and TNF- $\alpha$ ) decreased significantly in the entire cohort over ten days following sepsis ( $p<.05$ ). Serum resistin decreased in both olive oil-based and soybean oil-based lipid emulsions groups. Serum adiponectin only decreased in soybean oil-based lipid emulsions group ( $p<.05$ ). There was association between survival and percentage changes in adiponectin, resistin and visfatin concentrations ( $p<.05$ ).

**Conclusion:** Adipokine and cytokine responses are affected by medical nutritional therapy in the sepsis process and adipokines may represent functional prognostic biomarkers in critically ill patients with sepsis.

#### References:

Calder PC, Adolph M, Deutz NE, Grau T, Innes JK, Klek S, et al. Lipids in the intensive care unit: Recommendations from the ESPEN Expert Group. *Clin Nutr* 2018;37:1-18.

**Disclosure of Interest:** None declared.

### LB-038

#### NON-NUTRITIVE CALORIES INTAKE IN CRITICALLY ILL PATIENTS – ARE THEY JUST EMPTY CALORIES?

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**Rationale:** There are limited studies exploring the role of non-nutritive calories (NNCs), i.e. propofol, dextrose and citrate. This study aimed to evaluate the caloric contribution of NNCs during ICU admission and assess the impact of NNCs on clinical outcomes amongst critically ill patients

**Methods:** A prospective audit from August to December 2019 was performed for patients admitted into medical-surgical ICUs for the first seven days. We included patients who were (i) admitted for  $\geq 48$ h, (ii) mechanically ventilated for  $\geq 24$ h, and (iii) received either parenteral and/or enteral nutrition (PN/EN). Quantification of calories included PN/EN, propofol, IV dextrose and citrate. Patients receiving continuous renal replacement therapy (CRRT) were compared to those without. Comparisons of demographics and clinical data were performed using T-Test and Mann-Whitney U test for continuous variables, and Chi-Square test for nominal/ordinal variables.

**Results:** There were 177 patients included. Out of these, 42 patients received additional citrate calories, with up to 331kcal per CRRT day. The CRRT-group received higher dextrose calories (23.1 $\pm$ 49.5kcal vs 17.3  $\pm$  38.9kcal,  $p=0.011$ ). There was no difference in propofol calories received ( $p=0.548$ ). Overall, the CRRT-group received significantly higher NNC calories 47.2  $\pm$  68.9kcal vs 30.2  $\pm$  54.9kcal,  $p<0.001$ ). Patients receiving CRRT have a trend towards higher malnutrition risk (SGA Score B/C 76.3% vs 62.8%,  $p=0.125$ ), with longer length of stay (11.7  $\pm$  3.4 days vs 8.7  $\pm$  1.2 days,  $p=0.418$ ), but not statistically significant. More patients required long-term dialysis after 30 days (31.0% vs 1.5%,  $p<0.001$ ). There was no difference in 30-day (37.8% vs 26.2%,  $p=0.169$ ) and 3-month mortality rates (40.7% vs 26.2%,  $p = 0.089$ ).

**Conclusion:** NNCs, especially citrate calories, are a significant source of calories. As patients receiving CRRT are at greater nutritional risk, this implies a need for greater emphasis on NNCs during nutritional assessment and caloric prescription to prevent over-feeding in this population, leading to adverse outcomes.

#### References:

Nil

**Disclosure of Interest:** None declared.

## LB-039

## AN AUDIT ON NUTRITION DELIVERY AND PATIENTS' OUTCOME IN THE INTENSIVE CARE UNIT

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**Rationale:** Optimal nutrition delivery in the intensive care unit (ICU) is essential in reducing complications and improving patient's outcome. The audit aims to survey prevalent enteral nutrition practices in a Singapore hospital and improve the unit's quality of nutrition care.

**Methods:** Data were collected prospectively from medical and surgical ICU patients from August to December 2019. Information collected includes demographics, nutrition data (Subjective Global Assessment for nutritional status, caloric and protein intake) and clinical outcomes (length of stay, mortality). Data were collected for up to 7 days during patients' stay. Results were reported as mean  $\pm$  S.D. or median (IQR).

**Results:** Three hundred and ninety-four patients were included in the audit. Cardiovascular related conditions accounted for most of the ICU admissions (32.5%). The 30 and 90-day mortality rates were 20.6% and 22.8%. Feeding was initiated in 83.8% of patients within 48 hours of ICU admission. Hemodynamic instability is one of the main reasons (55%) for delayed feeding. More than 40% of the patients were malnourished. The median length of ICU stay is three days (IQR 2,5; range 1-146), and 81% of patients received  $\geq 1$  (IQR 1,2; range 0-4) dietetic review during the ICU stay. Patients had a mean daily deficit of 391.5 $\pm$ 344.5 kCal and 16.7 $\pm$ 15.0g protein. Common reasons for not meeting prescribed nutrition include withholding feeds due to hemodynamic instability (3.0%-46.5%) and non-operative procedures (extubation) (5.5%-71.8%) during the audit days. Approximately 35% of patients met  $\leq 75\%$  of their nutritional requirement post ICU discharge.

**Conclusion:** Nutrition support was initiated within an appropriate time-frame, but patients were not meeting their prescribed nutritional requirements during their ICU stay. Feeding interruptions during ICU stay is unavoidable, but this may negatively impact the patient's nutritional status, leading to poorer outcomes. A review of current practice to maximise nutrient delivery during and post ICU stay is needed.

**References:**

Nil

**Disclosure of Interest:** None declared.

## LB-040

## EFFECT OF ENTERAL NUTRITION WITH EICOSAPENTAENOIC ACIDS FOR PREVENTION OF BEDSORES IN CEREBROVASCULAR DISEASE PATIENTS

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**Rationale:** In cases with severely impaired consciousness due to cerebrovascular diseases, patients must go through therapy under hospitalization for several days, and are at risk of bedsores due to long-term bed rest during therapeutic period. If bedsores could be prevented by feeding an enteral diet enriched with EPA, it can be supposed that this diet therapy might make a contribution to improvement of aspects of clinical care and reduction of clinical costs.

**Methods:** The study was conducted as a prospective randomized controlled trial. Twenty patients were administrated. Ages ranged from 55 to 85 years of age. The breakdown of the patients was cerebrovascular infarction. Patients showing critically impaired consciousness with GCS scores of 12 or less for whom four or more days of bed rest had been prescribed were randomly allocated into two groups: one to be given the enteral diet enriched with EPA, and the other to be fed with an isonitrogenous and isocaloric control diet. All patients were evaluated regarding the incidence frequency of bedsores based on DESIGN-R.

**Results:** Investigation on changes in CRP, an inflammatory index, showed more significant suppression of inflammation in the EPA enriched diet

group when compared to the control group. Regarding new occurrence of bedsores, no lesion was observed in the EPA enriched diet group, showing apparently lower incidence of bedsores compared to the control group, in which one new lesion on day 4, one new lesion on day 7 and one new lesion on day 14 were observed.

**Conclusion:** It was considered that nutritional management of our study showed that EPA enriched enteral diets suppressed inflammation and improved low nutrition and using EPA enriched enteral diets could be a useful option for prevention of bedsores in patients who need long-term immobile bed rest. This nutritional management clarified that a proper choice of enteral diet makes it possible to save hours of clinical care and medical costs due to prevention of bedsores.

**References:**

Matsui Y, et al. Development of the DESIGN-R with an observational study: an absolute evaluation tool for monitoring pressure ulcer wound healing. *Wound Repair Regen* 2011; 19: 309-15.

**Disclosure of Interest:** None declared.

## LB-041

## NUTRITIONAL AND FUNCTIONAL STATUS AND HEALTH-RELATED QUALITY OF LIFE OF CRITICALLY ILL COVID-19 SURVIVORS. THE NUTRICOVID STUDY: AN INTERIM ANALYSIS AT 3 MONTHS POST-DISCHARGE

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**Rationale:** Malnutrition in critically ill COVID-19 and its long-term effects are not well known(1). NUTRICOVID study aims to describe 1-yr evolution of nutritional, functional status, and health-related quality of life (HRQoL) of COVID-19 survivors post-discharge.

**Methods:** A multicenter, ambispective, observational study is being conducted in 16 hospitals of Madrid (Spain) with ICU COVID-19 survivors of the 1<sup>st</sup> outbreak (March-June 2020). A descriptive interim analysis at 3 months post-discharge was performed (STATA v.14) including nutritional status (weight, MUST), functional status (SARC-F, Barthel), medical nutritional treatment (MNT) and HRQoL (EQ-5D) at discharge and at 3 months.

**Results:** A total of 199 patients were included: 70% male, mean age (SD) 61 (10) years; average (SD) weight loss during hospital stay 16% (8%). At discharge, 83% and 87% of patients were at high risk of malnutrition and sarcopenia, 81% were moderate-highly dependent, and 70 patients received MNT. At 3 months, the average (SD) weight gain was 8% (9%), 17% and 34% of patients were still at high risk of malnutrition and sarcopenia, but 63% were independent. 18 patients were still on MNT. The median EQ-VAS (IQR) at discharge was 40 (25-50), and improved to 60 (50-75) at 3 months. Distribution of patients with moderate to extreme problems/feelings according to EQ-5D was:

	At discharge (N=178)	After 3-months (N=165)
Mobility	72% (128)	25% (41)
Self-care	52% (93)	11% (18)
Usual activities	77% (137)	30% (49)
Pain/discomfort	63% (113)	36% (59)
Anxiety/depression	42% (75)	24% (40)

**Conclusion:** This analysis evidences the favorable improvement on nutritional and functional status and HRQoL experienced in ICU COVID-19 survivors from hospital discharge to 3 months afterwards.

**References:**

1. Cawood AL et al. A Review of Nutrition Support Guidelines for Individuals with or Recovering from COVID-19 in the Community. *Nutrients*. 2020;12(11).

**Disclosure of Interest:** None declared.

## LB-042

## ASSESS OF ANTHROPOMETRIC MEASUREMENTS AND MUSCLE CHANGES IN THE CRITICALLY ILL TRAUMA PATIENTS

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**Rationale:** The loss of skeletal muscle mass is associated with adverse outcomes in critically ill patients. This study aimed to examine rectus femoris muscle wasting and changes in anthropometric measurements in the first 7 days of admission to the intensive care unit for trauma patients. **Methods:** This single-center, prospective, observational study included critically ill trauma and surgical patients aged 18–85 years and expected to be in the intensive care unit for more than seven days. Ultrasound and anthropometric measurements were performed within 48 h of ICU admission (baseline) and seven days after. The rectus femoris cross-sectional area (CSA, in cm<sup>2</sup>) was measured using bedside ultrasound. European Society of Clinical Nutrition and Metabolism guidelines were used to energy and protein requirements.

**Results:** In total, thirty-five trauma patients were enrolled. The mean age of the patients was 49.6±18.6 (range 20–82) years; 71.4% were male. There was an association between baseline rectus femoris CSA and mid-upper arm circumference ( $r=0.542$ ,  $p<0.05$ ) and calf circumference ( $r=0.454$ ,  $p<0.05$ ). There were significant reductions in the rectus femoris CSA (−16.7% [95% CI, −22.2% to −11.3%];  $p<0.05$ ); mid-upper arm circumference (−4.6% [95% CI, −7.3% to −1.9%];  $p<0.05$ ) and calf circumference (−3.3% [95% CI, −4.9% to −1.7%];  $p<0.05$ ) observed at day 7.

**Conclusion:** Rectus femoris CSA is associated with anthropometric measurements, however, changes in muscle mass are more severe than changes in anthropometric measurements. In critically ill trauma patients, muscle wasting occurs rapidly in the first week in the intensive care unit, and ultrasound of rectus femoris could represent a safe, simple, and non-invasive method to evaluate changes in skeletal muscle.

**References:**

Simpson, F., Doig, G. S. (2016). *Bedside nutrition evaluation and physical assessment techniques in critical illness. Current opinion in critical care*, 22(4), 303–307.

**Disclosure of Interest:** None declared.

## LB-043

## MALNUTRITION, SARCOPENIA AND DISABILITY IN CRITICAL COVID 19 PATIENTS

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**Rationale:** Sarcopenia and malnutrition cause functional impairment in sick individuals. Its prevention and treatment showed positive effects. Our aim was to define the nutritional and functional status of patients with SARS CoV-2 infection upon admission to the ICU and during their evolution.

**Methods:** Observational, retrospective study, in conditions of usual clinical practice, of patients with critical SARS-CoV2 infection, admitted to the ICU between 09/03–30/09, 2020, and their evolution 3 and 6 months after discharge. We analyzed demographics outcomes, clinical history, nutritional screening (MUST) and sarcopenia (SARC-f), Barthel index, nutritional therapy (NT), invasive mechanical ventilation (IMV), stays in ICU, hospital and mortality.

**Results:** 150 patients (94V, 56M), mean age 60 years (28–87). Obesity (56.7%) and overweight (31.3%). 46% have a MUST ≥2; 48% met GLIM criteria for malnutrition. This malnourished patients had a 15-day stay more in the ICU (25.78±2.84 vs 9.9±10.054;  $p<0.027$ ) and 26.5 more in hospitalization (49, 9±34.7 vs 23.3±13.4;  $p<0.015$ ). Patients with weight loss ≥5% had 11.21 more days of IMV ( $p<0.004$ ). 47.3% presented SARC-f ≥4 with prolonged stays in ICU (24.4±22.04 vs 13.2 ±10.3 days;

$p<0.016$ ), and hospital (48.5±33.7 vs 25.7±13.2 days;  $p<0.005$ ). Only 4% of the patients were independent at discharge from the ICU. At 6 months, 17 patients maintained some degree of dependence. Mortality was 33%. All patients received NT according to protocol, enteral nutrition exclusively (88%) or exclusive or complementary parenteral nutrition (29.3%) during their stay in the ICU. Statistical analysis was performed using SPSS 26.0.

**Conclusion:** Critical COVID patients have a high prevalence of obesity, malnutrition, sarcopenia and dependence. Malnutrition and sarcopenia affects more days of IMV and prolonged ICU and hospital stays. Screening for both entities is key upon admission to hospital.

**References:**

1. Thibault R, Seguin P, Tamion F, Pichard C, Singer P. Nutrition of the COVID-19 patient in the intensive care unit (ICU): a practical guidance. *Crit Care*. 2020 Jul 19;24(1):447.

**Disclosure of Interest:** None declared.

## LB-044

## HYPERMAGNESEMIA IN PEDIATRIC PATIENTS UNDER TOTAL PARENTERAL NUTRITION

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**Rationale:** Hypermagnesemia is a medical emergency commonly seen, but frequently overlooked in pediatric patients under of total parenteral nutrition (TPN). The purpose of this study is to evaluate the prevalence and incidence of hypermagnesemia in pediatric patients, prior and within the first 7 days of TPN infusion.

**Methods:** This is a retrospective analysis of data collected prospectively from a cohort of pediatric patients who were hospitalized at a Brazilian quaternary hospital and received TPN during hospitalization. The laboratory monitoring was performed daily by 7 days (D1–D7). Hypermagnesemia was defined as above of the reference range. Hypermagnesemia was related to surgical procedure, renal insufficiency, inflammation (C-reactive protein ≥15mg/dl), and ICU stay.

**Results:** A total of 296 patients, 108/296 (36.4%) were infants, 138/296 (46.6%) of the patients came from gastrointestinal postoperative period, 219/296 (73.9%) were surgical, 241/296 (81.4%) were in the ICU, 22/296 (7.4%) died. There were 102 (34%) hypermagnesemia events before the start of PN infusion (D0), which remained prevalent until the seventh day, but in smaller proportions. When analyzing the weekly sum of events, hypermagnesemia was associated with inflammation ( $p<0.001$ ) OR: 0.47; CI (0.31 – 0.71), and related to with high creatinine ( $p=0.004$ ) OR: 2.35; CI (1.28 – 4.33). There was no statistically positive relationship between patients in the ICU and patients who underwent surgical procedures.

**Conclusion:** Hypermagnesemia were frequently observed before and particularly during the first 3–4 days of PN infusion. Inflammation and renal insufficiency were related to hypermagnesemia.

**References:**

Mihatsch W, Fewtrell M, Goulet O, Molgaard C, Picaud JC, Senterre T; ESPGHAN/ESPEN/ESPR/CSPEN working group on pediatric parenteral nutrition. ESPGHAN/ESPEN/ESPR/CSPEN guidelines on pediatric parenteral nutrition: Calcium, phosphorus and magnesium. *Clin Nutr*. 2018 Dec;37(6 Pt B):2360–2365. doi: 10.1016/j.clnu.2018.06.950. Epub 2018 Jun 18. PMID: 30097365.

Wu, Alan; Tietz Clinical Guide to Laboratory Tests. 4th Edition. Elsevier eBook. ISBN: 9781437719871. Imprint: Saunders. Published Date: 8th June 2006.

**Disclosure of Interest:** None declared.

## LB-045

## LIPID AND HEPATIC PROFILE OF ADULT PATIENTS UNDERGOING PARENTERAL NUTRITION THERAPY: A RETROSPECTIVE COHORT STUDY

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**Rationale:** Total parenteral nutrition (TPN) is used in the treatment of sick individuals who commonly present inflammatory/infectious states with associated metabolic alterations. Our objective was to evaluate lipid profiles, inflammatory states and demographic data, and their associations with hepatic profiles in hospitalized adults treated with TPN.

**Methods:** This was an observational, analytical, retrospective cohort study including 945 participants treated with TPN over a three-year period. As primary variables, the following profiles were evaluated: (hepatic) alanine aminotransferase (ALT), gamma glutamyl transpeptidase (GGT), (lipid) total cholesterol (TC), HDL and triglycerides. The secondary variables were albumin, pre-albumin, biochemical and clinical nutritional status.

**Results:** Most individuals receiving TPN presented an inflammatory condition, with hypertriglyceridemia and altered HDL. In the multivariate logistic regression, the odds ratio for ALT were more than twice the upper limit of normal. The values found were 5.92 for TC  $\geq$  240 mg/dL, and OR was 1.99 for triglycerides  $\geq$  150 mg/dL. The odds ratio for GGT was greater than twice the upper limit of normality, resulting in 4.42 for hypercholesterolemia, 2.08 for hypertriglyceridemia, 1.58 for females and 0.70 for malnourished patients.

**Conclusion:** Hypercholesterolemia and hypertriglyceridemia maybe induced alterations of ALT and GGT, modifying the hepatic profile in individuals receiving TPN. The multivariate logistic regression analysis revealed that female gender and malnutrition were adverse prognostic indicators of elevated GGT.

#### References:

ASPEN Board of Directors and the Clinical Guidelines Task Force. Guidelines for the use of parenteral and enteral nutrition in adult and pediatric patients. JPEN J Parenter Enteral Nutr. 2002;26(1):1-138.

Mateu-de Antonio J, Florit-Sureda M. New strategy to reduce hypertriglyceridemia during parenteral nutrition while maintaining energy intake. JPEN J Parenter Enteral Nutr. 2016;40(5):705-712.

**Disclosure of Interest:** None declared.

#### LB-046

#### PERSPECTIVE OF PATIENTS WITH COVID-19 ON NUTRITIONAL SUPPORT DURING RECOVERY: A EUROPEAN SURVEY

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**Rationale:** Nutrition plays a key role in recovery from severe illness such as COVID-19. Exploring patients' experience with nutritional support (NS) is crucial to improve management of malnutrition, including after hospital discharge, as continuity of nutritional care between settings remains a challenge.

	1 <sup>a</sup>	2 <sup>a</sup>	3 <sup>a</sup>	4 <sup>a</sup>
High-flow nasal oxygen at ICU admission, n(%)	8(40)	19(95)	20(100)	20(100)
Time from ICU admission to intubation(days)	0(0-1)	1(0-4)	2(1-5)	2(1-4)
Time from ICU admission to nutritional support(days)	2(1.7-3)	3(2-5)	3.5(3-5)	3(1.25-5.75)
% of kcal requirements based on ICU day 4	102(82-118)	41(0-65)	16(0-72)	39(0-64)
% of kcal requirements based on ICU day 7	90(77-112)	48(0-81)	88(44-112)	81(32-95)
Parenteral nutrition(PN) 7 <sup>th</sup> ICU day, n(%)	9(45)	7(35)	2(10)	1(5)
Enteral nutrition (EN) 7 <sup>th</sup> ICU day, n(%)	3(15)	3(15)	6(30)	13(65)
PN+EN 7 <sup>th</sup> ICU day, n (%)	7(35)	3(15)	4(20)	5(25)

**Methods:** Patients were included from Ipsos iSay panel (March-April 2021) if >18yrs and hospitalized for  $\geq$ 2 nights due to COVID-19. The online survey explored impact of COVID-19, NS received and patients' experience and perspective on nutrition during recovery.

**Results:** 453 patients (43  $\pm$  14yrs; 55% male) participated from Spain (n=195), Italy (n=167), France (n=42), UK (n=26) and Germany (n=23). Median hospital stay was 7 nights, with 38% of patients being admitted to ICU. COVID-19 symptoms reported included changes in smell/taste (44%/49%), diarrhea (37%) and swallowing issues (25%). 65% of patients lost >5% weight. 42% felt a lot weaker after discharge, with more difficulty with

daily tasks such as climbing stairs (85%). 50% received medical nutrition in hospital. 27% of tube-fed patients received no NS after extubation despite struggling to eat. After discharge, only 11% received oral nutritional supplements although 80% had eating challenges; appetite loss and dysphagia were often reported. 56% agreed that NS helped "a lot/enormously" in recovery. The main expectation of NS was to regain strength. 68% felt the need to look for more information, in particular on how to combat weakness or support immunity.

**Conclusion:** Patients report a significant impact of COVID-19 on weight loss, strength and function. NS is perceived to support recovery but remains limited after discharge and not fully in line with patient's expectations. Areas of attention include discharge management, patient education and better consideration of patient's goals to preserve and/or restore nutritional status, strength and function.

#### References:

n/a

**Disclosure of Interest:** H. Blanchard Other: Employee of Danone Specialized Nutrition, C. Green Other: Employee of Danone Specialized Nutrition, A. O'Callaghan Other: Employee of Danone Specialized Nutrition, E. van Eijk Other: Employee of Danone Specialized Nutrition, R. Browne Other: Employee of Danone Specialized Nutrition.

#### LB-047

#### NUTRITIONAL THERAPY IN CRITICALLY ILL COVID19 PATIENTS, HAVE THERE BEEN ANY DIFFERENCES BETWEEN THE 4 PANDEMIC WAVES?

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**Rationale:** An adequate nutritional support is essential in the outcomes of critically ill patients with COVID-19. OBJECTIVE: To know whether there are any differences in nutritional therapy and prognosis of critically ill COVID-19 patients during the 4 waves.

**Methods:** Randomized retrospective study of critically ill COVID-19 patients admitted to our hospital during the 4 waves. Clinical, therapeutic and nutritional support variables were collected. The variables are expressed in% and median (IQR). IBM-SPSS26v.

**Results:** 80 patients (20 per wave) aged 63 (57-70) years, 68.8% men, BMI 29.7 kg / m<sup>2</sup> (26.6-32.4), caloric requirements 1711 kcal (1600-1914) and protein 89 g (83.2-99.5). There were no significant differences between waves in age, sex, admission PAFI, BMI, comorbidity, days to ICU admission, nutritional requirements, IMV days, ICU or hospital length of stay. The table shows the variables in which we found significant differences (p<0.05):

**Conclusion:** Baseline characteristics of COVID-19 patients in the ICU were similar during the 4 waves. There was a wider use of PN in the 1<sup>st</sup> wave compared to the subsequent ones, when patients received more EN. We should specially take care of patients with high flow nasal cannula as they may not achieve nutritional requirements.

#### References:

Thibault R, Seguin P, Tamion F, Pichard C, Singer P. Nutrition of the COVID-19 patient in the intensive care unit (ICU): a practical guidance. Crit Care. 2020 Jul 19;24(1):447.

**Disclosure of Interest:** None declared.

## LB-048

## THE EFFECT OF NUTRITIONAL SUPPORT ON THE TREATMENT PROCESS OF ADULT PATIENTS IN THE INTENSIVE CARE UNIT

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**Rationale:** This study aims to use examine the effectiveness of nutritional support applied to patients with chronic diseases treated in intensive care for different reasons.

**Methods:** This retrospective and cross-sectional study was conducted with 155 patients treated in the intensive care unit of Biruni University Hospital (Istanbul/Turkey). From the hospital information management system and the archive files of the patients; anamnesis, disease history, biochemical parameters and nutritional support data were collected. "Pearson Chi-square" or "Fisher's Exact" for qualitative variables, and according to the suitability of the data for quantitative variables; "Independents-Sample T Test", "One-Way ANOVA", "Mann-Whitney U" or "Kruskal-Wallis H" tests were used. In addition, "Paired-Samples T Test", "Repeated Measures ANOVA", "Wilcoxon" or "Friedman" tests were used for biochemical parameters.

**Results:** Patients with a median age of 75 (IQR: 40-99) years and a hospital stay of 8 (IQR: 3-30) days; 49.7% are female. It was observed that 83.2% of the patients were given nutritional therapy and 38.8% of them were started on the first day. It was determined that the number of comorbidities made a significant difference on the time of initiation of nutritional therapy ( $p=0.003$ ) and the time of initiation of nutritional therapy on the duration of hospitalization ( $p<0.001$ ). Phosphorus and creatinine in patients receiving nutritional therapy; CRP, hematocrit and hemoglobin were found to be different according to the nutrition initiation time ( $p<0.05$ ). It was determined that the time of initiation of nutritional therapy made a significant difference on the length of stay ( $p<0.001$ ).

**Conclusion:** In conclusion, it has been revealed that the application of timely and adequate nutritional therapy supports survival, shortens the length of hospital stay and positively affects the prognosis of the disease.

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**Disclosure of Interest:** None declared.

## LB-049

## THE RELATIONSHIP OF VITAMIN C AND SURVIVAL IN COVID-19 PATIENTS TREATED IN INTENSIVE CARE UNIT

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**Rationale:** It is stated that the administration of high doses of intravenous (IV) vitamin C (VC), which has been the subject of discussion since the beginning of the COVID-19 pandemic, may be associated with the cytokine storm observed during infection and increasing in parallel with the severity of the disease, and immunosuppressive effects may be observed. In this study, it was aimed to examine the relationship between IV VC and survival in patients with COVID-19 infection hospitalized in the intensive care unit (ICU).

**Methods:** This retrospective and cross-sectional study was carried out using data from 130 patients (68 male) treated with the diagnosis of COVID-19 in the ICU of Biruni University Hospital (Istanbul). From management system and the archive files of the patients; anamnesis and disease history collected. According to the patient's prognosis, IV VC was administered as 2-12 g/day in the ICU and biochemical parameters data were evaluated.

**Results:** Intravenous VC treatment was given to 53 (32 men) of 130 COVID-19 patients with a median age of 73 (IQR: 26-96) years. Length of hospitalization was higher (12 days vs. 6 days,  $p<0.05$ ) in patients managed with VC than in those without. The administration of VC was associated with a

significant increase in C-reactive protein, hematocrit and hemoglobin levels were higher in patients under 65 years of age who were received IV VC treatment; in patients over 65 years of age, sodium was found to be higher than those who were not received ( $p<0.05$ ). 38 (68.4% men) of the patients who were given IV VC treatment and 46 (41.3% men) of those who were not given exitus. It was observed that the survival ratio of men given IV VC treatment was lower than that of women ( $p=0.034$ ).

**Conclusion:** This study showed that administrated VC did not improve the survival and length of hospitalization. More large-scale studies are required to further assess the role of VC in the treatment of COVID-19.

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**Disclosure of Interest:** None declared.

## LB-050

## RECOVERY PROGRAM FOR CRITICALLY ILL COVID-19 PATIENTS AFTER 6 WEEKS OF FOLLOW-UP FROM DISCHARGE

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**Rationale:** To assess the evolution of patients with severe pneumonia due to COVID19 who have required intensive care(ICU).

**Methods:** Prospective observational study.212 ICU patients were included from March 16-2020, to June 25-2021.Clinical evaluation(including nutritional, functional, strength, dependency and quality of life assessment) was carried out during hospitalization and by telephone 6 weeks after discharge. Age, sex, hospital stay, ICU stay, weight, height, weight loss, BMI, dietary intake estimation, Barthelscale, SARC-Ftest and the EQ-5D-5Lquestionnaire, nutritional treatment and therapeutic compliance were collected. The results are expressed as mean±SD and percentages(IBM-SPSS21.0).

**Results:** 212 patients aged 58.4±12.4 years were included, 63.7%male, weight at discharge 76.6±16.1kg, BMI 26.1 ± 7.4kg / m2. Total stay 55.1 ± 38.1 days, ICU stay 30.2±28.0 days and 61.9% needed intubation. Mean percentage of weight loss at hospital discharge was 12.2±7.3%, 9.3%had dysphagia and 74.7%had an oral nutritional supplement prescribed at discharge.

**Table 1**

	Discharge from ICU	6 weeks after hospital discharge
Weight (kg)*	76.6±16.1	79.3±15.2
BMI (kg/m2) *	26.9±5.3	28.2±4.7
SARC-F*	5.7±2.5	1.7±2.1
EQ-5D-5L (points)*	55.5±19.4	72.2±18.6
Barthel Scale*	72.7±22.2	87.5±18.7
Therapeutic compliance	84.5	51.5
Dietary Intake>75%*	47.5	87.1

**Conclusion:** Patients gained weight, improved intake, reduced the risk of sarcopenia, and perceived a significantly better quality of life after 6 weeks of hospital discharge. There was a good compliance with the specific nutritional therapy that can be important in the recovery of these patients.

**References:**

Thibault R, Seguin P, Tamion F, Pichard C, Singer P. Nutrition of the COVID-19 patient in the intensive care unit (ICU): a practical guidance. *Crit Care*. 2020 Jul 19;24(1):447.

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#### LB-051

##### NUTRITIONAL EVALUATION SCENERY ON COVID-19 ICU PATIENTS ON BRAZIL'S STATE OF PARAIBA

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**Rationale:** Most COVID-19 ICU patients have a higher risk of malnutrition and sarcopenia. Evaluation of strength and adequation of nutritional support are essential for these patients recovery.

**Methods:** For the data collection we used an online survey, with four identification questions, profession, age, years after graduation and if they are intensivists. And another four questions about the evaluation of the nutritional state of the Covid-19 ICU patients, asking how they evaluate the nutritional risk, the progression of nutritional therapy, the lean mass loss and the strength. Then the collected answers were tabulated and analyzed on Microsoft Excel.

**Results:** 88 professionals answered the questionnaire, 61 of them are medical doctors, 24 nutritionists and 3 nurses. The age ranged from 26 to 62, with the mean of 38,7. 15 of the physicians were intensivists. The mean years after graduation were 12,3, ranging from zero to 43. In the second group of questions we have many different answers, in the first 43 (48%) evaluate the nutritional risk, only three citing valid methods, 43 (48%) evaluate the progression of nutritional therapy, only two with concordant answers, 31 (35%) evaluate the lean mass loss, with five concordant answers, and 26 (29%) evaluate the strength on the ICU discharge, four of these with concordant answers.

**Conclusion:** We can see that the nutritional therapy on COVID-19 patients on ICU are poorly evaluated, less than half of the professionals that answered the questionnaire evaluate the nutritional risk with even less professionals evaluating the lean mass loss. Even nutritional therapy support being an essential part of the treatment.

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Thibault, R., Seguin, P., Tamion, F. *et al.* Nutrition of the COVID-19 patient in the intensive care unit (ICU): a practical guidance. *Crit Care* **24**, 447 (2020). <https://doi.org/10.1186/s13054-020-03159-z>

**Disclosure of Interest:** None declared.

## Liver and gastrointestinal tract

#### LB-052

##### NUTRITIONAL ASSESSMENT IN PATIENTS WITH PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS TYPE 3

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**Rationale:** Progressive familial intrahepatic cholestasis (PFIC) is a group of genetic diseases affecting the hepatocellular transport and bile formation. In PFIC3 there is a defect in the *ABC4* gene, which leads to impaired biliary phospholipid secretion, damaged hepatocytes and bile ducts, and heterogeneous clinical presentation. Growth impairment is often described in children with cholestatic liver diseases. The aim of our study was to assess the nutritional status in patients with PFIC3.

**Methods:** We present a single-centre retrospective study of patients with genetically confirmed PFIC3. Nutritional assessment at the time of diagnosis included anthropometry, biochemical and clinical methods. Age and gender-specific growth charts for height, weight and Body Mass Index (BMI) were used.

**Results:** Ten patients (6 boys and 4 girls) with PFIC3 diagnosed at the age between 1 and 17 years were included. The age of initial presentation was between 5 months and 14 years, all patients had hepatosplenomegaly, the majority (6/10) had pruritus. On follow-up, two children are stable with good liver function, five children have progressive liver disease, and three children are successfully transplanted. The anthropometric parameters at the time of diagnosis showed that three patients were below the 5<sup>th</sup> centile for height-for-age and two patients were below the 5<sup>th</sup> centile for weight-for-age. Two patients from all 8 aged >2 years at diagnosis showed underweight with BMI less than the 5<sup>th</sup> centile for age. The levels of vitamins and microelements were not assessed in all patients. However, moderate fat-soluble vitamin deficiencies and anaemia were detected in some patients.

**Conclusion:** Children with PFIC often present with nutritional deficiencies and growth impairment. More parameters have to be evaluated in patients with PFIC3 to better understand pathogenesis of growth failure in this disease. Nutritional assessment and support are essential to improve patient survival and quality of life.

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**Disclosure of Interest:** None declared.

## Nutrition and chronic disease

#### LB-053

##### ASSOCIATION BETWEEN SERUM TRIMETHYLAMINE N-OXIDE, CHOLINE AND BETAINE WITH HYPERTENSION: A CROSS-SECTIONAL STUDY

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**Rationale:** The role of trimethylamine N-oxide (TMAO), a gut bacteria metabolite of choline in hypertension remains unclear, and evidence is scarce. We aimed to investigate the association between serum TMAO, choline and betaine with hypertension among middle-aged and older adults in China.

**Methods:** This cross-sectional study included 2,737 participants, aged 40-75 years, from the Guangzhou Nutrition and Health Study, between 2008 and 2010. Hypertension status was ascertained according to self-reported medications, systolic blood pressure (SBP)  $\geq$  140 mmHg or diastolic blood pressure (DBP)  $\geq$  90 mmHg. Serum TMAO, choline and betaine were determined by HPLC-MS/MS. Logistic regressions and multiple linear regressions were used to estimate the association between serum TMAO, choline, betaine with odds of hypertension and blood pressure (BP) levels.

**Results:** The medians (IQRs) of serum TMAO, choline and betaine level were 1.57 (0.89-2.94)  $\mu$ mol/L, 18.79 (13.74-24.99)  $\mu$ mol/L, 51.59 (41.94-62.52)  $\mu$ mol/L, respectively. The multivariable adjusted ORs (95%CI) of hypertension were 0.73 (95%CI: 0.58-0.92; *P*-trend=0.014) for serum TMAO and 0.68 (95%CI: 0.54-0.87; *P*-trend=0.001) for serum betaine, compared the highest quartile with the lowest. However, no significant association between serum choline and hypertension was found in the final model. Multiple linear regression found that both serum TMAO and serum betaine were inversely associated with SBP and DBP levels (all *P* < 0.05).

**Conclusion:** Our finding suggested that serum TMAO and serum betaine were inversely associated with odds of hypertension and BP levels among middle-aged and older adults in China.

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#### LB-054

##### IRON ADEQUACY AND ANEMIA ASSESSMENT IN PATIENTS HOSPITALIZED WITH A DIAGNOSIS OF CHRONIC KIDNEY DISEASE

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**Rationale:** Anemia is often seen when renal function decreases, as the nutritional adequacy of iron is very important and contributing factor to aid in the treatment of anemia in this population. The main objective was to evaluate the iron adequacy of patients hospitalized with a diagnosis of chronic kidney disease in a public hospital.

**Methods:** Cross-sectional study with secondary data from adults and elderly hospitalized with a diagnosis of chronic kidney disease, from February 2017 to November 2019, including patients of both genders, aged 20 years or over. The variables of interest were: age, sex, weight, height, body mass index (BMI), hemoglobin (g/dl) and percentage of iron adequacy. The minimum percentage of 80% was considered adequate. To assess the nutritional profile of adults, the BMI classifications were considered. For data analysis, descriptive statistics was performed, using the chi-square test for independent samples to verify whether there is an association between inadequacy of dietary iron and the presence of anemia. The comparison of the mean, between genders, was made using the Student t-test, with a significance level of  $p < 0.05$ .

**Results:** Among 112 patients selected for the final sample, 52.7% ( $n=59$ ) were male. Of the 112 patients, 52% ( $n=58$ ) were eutrophic, 30.5% ( $n=34$ ) were overweight and 17.5% ( $n=20$ ) were underweight. Regarding the adequacy of iron, it was observed that 32% was inadequate, presence of anemia was observed in 24% of the patients. There was a difference between the groups, female and male, for age, BMI, and hemoglobin ( $p < 0.001$ ), it was found that there is an association between dietary inadequacy of iron and the presence of anemia in hospitalized patients diagnosed with chronic kidney disease ( $\chi^2(2) = 65.188$ ,  $p < 0.001$ ).

**Conclusion:** It is concluded that 32% of the patients had dietary iron inadequacy, 24% had anemia and the prevalence of nutritional status was eutrophic, representing 52%. There is an association between dietary iron inadequacy and the presence of anemia in hospitalized patients with chronic kidney disease.

##### References:

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**Disclosure of Interest:** None declared.

#### LB-055

##### ALTERED LIVER ENZYMES AND INFLAMMATION IN PATIENTS WITHOUT DIAGNOSIS OF HEPATOPATHIES

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**Rationale:** Changes in liver enzymes may be associated with the inflammatory process, regardless of having liver disease. The main objective of this study was to verify the relationship between liver enzyme changes and inflammation in adult and elderly hospitalized

**Methods:** Cross-sectional study with inpatients. The variables of interest are sex, age, clinical diagnosis, body mass index (BMI), C-reactive protein (CRP), alanine aminotransferase (ALT) aspartate aminotransferase (AST). ALT levels were considered up to 31 U/L for females and up to 41 U/L for males, and for AST: up to 32 U/L for females and up to 38 U/L for males. To

observe association between changes in liver enzymes and inflammation, the chi-square test was performed, with a significance level of  $p < 0.05$ .

**Results:** 125 patients were analyzed, 56.8% ( $n=71$ ) female. 57.80% showed normal weight, while 29.10% were overweight and 13.10% underweight. 76.50% of patients had high CRP, 31% high ALT and 23% high AST. There is association between changes in liver enzymes and inflammation:  $\chi^2(2) = 35.46$ ,  $p < 0.001$ .

**Table 1**

Descriptive analysis of variables.

Parameters	MaleMean	FemaleMean	p-value
Age (years)	65,4 ± 17,2	63,5 ± 15,6	P<0,001*
BMI (kg/m <sup>2</sup> )	26,7 ± 5,4	24,9 ± 7,8	P<0,001*
AST U/L	24 ± 19,7	27 ± 15,2	P<0,001*
ALT U/L	20 ± 17,4	21 ± 18,1	P<0,001*
CRP mg/dL	6,82 ± 6,7	7,1 ± 6,2	P<0,005*

\* Mann Whitney test

**Conclusion:** It is concluded that there is an association of changes in liver enzymes associated with inflammation, regardless of the presence of liver disease, and that most of the sample had high CRP (76.50%).

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**Disclosure of Interest:** None declared.

#### LB-056

##### DIFFERENCES IN THE EXTRACELLULAR BODY WATER/TOTAL BODY WATER (EBW/TBW) IN HEMODIALYSIS AND CHRONIC KIDNEY DISEASE PATIENTS. RELATIONSHIP WITH NUTRITIONAL PARAMETERS

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**Rationale:** Knowing the hydration status of CKD patients is one of the basic objectives in CKD patients considering the Ratio of EBW(TBW) as indicator of them. **Aim.** Determine the cut-off point of the EBW/TBW ratio using Bioimpedance in patients with global CKD and divided into advanced CKD and hemodialysis (HD) as a hydration marker in relation to MIS scale (malnutrition inflammation score), cut-off point 5.

**Methods:** We value 199 CKD patients by setting the EBW/TBW cut-off points using Inbody S10 multifrequency bioimpedance with global ROC curve and for advanced CKD (ACKD) and HD analyzing differences according to age ranges and differences in nutritional parameters.

**Results:** We have evaluated 199 patients with ACKD, 143 male and 56 female, 74 in CKD xage  $72.27 \pm 11.98$  years and 125 in HD, xage  $70.76 \pm 12.73$  years. Overall EBW / TBW ratio: AUC 0.657,  $p0.006$ , cut-off point 0.3965 60% sensitivity, 64% specificity. Advanced CKD: AUC 0.648,  $p0.071$ , cutoff point 0.397, 64% sensitivity, 61% specificity. HD: AUC 0.706,  $p0.012$ , cutoff point 0.391, 71% sensitivity, 63% specificity. The results in relation to age strata and MIS with 5 as the cut-off point in the table. No greater hydration in men than in women overall. The nutrition-inflammation parameters according to the cut-off point are different: **Advanced CKD:** age 0.001, albumin 0.024, prealbumin 0.013, transferrin 0.078, CRP 0.432. HD: albumin 0.014, prealbumin 0.001, transferrin 0.939, lymphocytes 0.030, CRP 0.342, age 0.000.

**Conclusion:** 1. We have found slightly higher cut-off points between ACKD and hemodialysis in the assessed sample. 2. The EBW / TBW ratio appears higher in patients > 65 years in both ACKD and HD, in contrast to what is observed in the healthy population. 3. A greater malnutrition appears in a greater hyperhydration in HD and ACKD.

##### References:

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**Disclosure of Interest:** G. Barril Speaker Bureau for: ABBOTT, NUTRICIA, RUBIO, CANTABRIA LABS, Other: NESTLE, G. Alvarez : None declared, M. Giorgi: None declared, A. Nuñez: None declared, Á. Nogueira Pérez: None declared.

#### LB-057

### ASSOCIATION BETWEEN FOOD INTAKE AND ORAL NUTRITION SUPPLEMENTATION UTILIZATION AMONG PATIENTS AT MALNUTRITION RISK IN LATIN AMERICA: RESULTS FROM NUTRITIONDAY

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**Rationale:** Malnutrition leads to adverse patient outcomes and high financial burden. Latin American data on hospital malnutrition, food intake and oral nutrition supplement (ONS) utilization are limited. We assessed in-hospital food intake and ONS use among hospitalized patients at risk of malnutrition at nutritionDay (nDay), a specific day every year during which hospital wards worldwide can participate in a one-day, cross-sectional audit.

**Methods:** We analyzed nDay data collected in ten Latin American countries from 2009 to 2015, including nutrition-related findings for 15,055 adult patients ( $\geq 18$  years) from 582 units. Prevalence of malnutrition risk was determined by mapping patient-reported responses to the Malnutrition Screening Tool (MST). We determined the association between food intake and ONS utilization and compared the proportion of patients with or without malnutrition risk receiving ONS (using STATA 15.1).

**Results:** Of the 39.6% (5,749/14,515) patients identified at malnutrition risk, 11.8% (n=681) of them ate nothing and 61.1% (n=3,510) ate half or less of their hospital meal. Overall, only 14.7% (n=843) of the patients at risk for malnutrition received ONS. Comparable results regarding food intake and ONS utilization were observed in patients not at risk of malnutrition; 7.3% (n=639/8,766) ate nothing, 47.8% (n=4,192) ate half or less of their hospital meal, while 7.2% (n=635) received ONS. An odds ratio of 2.2 (95% CI: 1.97–2.46;  $p < 0.0001$ ) was calculated for ONS use in patients with malnutrition risk compared to well-nourished patients.

**Conclusion:** Despite slightly higher ONS use in patients at risk of malnutrition, a large number of hospitalized patients not eating the food they are served at nDay are also not receiving ONS according to their low food intake. Increasing attention towards the monitoring of food intake and ONS utilization among hospitalized patients in Latin America, especially those with malnutrition risk is of utmost importance. Future policies and programs should look at effective ways to optimize patient's health outcomes and reduce healthcare costs through appropriate nutrition interventions across Latin American hospitals.

#### References:

n/a

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#### LB-058

### EFFECT OF A DIET BASED ON THE MEDITERRANEAN PATTERN IN COMBINATION WITH AN ISOCINETIC EXERCISE THERAPY ON BODY COMPOSITION AND CYTOKINE PROFILE IN PATIENTS WITH METABOLIC SYNDROME

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**Rationale:** Metabolic syndrome (MS) is a combination of comorbidities, which increase proinflammatory cytokines (PIC) production, with subsequent body composition (BC) alterations and high cardiovascular risk. Treatment with diet and exercise has been suggested as possible non-pharmacological adjuvant treatment.

**Methods: MATERIAL AND METHODS:** A controlled randomized clinical trial was conducted at Centro Médico Nacional 20 de Noviembre, México City, Mexico. Forty two patients with MS aged 18–65 years old were included and divided into 4 groups: G1 MedDiet + IE; G2 IE; G3, MedDiet; G4, control. Data for 24-hour recall related to MedDiet, anthropometry, BC and PIC were collected from baseline and at 12 weeks.

**Results: RESULTS:** A trend increase in waist circumference was observed in G1 (0.9% of change, 117.9 vs 119,  $p=0.02$ ). In general, saturated fatty acids tended to reduce, except for G3 (37.2%, 15.9 vs 37.1,  $p=0.001$ ), which was accompanied by reduction of resistin (-24.7%, 1020.8 vs 768  $p=0.043$ ). Intergroup differences characterized by a difference in percentage change in hip circumference between G1 vs G3 ( $p = 0.0009$ , PC 0.9% vs 0.28), a trend is observed between G1 vs G4 for waist circumference ( $p = 0.186$ , PC 0.9% vs -0.5%); Difference of G1 vs G2 is observed in percentage of change for adiponectin ( $p = 0.121$ , 42.3% vs 38.1%).

**Conclusion:** The results suggest that the combination of MedDiet and IE induces changes in BC, while MedDiet have selective impact on pro-inflammatory mediators.

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**Disclosure of Interest:** None declared.

#### LB-060

### ADVANCED NUTRITIONAL ASSESSMENT IN PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS

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**Rationale:** Malnutrition (MN) is a prognostic factor in Amyotrophic Lateral Sclerosis (ALS) and it might influence on disease progression. The objective was to study the MN prevalence, body composition, sarcopenia and physical performance (PP).

**Methods:** A prospective observational study was performed on 27 patients with ALS. Malnutrition diagnosis was assessed according to GLIM criteria, sarcopenia risk using SARC-F and PP with SPPB. Body composition by means of BIVA (Bioimpedance Vectorial Analysis) and anthropometric measurements. PCR was used as an inflammatory marker. Statistical analysis was carried out by SPSS v.s. 15.0. Statistical significance  $p < 0.05$ .

**Results:** Prevalence of malnutrition, sarcopenia risk and frailty prevalence was 44, 67 and 81% respectively. Disease evolution was  $37 \pm 30$  months (mean  $\pm$  SD), which was negatively correlated with BMI ( $p=0.004$ ) and calf circumference ( $p=0.05$ ). The BIVA showed a phase angle of  $4.4 \pm 0.95^\circ$ . This value correlates positively to muscle upper arm circumference ( $p=0.016$ ) and bioactive cell mass ( $p=0.000$ ). Patients with PCR  $< 5$  mg/dL had significant higher PA values ( $4.78 \pm 0.8^\circ$ ) compared to patients with PCR  $> 5$  mg/dL ( $3.96 \pm 0.9^\circ$ ,  $p=0.043$ ).

**Conclusion:** MN and muscle deterioration is highly prevalent in ALS patients. The relationship between PA and inflammatory marker may

contribute to decline nutritional status. Further studies are needed to confirm these preliminary results.

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**Disclosure of Interest:** None declared.

#### LB-061

### A NEW POWDERED, HIGH ENERGY, HIGH PROTEIN, LOW VOLUME ORAL NUTRITIONAL SUPPLEMENT DEMONSTRATES EXCELLENT COMPLIANCE, IS HIGHLY PALATABLE AND EASY TO USE IN COMMUNITY DWELLING OLDER ADULTS

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**Rationale:** Alongside dietetic input, high protein oral nutritional supplement (ONS) use demonstrates nutritional, clinical and functional benefits<sup>1</sup>. The purpose of this study was to investigate the acceptability and tolerance of a new high energy, high protein, low volume powdered ONS in community dwelling older adults.

**Methods:** A prospective observational study of 17 community dwelling adults who had or were at risk of disease-related malnutrition (DRM) and commenced on a new powdered ONS (AYMES ActaSolve Protein Compact, 20g protein, 312–315kcal/130ml) for 30 days. Tolerance was assessed daily for the first 7 days by evaluating GI symptoms. Compliance was recorded for 30 days and measured by comparing ONS volume consumed against dietitian prescribed volume. Palatability was measured by a 5-point hedonic scale questionnaire (day 33).

**Results:** 17 subjects were recruited (59% female, age 60–101y, BMI 14.5–25kg/m<sup>2</sup>). 82.4% of study participants were already established on a different ONS prior to starting the study. No GI symptoms were reported in 64.5% (n=11) of subjects, demonstrating GI tolerance of the new ONS. Of 6 subjects (35.3%) who did report symptoms, 5 (29%) had the same or similar symptoms at baseline, however total number of GI symptom episodes reduced and were not reported to be related to the new ONS. Mean compliance was excellent at 91% (65–100%) compared to baseline ONS compliance of 81% (31–100%) suggesting improved compliance with the new ONS. 71.4% of subjects preferred the study ONS to their existing ONS. Palatability was rated at 100% as overall acceptable. Carers/nurses (n=12) rated the preparation instructions as ‘easy’ or ‘very easy’ to follow.

**Conclusion:** Short-term compliance to a powdered high energy, high protein, low volume ONS is excellent and comparable to published ONS compliance data<sup>2</sup>. The new ONS is also easy to use, prepare, is convenient and highly palatable for the intended user. The new ONS is a clinically valuable option for the nutritional management of patients with or at risk of DRM.

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#### LB-062

### BRIDGING THE LANGUAGE BARRIER IN NUTRITION EDUCATION USING DIGITAL SOLUTION DURING COVID-19 PANDEMIC: A PILOT SURVEY

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**Rationale:** Coronavirus Disease 2019 (COVID-19) has affected a total of 62,053 people in Singapore since the beginning of the outbreak up until June 2021<sup>1</sup>. The vast majority were non-English speaking migrants living in overcrowded dormitories, making up of 87.9% of the total COVID-19 cases<sup>1</sup>. With limited resources and access to interpreter services, dietitians were challenged to maintain clear communication whilst providing timely nutrition therapy as an integral part of their chronic disease management. The purpose of this study was to determine the effectiveness of the use of translated nutrition education videos to cope with the large influx of non-English speakers in the healthcare setting during the pandemic.

**Methods:** A pilot retrospective survey was administered to healthcare professionals who were directly involved in disseminating the translated nutrition education videos to affected patients. The survey included four questions relating to efficacy, accessibility, cost and time-saved as perceived by healthcare workers.

**Results:** A total of 20 healthcare professionals responded to the survey. Among them, 14 were nurses, four were dietitians and two were interpreters. The result of the survey reveals that 95% of the respondents deemed that the videos were effective nutrition education tools for non-English speaking patients. Most of them (85%) felt that the videos were easily accessible using mobile devices and did not encounter any network connectivity issues. Compared with conventional one-to-one nutrition counselling, 90% of them finds that the videos were more cost-saving and 95% of them believes that it saved more time for healthcare workers.

**Conclusion:** The use of nutrition education videos as a means to reach out to more non-English speaking patients during the pandemic was perceived to be effective, low-cost and time-saving for patients and the healthcare system. Digital solutions not only benefit within the current crisis but it has also shined a light on the increasing importance of digital transformation in healthcare beyond the COVID-19 pandemic.

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1. Ministry of Health Singapore. (2021, June 1). *COVID-19 Interactive Situation Report*. Retrieved from <https://www.moh.gov.sg/covid-19/situation-report>.

**Disclosure of Interest:** None declared.

#### LB-063

### NUTRITIONAL STATUS CHANGE AND ITS IMPACT ON QUALITY OF LIFE AND FUNCTIONALITY IN MALNOURISHED DIABETIC PATIENTS TAKING A HIGH CALORIE, HIGH PROTEIN TUBE FEEDING WITH SLOW RELEASE CARBOHYDRATES AND MONOUNSATURATED FATTY ACIDS AS A SOLE SOURCE OF NUTRITION

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**Rationale:** To evaluate the effect of nutritional change in malnourished patients with diabetes taking a high calorie, high protein tube feeding diabetes-specific formula used in standard of care practice after 12 weeks on quality of life and functionality.

**Methods:** This was a prospective, observational study, conducted at hospital care setting in Spain, enrolling malnourished patients with diabetes

for 12 weeks, who had been prescribed Glucerna® 1.5 RTH by their health care professional per standard of care as a sole source of nutrition.

**Results:** Forty-nine patients from 8 sites were enrolled, and 73.5% of them completed the study. Mean age was  $75.3 \pm 12.0$  years and 67.3% were male ( $n=33$ ). According to MUST score, 69.4% ( $n=25$ ) of the patients at week 12 were at low risk of malnutrition and 8.3% ( $n=3$ ) were at moderate risk vs. baseline. At week 12, 72.2% (26/36) of the patients were well-nourished per SGA ( $p<0.0001$ ). About metabolic glycaemic control the mean HbA1c was 6.79% at baseline and 6.51% at week 12 ( $p=0.2702$ ). Regarding quality of life and functionality, the mean total score for Barthel Index of Activities of Daily Living tends to significantly improve from 8.8 at baseline to 9.6 at week 12 ( $n=29$ ,  $p=0.0512$ ); and the mean EQ-5D-5L Health State Score significantly improved at week 12 ( $p=0.0002$ ). No adverse events related to the study product were reported.

**Conclusion:** Malnourished diabetic patients, treated with Glucerna® 1.5 RTH as a sole source of nutrition, improved their nutritional parameters, quality of life and functionality, with no safety concerns.

#### References:

1- Park SW, Goodpaster BH, Lee JS, Kuller LH, Boudreau R, de Rekeneire N, Harris TB, Kritchevsky S, Tylavsky FA, Nevitt M, Cho YW, Newman AB; Health, Aging, and Body Composition Study. Excessive loss of skeletal muscle mass in older adults with type 2 diabetes. *Diabetes Care*. 2009;32(11):1993-7. 2- Sinclair AJ, Abdelhafiz AH, Rodríguez-Mañas L. Frailty and sarcopenia - newly emerging and high impact complications of diabetes. *J Diabetes Complications*. 2017;31(9):1465-1473.

**Disclosure of Interest:** G. Guzmán Other: German Guzman is employee of Abbott Nutrition, D. de Luis Román Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, L. Visiedo Rodas Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, L. Rey Fernández Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, L. Mola Reyes Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, J. López Medina Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, C. Gómez Candela Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, E. Martí Bonmatí Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, S. Baos Fernández de Sevilla Grant / Research Support from: Sergio Baos is ex-employee of Abbott Nutrition, Á. Martín Palmero Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition.

#### LB-064

### THE INFLUENCE OF NUTRITIONAL SUPPORT ON THE ANTHROPOMETRIC INDICATORS OF CHILDREN WITH CEREBRAL PALSY

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**Rationale:** Children with cerebral palsy (CP) need nutritional support (NS) because of the high prevalence of nutritional disorders. The aim of the study was to evaluate the effectiveness of NS with hypercaloric (1.5 kcal/ml) polymer formula with fibers in addition to standard dietary counseling in children with CP.

**Methods:** The study included 15 children with CP aged 4–10 years, with the level of motor disorders GMFCS III-IV, whose z-score weight/age was lower than -1.5. All patients received a hypercaloric (1.5 kcal/ml) polymer formula with fibers in a volume of 200 ml per day for 3 months. The patients underwent three-time anthropometry (at the time of inclusion, after 6 weeks and after 12 weeks) with the measurement of body weight (BW), height (H), body mass index (BMI), shoulder circumference (SC) and shoulder muscles (SMC), the triceps skinfold thickness (TST) and subscapular skinfold thickness (SST).

**Results:** Over 12 weeks of monitoring the average BW gain was 1.15 kg [0.55-1.65 kg], H gain was 2.5 cm [1.25-3 cm], and BMI - 0.2 kg/cm<sup>2</sup> [-0.2-0.4 kg/cm<sup>2</sup>]. There was a statistically significant increase in BW ( $p<0.001$ ) and H ( $p=0.001$ ) of patients after 12 weeks. BW gain was achieved in 14/15 patients (93%). An increase in H was observed in 12/15 patients (80%). There were changes in the z-score of BW ( $p=0.03$ ). During 12 weeks of monitoring, there were increases of SC ( $p=0.001$ ), SMC ( $p=0.01$ ), and TST ( $p=0.032$ ). The cumulative analysis of these indicators showed an increase more in musculoskeletal mass, not fat mass.

**Conclusion:** Despite the stagnation of anthropometric indicators, the appointment of NS had a positive effect on the indicators of H and BW, z-score of BW. Analysis of anthropometric indicators dynamics revealed that the period of prescribing nutritional support for children with CP should be more than 12 weeks, since it will be ineffective in the case of a shorter period

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**Disclosure of Interest:** None declared.

#### LB-065

### NUTRITIONAL AUTONOMY IN SHORT BOWEL SYNDROME AND INTESTINAL FISTULAS

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**Rationale:** Short bowel syndrome (SBS) and entero-cutaneous/atmospheric fistulas are the commonest causes of Type 3 intestinal failure (IF). The aim of the study was to evaluate the likelihood of achieving nutritional autonomy in a large home parenteral nutrition (HPN) cohort from a national reference centre.

**Methods:** Clinical records of adult HPN-dependent patients from 2001 to 2018 were reviewed. Data were collected on clinical characteristics, gastrointestinal (GI) anatomy and details of any surgery.

**Results:** 458 cases (176 with intestinal fistula, 282 with SBS) were included, with a median HPN-dependency of 2.6 years (IQR 1.2–4.9). 193/458 (42.1%) patients underwent surgery, including fistula repair ( $n=70$ ) and restoration of GI continuity ( $n=123$ ), gaining an additional 60cm (IQR 0cm – 140cm) small intestinal length (SIL), with 143 patients changing their digestive circuit from end-ostomy to small bowel in continuity with colon. 167/458(36.5%) of the entire cohort achieved nutritional autonomy, with a probability of 13.5% at 1 year, 26.3% at 2 years and 39.5% at 5 years; notably, adjusting for death as a competing factor using the Aalen-Johansen estimator reduced the probabilities to 13.3% at 1 year, 24.2% at 2 years and 34.0% at 5 years. More patients undergoing surgery achieved autonomy (72.8% vs. 7.8%,  $p<0.001$ ). SIL and colon in continuity were the most important predictors for achieving autonomy in the entire cohort. 290/458 (63.3%) patients had been predicted to achieve autonomy based on their final GI anatomy (115cm SIL for Group 1, 60cm for Group 2 and 35cm Group 3 SBS-IF (1)) but only 159/290 (54.8%) of these did so; those unable to achieve autonomy were older (median age 59.0 vs. 49.0,  $p<0.001$ ) and had a higher Charlson Comorbidity Index (median score 3 vs. 1,  $p<0.001$ ).

**Conclusion:** Reconstructive intestinal surgery significantly facilitates HPN weaning in patients with severe IF. While, final bowel anatomy is the most important predictor for achieving nutritional autonomy, this may be less likely in older people with greater co-morbidity. Of note, death as a competing factor impacts on the estimation of nutritional autonomy and we would recommend obtaining probabilities using the Aalen-Johansen estimator.

#### References:

1. Pironi L et al. *Clinical Nutrition*. 2015;34(2):171-80.

**Disclosure of Interest:** None declared.

#### LB-066

### A PROSPECTIVE, OBSERVATIONAL STUDY, OF THE EFFECT ON WEIGHT, NUTRITIONAL STATUS AND GLYCEMIC CONTROL OF A HIGH CALORIE, HIGH PROTEIN TUBE FEEDING WITH SLOW RELEASE CARBOHYDRATES AND MONOUNSATURATED FATTY ACIDS, IN A MALNOURISHED POPULATION WITH DIABETES

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**Rationale:** To evaluate the effect of a high calorie, high protein tube feeding diabetes-specific formula used in standard of care practice after 12 weeks on weight, nutritional status and glycemic control in diabetic malnourished patients.

**Methods:** This was a prospective, observational study, conducted at hospital care setting in Spain, enrolling malnourished patients with diabetes for 12 weeks, who received Glucerna® 1.5 RTH per standard of care as a sole source of nutrition.

**Results:** 49 patients from 8 sites were enrolled, and 73.5% of them completed the study. Mean age was 75.3 ± 12.0 years and 67.3% were male. The mean weight was 63.58 kg at baseline and at week 12 was 67.43 kg (p=0.0003). At week 12, 93.1% of the patients increased or maintained their baseline weight (p=0.0003). According to MUST score, 69.4% of patients at week 12 were at low risk of malnutrition and 8.3% were at moderate risk. Per SGA 72.2% of the patients were well-nourished vs. 12.2% at baseline (p<0.0001). Regarding glycemic control, mean glucose were at baseline 153.0 mg/dL vs. 117.7 mg/dL at week 12 (p=0.0018). Mean HbA1c was 6.79% vs. 6.51% at week 12 (p=0.2702). Total cholesterol changed from 136.3 mg/dL at baseline to 156.5 mg/dL at week 12 (p=0.0081), and HDL-c changed from 34.7 mg/dL to 41.5 mg/dL at week 12 (p=0.0154). No adverse events related to the study product were reported.

**Conclusion:** Malnourished diabetic patients, supplemented with tube feeding Glucerna® 1.5 RTH as a sole source of nutrition, improved body weight, nutritional parameters, glycemic control and lipid profile.

#### References:

1- Park SW, Goodpaster BH, Lee JS, Kuller LH, Boudreau R, de Rekeneire N, Harris TB, Kritchevsky S, Tyllavsky FA, Nevitt M, Cho YW, Newman AB; Health, Aging, and Body Composition Study. Excessive loss of skeletal muscle mass in older adults with type 2 diabetes. *Diabetes Care*. 2009;32(11):1993-7. 2- Sinclair AJ, Abdelhafiz AH, Rodríguez-Mañás L. Frailty and sarcopenia - newly emerging and high impact complications of diabetes. *J Diabetes Complications*. 2017;31(9):1465-1473.

**Disclosure of Interest:** M. Camprubí Robles Grant / Research Support from: Maria Camprubí is employee of Abbott Nutrition, D. de Luis Román Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, L. Visiedo Rodas Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, L. Rey Fernández Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, L. Mola Reyes Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, J. A. López Medina Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, C. Gómez Candela Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, E. Martí Bonmatí Grant / Research Support from: The author has received speaker's fees and worked on research projects from Abbott Nutrition, S. Baos Fernández de Sevilla

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#### LB-067

### THE IMPACT OF NUTRITIONAL SUPPLEMENTATION ON MORTALITY AND BODY COMPOSITION OF ELDERLY PATIENTS ON HEMODIAFILTRATION

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**Rationale:** Malnutrition is highly prevalent among patients on dialysis, particularly in the elderly. Oral nutritional supplementation is important to treat and prevent negative outcomes. The aim of this study was to evaluate the impact of nutritional supplementation on the nutritional profile and on the mortality rate of elderly individuals undergoing hemodiafiltration (HDF).

**Methods:** We included consecutive patients aged at least 65 years old, who have been on HDF. Multifrequency electrical bioimpedance was used to assess body composition. All assessments were compared at baseline and after 6 months of follow-up. The prescription of the nutritional supplement was done according to established protocol.

**Results:** We included 132 patients. Patients receiving nutritional supplementation (64.4%) were older than those without supplementation (35.6%). Skeletal mass had a direct impact of supplementation (p=0.039), which interfered with the stabilization behavior in the supplemented group (from 17.4±5.4 kg to 17.2±4.8 kg) and mild reduction in the group without supplementation (from 19.8±5.7 kg to 18.6±6.6 kg). A total of 20 deaths were observed, 7 (14.9%) and 13 (15.3%) patients in the non-supplemented and supplemented group, respectively, which was not different. Non-survivors were older, with a higher concentration of C-reactive protein and lower lean body mass. COX survival analysis showed that skeletal muscle mass (Relative risk 0.90, 95% confidence interval 0.82-0.99, p=0.030) and age (Relative risk 1.07, 95% confidence interval 1.01-1.14, p=0.046) were independent risk factors for mortality.

**Conclusion:** Nutritional supplementation in elderly patients on dialysis could stabilize the loss of skeletal muscle mass, an independent risk factor for mortality. In addition, patients receiving nutritional supplementation had a similar mortality rate to those without supplementation, despite an older age.

#### References:

Piccoli GB et al. *J Clin Med*. 2018;7(10):331.

**Disclosure of Interest:** None declared.

#### LB-068

### TRANSITIONING PATIENTS WITH INTESTINAL FAILURE AND INTESTINAL INSUFFICIENCY FROM PEDIATRIC TO ADULT CARE. EXPERIENCE AT A SINGLE CENTER IN ARGENTINA

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**Rationale:** Intestinal failure is a rare disease that affect adults and children. The transition from pediatric to adult care is the topic we focused our work.

**Methods:** Patients who had transition to our unit from 2009 to 2021 were selected retrospectively. Information was retrieved from the medical history and the data obtained was analyzed.

**Results:** 20 pts were transfer from the pediatric hospital to our unit. Ten females (50%), mean age of referral was 18 ± 2.9 and mean age at the end of follow up was 22.6 ± 4.9 Etiology was as follow: ShortBowel

Syndrome(SBS) 13pts (65 %) and Chornic Intestinal Pseudo-Obstriccion 7pts (35 %). At time of referral, 7 patients didn't require PN, 3 were on enteral nutrition. SBS was the etiology in all of these patients. To soften the transition, our first step is to arrange 2 consultations with the pediatric and the adult team; 1 at each center. As part of a global approach, pts are encouraged to remain in high school and if possible pursue a career after graduation. We stimulate pts to achieve self-connection to PN. Reproductive health advice and psychological support is offered. Currently 16 (80%) are still on follow up on our unit, 3 were derivate due to a tras-plantation center and 1 was lost in follow up. Nine pts remain on PN, 2 initiated teduglutide treatments and recover intestinal sufficiency. Mean time of follow up is 4.8 years. Mean time on PN was 20.5 ±4 years, mean volume is 2183 ml/d, mean calories are 1161 kcal/d. Five pts have managed to self-connect. All pts are schooled. One pt had a healthy baby during follow up.

**Conclusion:** 80% of referred pts remain on follow up. Only one patient was lost in follow up. Intestinal sufficiency was achieved in 45% of pts, all of them with SBS. Our comprehensive approach has not only managed pts on the medical aspects but also has encouraged pts to lead a normal and independent life.

**References:**

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**Disclosure of Interest:** None declared.

**LB-069**

**MALNUTRITION IN HOSPITALIZED PATIENTS WITH CHRONIC KIDNEY DISEASE: WHAT IS THE BEST ASSESSMENT METHOD?**

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**Rationale:** Chronic kidney disease is a complex disease, with a significant impact due to complications in hospitalizations and worse clinical outcomes. The main objective was to evaluate the prevalence of malnutrition in adults and elderly hospitalized with a chronic kidney disease diagnosis.

**Methods:** Cross-sectional study, with secondary data, of hospitalized adults and elderly, from February 2017 to November 2019, including patients of both genders, aged 20 years or over, diagnosed with chronic kidney disease. The variables of interest were: age, sex, weight, height, body mass index (BMI), calf circumference and arm circumference. To assess the nutritional profile of adults and the elderly, the BMI classifications were considered, according to the criteria proposed by the World Health Organization and by Lipschitz, to identify the nutritional status, and the measurement of the calf circumference (CC) and arm circumference (AC), according to the World Health Organization and Frisancho, to identify muscle mass depletion. For data analysis, descriptive statistics were performed. The comparison of the mean, between genders, was made using the Student t-test, with a significance level of  $p < 0.05$ .

**Results:** Among the data from 319 patients evaluated with chronic kidney disease, 56.8% (n=181) were male. Considering the classification by BMI, 19.5% (n=61) of the patients had malnutrition. Through the calf circumference, 35.9% (n=115) of the patients had muscle mass depletion and by measuring the arm circumference, 27.3%, there was depletion of muscle mass. The t-Student test showed that there is difference between sexes for BMI, CC, AC and age ( $p < 0.001$ ).

**Conclusion:** It is concluded that a higher percentage of patients with malnutrition was obtained by measuring the circumference of the calf, with 35.9%, compared to the other anthropometric measures evaluated, thus it is possible to observe the importance of assessing malnutrition by other methods and not just by BMI.

**References:**

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**Disclosure of Interest:** None declared.

**LB-070**

**ANALYSIS OF THE RELATIONSHIP BETWEEN ADDUCTOR POLLICIS MUSCLE THICKNESS AND MALNUTRITION IN HOSPITALIZED PATIENTS DIAGNOSED WITH CONGESTIVE HEART FAILURE**

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**Rationale:** Congestive Heart Failure (CHF) is a disease that causes insufficient blood pumping from the heart to the rest of the body, and can lead to malnutrition. The main objective was to verify the presence of malnutrition in hospitalized adult and elderly patients diagnosed with congestive heart failure (CHF), by APTM and BMI.

**Methods:** Cross-sectional study, carried out in a public hospital. The variables of interest were selected from the database from March 2017 to December 2019: sex, age, clinical diagnosis, weight, height, APTM, and body mass index (BMI). For the assessment of malnutrition in adults, the BMI criteria of the World Health Organization were considered, and for the elderly was performed by the Lipschitz BMI criteria. Low APMT (<12,8mm) For data analysis, descriptive statistics were performed. The comparison of the mean between the groups was made using Mann Whitney test. The Spearman correlation test was performed to verify the correlation between the APTM and BMI variables. The level of significance was equal to  $p < 0.05$ .

**Results:** Data from 106 hospitalized patients diagnosed with CHF were evaluated, 58.5% (n = 62) of whom were male. 28.8% of the patients presented malnutrition according to APTM, while 12.4% of the patients were malnourished according to BMI.

**Table 1 Characterization of the sample. Mean and standard deviation values of continuous variables.**

Parameters	Male	Female	p-value*
Age (Years)	75,27 ± 13,18	72,15 ± 11,35	$P < 0,001$
BMI (kg/m2)	22,98 ± 8,18	23,46 ± 9,30	$P < 0,001$
APTM (mm)	3,5 ± 3,8	3,2 ± 4,2	$P < 0,001$

\* Mann-whitney test for independent sample.

**Conclusion:** It is concluded that there is a strong and positive correlation between APTM and the BMI of the analyzed patients. 28.8% of the individuals assessed by APTM were malnourished, while 12.4% of the patients had malnutrition according to the BMI.

**References:**

Aguiar N, et al. Adductor Pollicis Muscle Tickness. A sensitive method in the detection of nutritional risk. *Nutr. clín. diet. hosp.* 2018; 38(4):183-188

**Disclosure of Interest:** None declared.

**Obesity and the metabolic syndrome**

**LB-071**

**DIETARY CARBOHYDRATES AND CHANGES IN INTERNAL BODY FAT IN ADULTS WITH OBESITY: A RANDOMIZED CONTROLLED TRIAL**

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**Rationale:** Obesity, particularly visceral adiposity, represents an increasing health challenge worldwide. There is a great need for effective approaches resulting in successful long-term weight loss, and diets differing in carbohydrate quality and quantity may differentially affect visceral fat mass in adults with obesity.

**Methods:** We designed a randomized clinical trial comparing the effect of carbohydrate quality and quantity, on changes in visceral adipose tissue

(VAT) measured by computed tomography imaging (1). 193 participants with obesity and/or visceral obesity were randomized to one of three study diets (all 2000–2500 kcal, 17 E% protein): 1) an "acellular" high-carbohydrate (45 E%) low-fat (38 E%) diet (comparator arm) with primarily refined (flour-based) carbohydrate sources, 2) a "cellular" diet high-carbohydrate (45 E%) low-fat (38 E%) diet based on minimally processed carbohydrate sources, and 3) a low-carbohydrate (8 E%) very-high-fat (75 E%) diet (LCHF). Results are from an intention-to-treat analysis using constrained linear mixed modeling.

**Results:** In total, 57 participants (acellular: 14; cellular: 22; LCHF: 21) completed 12 months follow-up. Reported carbohydrate intake was 43, 41 and 13 E% and reported fat intake was 37, 38 and 68 E% in the acellular, cellular and LCHF groups, respectively. We found no significant between-group differences in change scores for VAT from baseline to 12-months (cellular vs. acellular [95% CI]:  $-122 \text{ cm}^3$  [-757, 514]; LCHF vs. acellular [95% CI]:  $-317 \text{ cm}^3$  [-943, 309]). Within groups, VAT decreased significantly by  $-609 \text{ cm}^3$  [-1097, -121],  $-731 \text{ cm}^3$  [-1141, -320] and  $-926 \text{ cm}^3$  [-1321, -530] on the acellular, cellular and LCHF diets, respectively.

**Conclusion:** All three dietary concepts were successful in reducing visceral obesity; however, they did not differentially influence visceral fat mass.

#### References:

1. ClinicalTrials.gov Identifier: NCT03401970

**Disclosure of Interest:** None declared.

#### LB-072

##### TRANSGENIC UNACYLATED GHRELIN OVEREXPRESSION MODULATES ADIPOCYTE ACTIN CYTOSKELETON REMODELLING AND EXPANSION IN HIGH-FAT DIET INDUCED OBESITY IN MICE

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**Rationale:** Adipose tissue is key player in the development of obesity and obesity-related complications. Recent evidence shows that adipocyte size regulation through actin cytoskeleton remodeling is mechanistically interlinked with disrupted cell metabolism, including reduced mitochondrial function and insulin signaling. The unacylated form of the hormone ghrelin (UnAG) is a novel profound metabolic modulator, with whole-body and tissue-specific effects. In rodent models it improves obesity-induced skeletal muscle insulin resistance, however its impact on adipocyte expansion and metabolism is currently unknown.

**Methods:** We investigated the effect of cardiac transgenic UnAG overexpression (Tg; 30-fold increase in plasma UnAG) vs. wild type (Wt) on body weight gain, adipose tissue (epididymal pads) mass, adipocyte size (average area and frequency distribution) as well as factors that activate and regulate actin-mediated remodeling machinery (Arp2, Cofilin1, Profilin2, by western blot) in male 6 week-old mice fed with high-fat (HF; 60% fat) or control diet (Con) for 16 weeks (n=6/group).

**Results:** HF-induced body weight gain and adipose tissue mass were comparable between TgHF and WtHF, as was cumulative food intake (all p=NS). However, HF-induced increase in actin-mediated remodeling machinery markers was completely prevented (Cofilin1 and Profilin2) or markedly reduced (Arp-2; p<0.05) in Tg mice. In excellent agreement, TgHF had lower increase of adipocyte size (p<0.05), which was in fact comparable to WtC (p=NS).

**Conclusion:** While not affecting obesity-associated fat mass, in mouse adipose tissue UnAG overexpression importantly prevents obesity-induced actin cytoskeleton remodeling activation and adipocyte expansion, with the potential to negatively modulate adipose tissue metabolic derangements. These findings support the hypothesis that UnAG could potentially lower the risk of metabolic complications in obese patients

#### References:

Gortan Cappellari G et al, Diabetes, 65(4): 874–86, 2016

Hansson et al, Sci. Rep. 9:1–14, 2019

Choe et al, Front. Endocrinol., 13 April 2016

**Disclosure of Interest:** None declared.

#### LB-073

##### A 6-WEEK INTERVENTION WITH A NORDIC-LIKE DIETARY PATTERN INCREASED GUT MICROBIAL DIVERSITY ONLY IN OBESE SUBJECTS SHOWING A DIET-IMPROVED LIPID METABOLISM

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**Rationale:** Recent epidemiological studies indicate that a Mediterranean-like diet beneficially modulates the gut microbiota profile [1]. We hypothesized that higher portion of vegetables and fruits, use of mono-unsaturated fat and less intake of red meat may be responsible for this observation. To prove this hypothesis, we performed an intervention study comparing the effects of three different food patterns on host metabolism and gut microbiota composition.

**Methods:** One hundred and eighteen adults (60±7y, BMI 31±4kg/m<sup>2</sup>, 49 males) were randomized into one of three groups, adhering to iso-energetically designed Nordic diet (ND, rich in berries, fish, nuts), Vegetarian diet (VD), or Western-styled control diet (WD) for six weeks. Stool samples were collected before and after intervention. DNA extraction was performed using the Chemagic DNA stool 360 H96 kit (PerkinElmer, Waltham, USA). Two-step PCR amplification of the 16S rRNA V3V4 region was performed, followed by Illumina sequencing using MiSeq Reagent Kit v3. Statistical data analysis was performed using Welch's t-test and linear mixed-effect models.

**Results:** After six weeks, neither group-specific nor between groups diet-induced variations in the microbial diversity (shannon index, faith index, observed features counts; p>0.05) were observed. However, within a subgroup of 'responders' (n=33) showing ND-induced improvements in lipid metabolism, an increase in microbial diversity (shannon index) in the ND relative to WD (p=0.04) was found. Furthermore, microbial diversity was negatively correlated with cholesterol levels in responders (estimate:-0.004, p=0.01).

**Conclusion:** It can be cautiously concluded that food items like berries and nuts as part of a Nordic-like dietary pattern show a high potential to beneficially change gut microbiome profiles in a group of responders.

#### References:

[1]Wang et al., Nature Medicine2021

**Disclosure of Interest:** None declared.

#### LB-074

##### EFFECTS OF A TWO-DAY INTENSIVE OAT INTAKE ON THE GLUCOSE AND LIPID METABOLISM IN PARTICIPANTS WITH METABOLIC SYNDROME

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**Rationale:** Oat consumption has a beneficial effect on the metabolism, which may go beyond the effects of an energy restricted diet. Therefore, we aim to compare a two-day intensive oat intake with an energy restricted diet in subjects with metabolic syndrome (MetSyn).

**Methods:** In a randomized, energy restricted, intervention trial with 34 subjects with MetSyn (59 ± 7 y; BMI 32 ± 3 kg/m<sup>2</sup>) half of the participants

performed a two-day intensive oat intake (OG: “oat cure”: 3 x 100 g oatmeal/d) while the other half received a macronutrient-adapted diet for two days (CG). Anthropometry and clinical chemistry were evaluated at baseline and post-intervention using routine methodology. Data were analysed by t-test and by Wilcoxon test or Whitney-U-test by missing normal distribution, respectively.

**Results:** The OG had a significant reduction of total cholesterol (TC), LDL-cholesterol, blood glucose and diastolic blood pressure (DBP) ( $p < 0.01$ , respectively). The change of TC, LDL and DBP was also significant compared to CG (TC, LDL:  $p < 0.01$ ; DBP:  $p = 0.018$ ). Compared to CG, systolic BP was lower after the oat-days ( $p = 0.017$ ). In addition, the oat intake led to a reduction in body weight ( $p < 0.001$ ), BMI ( $p < 0.001$ ), insulin concentration ( $p = 0.001$ ), HOMA index ( $p = 0.001$ ) and HDL-cholesterol ( $p = 0.001$ ) with no differences compared to the CG.

**Conclusion:** Compared to an energy restricted diet, a two-day intensive oat intake may have a more pronounced impact on the glucose and lipid metabolism of participants with MetSyn.

#### References:

Bao, L.; Cai, X.; Xu, M.; Li, Y. (2014): Effect of oat intake on glycaemic control and insulin sensitivity: a meta-analysis of randomised controlled trials. *Br. J. Nutr.* DOI: 10.1017/S0007114514000889.

Scientific Opinion on the substantiation of health claims related to beta-glucans from oats and barley and maintenance of normal blood LDL-cholesterol concentrations (ID 1236, 1299), increase in satiety leading to a reduction in energy intake (ID 851, 852). *EFSA J.* DOI: 10.2903/j.efsa.2011.2207.

Whitehead, A.; Beck, E. J.; Tosh, S.; Wolever, T. M. S. (2014): Cholesterol-lowering effects of oat  $\beta$ -glucan: a meta-analysis of randomized controlled trials. *Am. J. Clin. Nutr.* DOI: 10.3945/ajcn.114.086108.

**Disclosure of Interest:** None declared.

## Nutrition and cancer

### LB-075

#### IMPACT OF PREOPERATIVE NUTRITION STATUS IN THE CLINICAL OUTCOMES OF CANCER PATIENTS WHO UNDERWENT GASTROINTESTINAL SURGERY IN EAST AVENUE MEDICAL CENTER FROM JANUARY 2018 TO OCTOBER 2020: A RETROSPECTIVE COHORT STUDY

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**Rationale:** Poor nutritional status has been linked to poor surgical outcomes leading to increased length of hospital stay and increased morbidity and mortality. This paper aims to determine the relationship between preoperative nutrition status by Nutritional Risk Screening and clinical outcome among cancer patients who underwent gastrointestinal surgery.

**Methods:** Retrospective cohort design to determine the relationship between preoperative nutrition status and clinical outcomes among cancer patients who underwent GI surgery. Relationship between preoperative nutrition status and postoperative outcomes was determined through a multiple logistic regression analysis. Screening for potential confounders was based on the criteria of  $p < 0.20$ , and model building was performed based on the change in estimate criterion of 10%.

**Results:** No significant difference in preoperative nutrition risk in terms of age, sex, height, BMI, type of surgery either laparoscopic or open, length of hospital stay, type of procedure and comorbidities. There is significant difference however with regards to weight and preoperative albumin, wherein low risk cases have significantly higher levels of albumin preoperatively. High risk patients (33%) developed postoperative morbidity with pneumonia as the highest post-operative complication. Patients with moderate risk of malnutrition have about 7 times higher odds of mortality than low risk patients.

**Conclusion:** NRS showed that high risk patients have higher mortality and morbidity rates compared to moderate and low risk patients. Patients with higher values of weight and preoperative albumin had better post-operative outcomes.

#### References:

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Caballero CI, Lapitan MC and Buckley B. 2013. *Nutritional Assessment of Adult Cancer Patients admitted at the Philippine General Hospital using (PG-SGA)*. *Acta Medica Philippina*. 2013; 47(4): 12-17

**Disclosure of Interest:** None declared.

### LB-076

#### IMPACT OF AN EARLY NUTRITIONAL APPROACH IN PATIENTS WHO ARE CANDIDATES FOR SURGERY FOR ESOPHAGEAL AND GASTRIC CANCER

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**Rationale:** To evaluate the effectiveness of the early nutritional approach in patients who are candidates for major digestive surgery (MDS) for esophageal-gastric cancer, comparing a group included in the early screening (group2) and a historical control (group1)

**Methods:** Clinical-nutritional variables, IMM and sarcopenia measured in perioperative CT(L3) were collected. PO morbidity at 30/60 days, hospital stay and mortality were evaluated.

**Results:** 70 patients were included (group1 34, group2 36) with a mean age of  $62 \pm 19.4$  (64.3% men). We observed a weight loss > 5% in 55.9%(group1) and 66.7%(group2). Nutriscore+ in 35.5%(group1) and 72.2%(group2) and Glim criteria of moderate-severe malnutrition in 64.7%(group1) and 83.3%(group2) with significant differences (**p0, 002 OR 4.75 and p0.02**) Preoperative IMM ( $p0.167$ ) of 46.0 (group1) and 49.37(group2) was observed; and preoperative sarcopenia ( $p0.345$ ) in 54.5%(group1) and 45.5%(group2). As well as PO IMM (**p0.009**) of 43.73(group1) and 49.37(group2) and PO sarcopenia (**p0.00**) 79.3%(group1) and 20.7%(group2). No statistical significance was found when comparing pre and postoperative RCP/Prealbumin, PO morbidity and mortality and hospital stay of both groups. Differences were found when comparing the presence of PO sarcopenia and mortality **p0.018**; PO RCP/Prealbumin and PO morbidity and mortality (**p0.004 and p0.002**)

**Conclusion:** Preoperative malnutrition, sarcopenia, and low RCP/Prealbumin ratio increase PO morbidity and mortality in patients undergoing MDS. Both groups have a similar PO morbidity and mortality. Given that group 2 presented a higher degree of preoperative malnutrition and a lower degree of PO sarcopenia, we can conclude that the early nutritional approach reduces/equals morbidity and mortality in group1. Furthermore, those patients with a higher mean PO RCP/Prealbumin presented lower PO morbidity and mortality.

#### References:

García Almeida JM et al. Nuevo enfoque de la nutrición. Valoración del estado nutricional del paciente: función y composición corporal. *Nutr. Hosp.* vol.35 spe 3 Madrid 2018 Epub 21-Sep 2020. <https://dx.doi.org/10.20960/nh.2027>

**Disclosure of Interest:** None declared.

### LB-077

#### TIME-RESTRICTED EATING IN BREAST CANCER SURVIVORS: EFFECTS ON ENERGY EXPENDITURE AND NUTRITIONAL STATUS

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**Rationale:** Time-restricted eating (TRE) may be a practical approach to improve body composition and overall health. In a secondary analysis, we



examined the effects of TRE on nutritional status, and resting energy expenditure (REE) in breast cancer survivors.

**Methods:** Women who completed chemotherapy for early-stage breast cancer in the past 1–6 years (age  $\geq 60$  years, BMI  $> 25$  kg/m<sup>2</sup>) were enrolled in an 8-week single-arm pilot study of weekday TRE for 8 hours/day (16-hour fast). Assessments were conducted before (T1) and after 8 weeks (T2) of TRE. Bioelectrical impedance was used to evaluate whole-body % fat mass, and phase angle (PhA). Vector analysis (BIVA) was performed using software (Piccoli & Pastori, 2002) to evaluate nutritional status by body cell mass (BCM) and hydration levels. According to BIVA, each participant was located in the bivariate tolerance ellipses for a reference population (50%, 75%, and 95%); the first two within normality ranges.

**Results:** Sixteen participants (66 $\pm$ 4 years) completed the study to-date. T1 BMI (31.6 $\pm$ 4.3 kg/m<sup>2</sup>), % fat mass (46.9 $\pm$  4.8%), % fat-free mass (53.16 $\pm$ 4.73%), % total body water (40.03  $\pm$ 3.30%), PhA (5.07  $\pm$ 0.58 $^\circ$ ), and (REE (1407 $\pm$ 179 kcal) did not change by T2. Most participants (n=14, 88%) had a PhA value associated with lower cancer survival ( $\leq 5.6^\circ$ ) at T1 and n=2 improved at T2. At T1, the mean BIVA vector and n=8 at both time points were classified within the normality ranges of BCM and hydration. N=3 were classified as having obesity (placed between the 75–95% ellipses) at T1, with improved body composition after TRE (vector migration to the 75% ellipse at T2).

**Conclusion:** The high prevalence of low PhA at baseline suggests reduced cellular health in these breast cancer survivors. 8 weeks of weekday TRE did not impact nutritional status, or REE. However, a minority of participants experienced a favorable change in their nutritional status detected by BIVA analysis but not BMI, the latter due to its limitation in discriminating alterations in BCM and hydration status. The study is ongoing, but longer TRE interventions or other interventions are needed to impact energy expenditure and nutritional status in these individuals.

#### References:

Piccoli & Pastori: BIVA software. University of Padova, Padova, Italy, 2002

**Disclosure of Interest:** None declared.

#### LB-078

### IMPACT OF PERIOPERATIVE ENTERAL IMMUNONUTRITION IN PATIENTS WITH GASTROINTESTINAL CANCER UNDERGOING ELECTIVE SURGERY: A RANDOMIZED CONTROLLED TRIAL

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**Rationale:** Major cancer surgery poses a significant risk to patient's nutritional intake, especially among gastrointestinal cancer patients. Patients are often at high risk of a remarkable weight loss and impaired functional capacity after surgery. The aim of our study is to investigate the effects of two immune-modulating formulas on nutritional status and functional capacities in patients undergoing elective surgery.

**Methods:** 202 patients with gastric or colorectal cancer were randomized into two groups. Both groups received isocaloric enteral feeding for 5–7 days preoperatively and 7 days postoperatively with 30kcal/kg. Group A (n=100) received an immune-enhanced formula supplemented with L-arginine, n-3 fatty acids and nucleotides (Impact Oral, Nestle) while Group B (n=102) received an immune-modulating formula enriched with n-3 fatty acids and RNA(Supportan, Fresenius Kabi). Serum prealbumin levels, weight changes and functional capacity were compared between the two groups.

**Results:** The per-protocol analysis showed that serum prealbumin levels dropped significantly after surgery in both groups (p<0.001). A statistically significant intergroup difference was seen on POD 8(Group A:18.0 vs. Group B:16.7mg/dl; P =0.045). And the difference remained significant among those undergoing laparoscopic colorectal surgery (18.5 and 16.9mg/dl; P=0.022). The magnitude of weight loss after surgery in the Group A was significantly smaller than Group B (1.63 vs. 2.44kg; P=0.009). There were significant more patients with an ECOG score $\leq 2$  in Group A at 1 month after surgery than Group B (93% vs. 82%, P=0.022).

**Conclusion:** Serum pre-albumin, as a more sensitive biomarker, is associated with inflammation and commonly used as a risk factor for malnutrition. Our study results showed that provision of enteral formulas enriched with L-arginine, n-3 fatty acids and nucleotides perioperatively may help identify patients with nutritional risks, prevent dramatic weight loss and maintain patients' functional capacities for further cancer treatments.

#### References:

None

**Disclosure of Interest:** None declared.

#### LB-079

### OMEGA-3 FATTY ACID SUPPLEMENTATION ATTENUATES DOXORUBICIN-INDUCED CARDIOTOXICITY IN RATS, BUT NOT BY SPHINGOMYELINASE/CERAMIDE PATHWAY

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**Rationale:** Cardiotoxicity is the most serious side effect of doxorubicin (Dox) treatment. Pathophysiological mechanisms related to cardiotoxicity are not completely understood. Omega-3 fatty acid (w3) supplementation could act in the ceramide/sphingomyelinase pathway.

**Methods:** Male Wistar rats (n=60) were divided into 4 groups: C (control), W (administration of w3), D (administration of dox), and DW (administration of dox and w3). The w3 (400mg/kg/day, gavage) was administered for 6 weeks. Dox (3.5mg/kg, IP, 1x/week) was administered for the last 4 weeks of the experiment. Rats were submitted to echocardiogram and the neutral sphingomyelinase (nSMase) activity and protein expression in the myocardium were evaluated. Statistical analysis: 2-way ANOVA.

**Results:** The D group exhibited increased left atrium/aorta ratio (C:1.31 $\pm$ 0.11, D:1.45 $\pm$ 0.11, W:1.36 $\pm$ 0.11, DW:1.27 $\pm$ 0.11; pD=0.467, pW=0.028, pi<0.001) and decreased in the E wave (C:90 $\pm$ 10, D:66 $\pm$ 13, W:86 $\pm$ 9; DW:75 $\pm$ 13; pD<0.001, pW=0.402, pi=0.036), characterizing diastolic dysfunction, and decreased left ventricular fractional shortening (C:0.57 $\pm$ 0.07, D:0.46 $\pm$ 0.07, W:0.56 $\pm$ 0.08, DW:0.53 $\pm$ 0.08; pD=0.002; pW=0.164; pi=0.046) when compared to group C, characterizing systolic dysfunction. The DW group showed improvement in these variables. Both myocardial nSMase expression (C:0.05 $\pm$ 0.03, D:0.04 $\pm$ 0.02, W:0.05 $\pm$ 0.02, DW:0.03 $\pm$ 0.02; pD=0.009, pW=0.455, pi=0.275) and nSMase activity (C:2283 $\pm$ 412, D:2879 $\pm$ 680, W:2461 $\pm$ 639, DW:3319 $\pm$ 284; pD<0.001, pW=0.087, pi=0.461) were lower in rats treated with dox when compared to animals that did not receive dox. The w3 supplementation did not interfere with these variables.

**Conclusion:** Administration of w3 attenuated dox-induced cardiac dysfunction in rats. The sphingomyelinase/ceramide pathway is possibly involved in the pathophysiology of cardiotoxicity; however, this is not the mechanism by which w3 attenuated cardiac dysfunction.

#### References:

FAPESP Process 2018/25677-7

**Disclosure of Interest:** None declared.

#### LB-080

### EFFECTS OF EARLY NUTRITIONAL SUPPORT TREATMENT BEFORE HOSPITALIZATION ON CLINICAL OUTCOMES IN PATIENTS WITH SOLID ORGAN TUMORS

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**Rationale:** This study aimed to explore the effect of early nutrition support treatment (NST) (conducted more than 1 week before hospitalization) on outcomes in patients with solid tumors.

**Methods:** 6,026 patients with 10 tumor types, including gastric, esophageal, liver, pancreatic colorectal, lung cancer, rostate, bladder, cervical, ovarian, and endometrial cancer, and cholangiocarcinoma, were included. Patients were divided into three categories according to Patient-Generated

Subjective Global Assessment (PG-SGA) scores: well-nourished moderate malnutrition and severe malnutrition; three groups according to scheduled antitumor treatments (ANTs): radical resection surgery, adjuvant chemoradiotherapy, and palliative chemoradiotherapy. Survival curves were estimated using Kaplan-Meier method. Cox proportional hazards models were formulated to identify factors that affect death risk and compute the hazard ratios (HRs) with their 95% confidence intervals (CIs). **Results:** A total of 6,026 patients with 10 types of solid tumors were included. Patients were divided into three categories according to Patient-Generated Subjective Global Assessment (PG-SGA) scores: well-nourished moderate malnutrition and severe malnutrition; three groups according to scheduled antitumor treatments (ANTs): radical resection surgery, adjuvant chemoradiotherapy, and palliative chemoradiotherapy. Survival curves were estimated using Kaplan-Meier method. Cox proportional hazards models were formulated to identify factors that affect death risk and compute the hazard ratios (HRs) with their 95% confidence intervals (CIs). **Conclusion:** Our data showed that patients with early stage cancer and moderate malnutrition and receiving surgery and adjuvant chemoradiotherapy benefited from early NST, while patients receiving palliative chemoradiotherapy and with severe malnutrition did not benefit.

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**Disclosure of Interest:** None declared.

#### LB-081

### MEDICAL NUTRITION THERAPY VERSUS STANDARD NUTRITION ADVICE IN PATIENTS WITH ESOPHAGEAL CANCER: EFFECT ON INFLAMMATORY CYTOKINES AND NUTRITIONAL STATUS

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**Rationale:** Malnutrition is common in patients with esophageal cancer. The purpose of this study was to compare medical nutrition therapy (MNT) with standard Nutritional Advice (NA) in regards to nutritional status and serum cytokine levels in patients during chemoradiation therapy (CRT).

**Methods:** Newly diagnosed patients with esophageal cancer included from February 2018 to February 2019. The MNT group (n=30) received individualized nutritional consultation as well as oral nutritional supplements. The NA group (n=30) was provided only standardized nutritional advice at the beginning of the study. The primary end-points were patient-generated Subjective Global Assessment (PG-SGA) and weight. The secondary endpoints were anthropometric indices, body composition, dietary intake, nutritional-related complications, and serum concentrations of IL-1 $\beta$ , IL-6, IL-8, and MCP-1. The patients were assessed before, right after, and 4 to 6 weeks following the treatment.

**Results:** MNT group had a significantly higher total energy (29.1 $\pm$ 13 vs. 18.4 $\pm$ 9 Kcal/kgw.day) and protein (1.08 $\pm$ 0.5 vs. 0.67 $\pm$ 0.4 g/kgw.day) intake than the NA group. A non-significant drop in the PG-SGA score was observed in both groups during the treatment. Weight, MUAC, body composition, physical performance, nutritional-related complications, and the levels of the cytokines were not significantly different between the two groups at any point. There was also no significant difference in 12-month survival between the two groups.

**Conclusion:** Despite significantly higher total daily energy intake and daily protein intake in the MNT group, there was no significant difference in nutritional status indices and inflammatory cytokine levels between MNT and NA groups right after and 4–6 weeks following CRT.

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Outcomes of Esophageal Cancer Patients with Concurrent Chemo-radiotherapy. *Chin Med J (Engl)*. 2015;128(22):3003–7.

**Disclosure of Interest:** None declared.

#### LB-082

### COMPREHENSIVE ASSESSMENT OF NUTRITIONAL STATUS AND NUTRITIONAL-RELATED COMPLICATIONS IN NEWLY DIAGNOSED ESOPHAGEAL CANCER PATIENTS: A CROSS-SECTIONAL STUDY

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**Rationale:** Malnutrition is prevalent in upper gastrointestinal cancer patients. The purpose of this study was a comprehensive assessment of nutritional status in newly diagnosed patients with esophageal cancer.

**Methods:** Newly diagnosed esophageal cancer patients were referred to a chemo-radiation referral center in Mashhad, Iran, between February 2017 to February 2019. Anthropometric indices, a Patient-Generated Subjective Global Assessment (PG-SGA) tool, body composition, dietary intake, nutritional-related complications, and laboratory tests were assessed.

**Results:** One hundred and eighty-nine patients with a mean age of 67.1  $\pm$  12 and a male to female ratio of 98 to 91 were included. Ninety-seven (51.3%) of patients had experienced significant weight loss and 56 (29.6%) were underweight at diagnosis. According to PG-SGA, 179 (94.7%) needed nutritional interventions. Reduced muscle mass and low handgrip strength were observed in 70 (39.4%) and 26 (14.4%) of patients, respectively. Inadequate intakes of energy (less than 24 kcal/kg/day) and protein (less than 1.2 g/kg/day) were found in 146 (77.8%) and 171 (91%) patients, respectively. The mean total daily energy and protein intakes of subjects were 943.8  $\pm$  540 kcal/day, and 30.6  $\pm$  21 g/day, respectively. The most common nutritional-related complications were as follows: dysphagia (84.8%), anorexia (31.6%), constipation (62.1%), esophageal pain (48.4%), and dyspepsia (41.1%).

**Conclusion:** Our study demonstrated a high prevalence of malnutrition in newly diagnosed esophageal cancer patients. Early screening of nutritional status via PG-SGA tool, clinical evaluation, dietary intake evaluations, and laboratory tests, as well as effective nutritional interventions and Symptoms management are of essential importance.

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**Disclosure of Interest:** None declared.

#### LB-083

### BODY COMPOSITION AND THE CANCER PATIENT

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**Rationale:** Malnutrition is a prevalent negative factor in cancer patients and increases mortality, morbidity and treatment complications, besides also reducing treatment effectiveness and quality of life. Cancer patients (pts) are usually at risk of developing cachexia, with progressive weight loss, muscle and fat tissue loss, impaired immune function, and metabolic disturbances caused by a combination of reduced food intake, systemic inflammation and abnormal metabolism. A way to assess this may be through cancer pts' body composition evaluation. We evaluated the bioimpedance parameters pattern in a cohort of non-selected cancer pts.

**Methods:** This pilot cross-sectional study was conducted in all first time evaluations of pts at a single Oncology Department between April 1<sup>st</sup> 2021 and May 15<sup>th</sup> 2021. Evaluations were taken to measure body composition by Tetrapolar Bioimpedance Analysis (TANITA®)

**Results:** We evaluated 34 pts, 32.5% female, median (med) age of 67.8 years [30–81]. The most frequent types of cancer were colorectal (35.3%), gastro-esophageal (29.4%) and breast (20.6%). Regarding body mass index (BMI), 62% were within the normal range (18.5–25 kg/m<sup>2</sup>), 3% were under and 35% over. Concerning bioimpedance parameters, 38.2% had fat mass (FM) outside the normal range; 17.6% had below and 20.6% above FM percentage age and gender-adjusted normal values. There was a fat-free mass (FFM) percentage med of 78.82% (57.54–90.09); 29.4% had FFM% below 70%; the FM/FFM ratio med was 0.27 (0.11–0.74), with 32.4% > 0.40 and 17.6% < 0.20. The muscle mass (MM) percentage med was 74.79% (58.13–85.47), with 23.5% with MM% below 65%. There was a total body water (TBW) percentage med of 54.65% (40.0–72.3).

**Conclusion:** In the evaluated oncological cohort, there was a high incidence of abnormal FM; about 30% had FFM below 70% and 25% MM below 65%. These readings may allow a more adequate cachexia screening and more intensive and personalized nutritional support intervention.

**References:**

**Disclosure of Interest:** None declared.

#### LB-084

#### NOVEL NUTRITIONAL ASSESSMENT TOOLS IN ONCOLOGIC PATIENTS; A CASE-CONTROL STUDY

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**Rationale:** Malnutrition is frequent in cancer patients and tumor cachexia is responsible for death in a third part of these patients. Our objective was to analyzed bioelectrical impedance (BI) values in oncologic outpatients, compare them with a control group and relate anthropometric, analytical and muscle strength parameters.

**Methods:** A case-control study of 107 subjects (67 patients and 40 controls) was performed. Classical nutritional parameters (body mass index (BMI), arm circumference (AC), tricipital fold (TF), laboratory tests (albumin, prealbumin, total proteins, C-reactive protein) and advanced nutritional assessment (BI and dynamometry) were determined. We compared these parameters between head and neck cancer patients and a control group. Statistical analyses were performed with SPSS.

**Results:** We enrolled 67 patients, mean age 63.8 ± 10.3 years and 40 control subjects, mean age 54.9 ± 6.4 years. 80.6% of patients received oral nutritional supplements. The phase angle (PA) was significantly lower in patients (5.15° ± 0.74) compared to controls (5.91° ± 0.74) with p < 0.001. There were statistically significant differences in fat mass (FM), fat free mass (FFM), total body water (TBW), appendicular skeletal muscle mass (ASMM) and cell mass (BCM) (p < 0.05). AC, TF and maximum and mean dynamometry were statistically lower in patients (p < 0.05). PA was positively and strongly correlated with BCM, ASMM, FFM, and maximum and mean dynamometry. (r > 0.5) (p < 0.001). The correlation between PA and analytical parameters was not significant.

**Conclusion:** PA is a potential indicator of nutritional status. Lower muscle mass and BCM added to lower dynamometry values can be considered as advanced markers of malnutrition. Therefore, these assessments provide relevant information for clinical practice in the diagnosis and nutritional monitoring of head and neck cancer patients.

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**Disclosure of Interest:** None declared.

#### LB-085

#### ADIPOSIY IN ADOLESCENTS WITH MALIGNANT NEOPLASMS: IS THERE A MORE SUITABLE PARAMETER FOR EARLY IDENTIFICATION?

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**Rationale:** Evidence suggests that cytokine-induced lipolysis, through TLR-4 signaling, causes the release of pro-inflammatory mediators involved in chemoresistance in tumor cells. Upper subcutaneous body fat (USBF), which can be identified by neck circumference (NC), is strongly associated with these metabolic changes and may be increased in adolescence. The main objective of this study was to identify the assessment of adiposity in adolescents with malignant neoplasms.

**Methods:** A cross-sectional study with adolescents, conducted at the specialized pediatric oncology institute in Brazil, among 2016–2017. Variables: Sex Weight, Length, Body Mass Index for age (BMI/A) z-score, Neck Circumference, sex, age. The Mann-Whitney test between different samples was performed, with significance level p < 0.05. BMI/A z-score was conducted to identify body excess (WHO 2007). Adiposity was defined when NC was above cutoff values, according to Brazilian cutoff for NC to identify excess adiposity according to sexes and age groups: 10–12 y, 13–15y and above 16 y. (Ferretti et al, 2015).

**Results:** Among 496 cases, 60.3% (n=299) were male. Mean age for male and female were 14.98±4.7 and 14.26±3.0 (p<0.05). According to age group, 28.2% (10–12y), 38.1% (13–15y) and 33.7% (>16y). Most of the sample was solid tumors (77.8%, n=386). BMI z-score classification demonstrated that 14.7% (n=73) was excess, but according to NC, 31.9% (n=158) was excess of adiposity. that is, NC identified most patients with excess of USBF than BMI/A.

**Conclusion:** We conclude that 31.9% of this sample showed excess adiposity. NC is an easy going measure, low cost, besides being more sensible to identify adiposity in relation to BMI z-score.

**References:**

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**Disclosure of Interest:** None declared.

#### Paediatrics

#### LB-086

#### COMPARISONS BETWEEN THE CLINICAL OUTCOMES OF EARLY AND LATE ENTERAL NUTRITION AND MORTALITY RISK FACTORS FOR PEDIATRIC BURNS

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**Rationale:** Burn injuries induce hypermetabolism and consequential increased caloric and protein requirements. This study compared the clinical outcomes of early enteral nutrition (EEN) with those of late enteral nutrition (LEN) for the management of burns.

**Methods:** A retrospective study was conducted in subjects aged under 18 years who had been admitted to the Burn Unit of Siriraj Hospital between January 2013 and October 2019 and diagnosed with either a second-degree burn with a burn area of at least 10% of the total body surface area (TBSA), or a third-degree burn. The subjects were divided into EEN and LEN groups, with enteral nutrition commencing within 48 hours and after 48

hours of the burn injuries, respectively. Clinical outcomes and mortality risk factors were assessed.

**Results:** Fifty-three patients were assigned to the EEN and LEN groups. There were fewer episodes of respiratory failure and pneumonia and shorter hospitalization in the EEN group than the LEN group. When comparing only patients with a burn size larger than 40% of TBSA, the EEN group had a shorter hospitalization than the LEN group. The factors associated with death were a burn size of at least 50% of TBSA, an initial serum albumin of 1.5 g/dL or less, a PRC transfusion of 57 ml/kg or more, and the presence of acute kidney injury (AKI).

**Conclusion:** EEN demonstrated favorable clinical outcomes compared with LEN. A burn size, an initial albumin, a PRC transfusion volume, and AKI could be the prognostic factors of burn mortality.

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**Disclosure of Interest:** None declared.

**LB-087**

**SPIS-F SCORE:A SCORE BASED ON SCREEN TIME, PHYSICAL ACTIVITY, SLEEP HOURS, ENERGY INTAKE AND FAMILY HISTORY OF OBESITY IN CHILDREN AGED 5-12 YEAR AND ITS CORRELATION WITH BMI AND CHILDHOOD OBESITY IN INDIAN CHILDREN**

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**Rationale:** We have devised a score based on screen time exposure, physical activity,energy intake, sleep hours per day and family history of obesity and its relation with BMI,Obesity and Overweight in children.We have also studied early childhood risk factors and its impact on pediatric obesity.

**Methods:** This is prospective cohort study done in pediatric clinic where children aged 5-12 years with their parents were interviewed on a questionnaire where questions were pertaining to age ,sex,prematurity,birth weight ,maternal weight gain during pregnancy, type of delivery,duration of exclusive breastfeeding,timing of introduction of complimentary feeding. **SPIS-F** score was devised based on duration of screentime,physical activity,energy intake, sleep hours per day and family history of obesity| and scoring was done on a scale from 0-10(Table1).Child weight,height and BMI was plotted on WHO growth charts.

**Results:**

TABLE 1-SPIS-F SCORES

SCORES	- 0	- 1	- 2
- SCREEN TIME EXPOSURE PER DAY	- <2 HOURS	- 2-4 HOURS	- >4 HOURS
- PHYSICAL ACTIVITY PER DAY	- MODERATE (3-6 METS) (60 minutes or more)	- LIGHT (1.5-3 METS) (30-60 minutes)	- SEDENTARY BEHAVIOUR(<1.5 METS) (0-30 minutes)
- ENERGY INTAKE KCAL PER DAY	- 1700-2200	- 2200-3000	- >3000
- SLEEP HOURS PER DAY	- 9-11	- 6-9	- <6 OR >11
- FAMILY HISTORY OF OBESITY	- NONE	- 2nd DEGREE RELATIVES	- 1st DEGREE RELATIVES

**Conclusion:** BMI of children was associated with maternal weight gain during pregnancy(p0.026),physical activity(p 0.004),energy intake (p<0.001)family history of obesity(p0.004) SPIS-F scores(p<0.001).Obese children(BMI>97th centile) had maximum scores of (4.77+/-1.66),overweight children(BMI 85th-97th centile) had scores of (3.55+/-

1.53),BMI<85th centile were having lower scores(p<0.001).SPIS-F scores can predict childhood obesity.

**References:**

- 1.WHO guidelines on physical activity and sedentary behaviour in children.

**Disclosure of Interest:** None declared.

**LB-088**

**IMPACT OF A SYNBIOTIC CONTAINING EXTENSIVELY HYDROLYSED FORMULA ON HEALTHCARE USE IN INFANTS WITH COWS MILK ALLERGY**

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**Rationale:** Management of cow's milk allergy (CMA) presents a significant burden on the health care system. A healthy gut microbiota is important for the prognosis of CMA and synbiotic use may correct gut dysbiosis, improve clinical outcomes and reduce healthcare use.<sup>1,2</sup> This study evaluated the impact of a synbiotic-containing (galacto-oligosaccharides, fructo-oligosaccharides, *Bifidobacterium breve* M-16V) whey-based, extensively hydrolysed formula (SeHF), on healthcare use of infants with CMA.

**Methods:** Following a multi-centre, 31-day trial of SeHF<sup>3</sup> hospital medication prescriptions (MP) and hospital visits (HV) (number;% of infants with ≥1) of 16 CMA (non-IgE) infants (38% male, 12.9±12.7 weeks old at diagnosis, all previously taking eHF) were retrospectively extracted from hospital records for 6m pre- and post- SeHF initiation and compared. Parents rated symptom improvement on a 5 point Likert scale.

**Results:** MP were significantly lower in the 6m post SeHF initiation (Table), most notably gastrointestinal-related MP (46.2% pre vs 7.7% post, p=0.025). Significant reductions in HV were also observed (Table) with the largest decrease in elective attendances (2.8±2.0 pre vs 1.5±1.4 post, p=0.019). Post SeHF initiation, 94% of parents reported improvement in infants CMA-related symptoms.

**Table. Healthcare use pre and post eHFS (n=13; \*significant reduction, p<0.05 Wilcoxon signed-rank test)**

	Pre		Post	
	Mean±SD	% infants	Mean±SD	% infants
Hospital medication prescriptions	2.4±4.9	53.8	0.2±0.6*	7.7*
Hospital visits	3.5±2.6	100	1.9±2.3*	76.9

**Conclusion:** SeHF use is associated with reductions in MP and HV in infants with CMA previously prescribed eHF. These benefits appear additive to symptom improvement and may have important health economic implications.

**References:**

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**LB-089****ADOLESCENTS EATING HABITS: THE PERCEPTION OF ADOLESCENTS VS PARENTS**

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**Rationale:** During adolescence, there are several changes, both physically and emotionally and socially, which are reflected in eating habits. The aim of this study was to assess the perception of adolescents about their eating habits, as well as their parents' perception about them.

**Methods:** This study is observational and involved the participation of 84 individuals, including 42 adolescents and 42 parents. Data were obtained through an online questionnaire, which was applied to both parents and adolescents. Data were analysed and considered as significant when  $p < 0.05$ .

**Results:** Of the 42 adolescents who participated in this study, 22.60% ( $n=19$ ) stated that half of the dish was composed of vegetables, 22.60% ( $n=19$ ) rice, pasta and potatoes and 25% ( $n=21$ ) for meat/fish, these results being in agreement with the parents. With regard to the end of the meal, most adolescents 36.40% ( $n=12$ ) reported finishing with a piece of fruit and 45.50% ( $n=15$ ) of the parents said the same, with this perspective being similar to the number of pieces of fruit consumed daily. On the other hand, most adolescents 29.80% ( $n=25$ ) stated that they did not consume any juice per day, this value being in accordance with the parents' view of 33.30% ( $n=28$ ). *Fast food* consumption was found to be infrequent 17.90% ( $n=15$ ) in line with the perception of parents in relation to it (20.20% ( $n=17$ )). However, when asked about the perception of healthy eating, 46.40% ( $n=39$ ) said yes and 41.70% ( $n=35$ ) of the parents said the same.

**Conclusion:** No differences were found between the perceptions of adolescents and their parents about their eating habits, which may mean greater knowledge of parents about their children's nutrition, which is useful to contribute to the improvement of eating habits, and it is necessary to invest in their food education to correct dietary errors.

**References:**

- Philippe, K., Chabanet, C., Issanchou, S., & Monnery-Patris, S. (2021). Child eating behaviors, parental feeding practices and food shopping motivations during the COVID-19 lockdown in France: (How) did they change? *Appetite*, 161. <https://doi.org/10.1016/j.appet.2021.105132>.

**Disclosure of Interest:** None declared.

**LB-090****EFFECT OF THE COVID-19 PANDEMIC ON THE NUTRITIONAL STATUS AND EATING HABITS OF PORTUGUESE CHILDREN AND ADOLESCENTS**

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**Rationale:** The COVID-19 pandemic forced countries to impose measures in order to dissipate the spread of the virus, causing the population to change their daily routines. The aim of this study was to evaluate the effect of the Covid-19 pandemic on the nutritional status, lifestyle and eating habits of Portuguese children and adolescents.

**Methods:** This is a descriptive observational study that consisted of the application, during the pandemic, of an online questionnaire on anthropometric data, lifestyles and eating habits before and during the pandemic, through a convenience sample of parents of children and adolescents among 3 and 17 years old, residing in Portugal. 170 parents answered the questionnaire, and the children had a mean age of 10.5 ( $\pm 3.76$ ) years. The responses obtained were analysed using Excel and IBM SPSS.

**Results:** Differences were observed in relation to weight, height and frequency of physical activity ( $p < 0.05$ ), as well as for the increase in the 1st and 2nd morning snack (97.6% and 11.2%, respectively) and the 2nd afternoon snack (29.4%). Although there are some differences, especially in terms of the increased intake of sweet/savoury snacks and meals cooked at home (35.2% and 63.4%) and the decrease in *fast-food* meals (39.4%) and through the take-away service (46.5%), it was not possible to correlate food consumption with changes in weight or nutritional status.

**Conclusion:** We found that this population of children and adolescents is being affected by the side effects of this pandemic, namely weight gain, reduced physical activity and increased snacks between main meals, and it is extremely important to create strategies to prevent these from being most devastating.

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**Disclosure of Interest:** None declared.

**Nutritional techniques and formulations****LB-091****SAFE ADMINISTRATION OF MEDICATIONS BY ENTERAL TUBE**

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**Rationale:** The aim was to increase safety in the use of drugs in patients with enteral tube (ET) by providing information both to health professionals and to the patient himself.

**Methods:** This study was structured in three parts: preparation of a guide for ET administration drugs, modification of the Electronic Assisted Prescribing (EAP) program and training of healthcare personnel and patients. Firstly, in order to obtain data on the administration of drugs by ET for all the drugs included in the hospital's formulary, a literature search was carried out, a review of technical data sheets was performed and the manufacturing laboratories were contacted directly. The following variables were recorded in a database: active ingredient and trade name, possibility of administering the drug by gastric and/or post-pyloric tube (and their respective handling instructions), enteral nutrition (EN) compatibility, physicochemical characteristics, administration with/without food and any relevant observation. The guide was edited in book format and all the information collected was incorporated into EAP, making it available at the time of prescription, validation or administration. Finally, training sessions were organized to disseminate the importance of the correct administration of drugs by ET.

**Results:** The guide included a total of 486 drugs. In EAP, the following standardized information for nurses was added to those drugs suitable for administration by ET: instructions for administration by gastric and/or post-pyloric tube, compatibility with food and/or NE and, in certain drugs, additional relevant data. In addition, restricting the route of administration meant that only those drugs suitable for administration by ET could be prescribed by this route, increasing safety in the pharmacotherapeutic process. The dissemination of information in the hospital was carried out through informative bulletins from the Pharmacy Service, as well as through training talks to healthcare personnel.

**Conclusion:** The role of the pharmacist is key within the multidisciplinary chain involved in the administration of the drug by ET, made difficult by the wide variety of PF, the joint prescription with the EN and the scarce

literature available. This work guarantees safe medication practice and, ultimately, better care for the hospitalized patient.

**References:**

1. American Journal of Health-System Pharmacy, 66(16), 1458–1467. doi:10.2146/ajhp080632.

**Disclosure of Interest:** None declared.

**LB-092**

**QUANTITATIVE ANALYSIS ON BIOAVAILABILITY OF INSULIN IN BAGS OF PARENTERAL NUTRITION**

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**Rationale:** Hyperglycemia is reported in more than 50% of patients receiving parenteral nutrition (PN). A gold standard for the administration of insulin in PN solutions does not exist due to its unknown bioavailability. We performed a quantitative analysis of insulin bioavailability in the main types of PN bags, analysing the matrix and time effects, as well as the effect related to the presence of vitamin supplements.

**Methods:** Regular human insulin was added to the main types of PN bags: normal saline, glucose solution, two-compartment solution (carbohydrates, amino acids), three-compartment solution (carbohydrates, amino acids, lipids), with or without vitamin supplements. We tested two different types of container (PVC, Glass). DRG Insulin ELISA test was used to determine insulin concentrations in samples collected at six different time points.

**Results:** Our data pointed out that lipid and/or vitamin addition to the PN solutions significantly influenced insulin concentration.

	Insulin Concentration			
	Saline 0,9% s	Glucose 5%	Two-compartment solution	Three-compartment solution
w/o vitamins	0,68±0,11	1,55±1,32	1,1±0,7	10,0±1,3
w vitamins	10,96±0,60	4,69±3,11	13,6±2,9	19,9±16,1

Data expressed Mean Insulin Concentration (mUI/mL±s.d.); Expected concentration: 20 mUI/mL

Insulin concentration was significantly higher in the three-compartment solution and with vitamin supplements. None of the conditions allows a 100% the hormone recovery. Certain types of vitamins and lipids appear to influence insulin bioavailability. On the opposite, nor time nor type of container leads to difference in insulin concentration (*data not showed*).

**Conclusion:** Our data show that the bioavailability of insulin is greater in lipid containing solutions (three-compartment bags) and that the vitamin addition significantly increases the detectability of the hormone, regardless of the type of solution.

**References:**

Weber S, Wood WA, Jackson EA. Availability of insulin from total parenteral nutrition solutions. Am J Hosp Pharm 1997;34 (4): 353-357

**Disclosure of Interest:** None declared.

**LB-093**

**CLINICAL AUDIT ON NASOGASTRIC FEEDING TECHNIQUE IN PATIENTS WITH ACUTE CEREBROVASCULAR ACCIDENTS IN A TERTIARY CARE SETTING**

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**Rationale:** Although nasogastric (NG) tube feeding is an effective modality of short-term enteral nutrition administration in patients with acute

cerebrovascular accidents (CVA), it is important to adhere to safe feeding practices to prevent potential adverse effects. This clinical audit is based on assessing NG feeding technique in a tertiary care hospital in Kandy, Sri Lanka among patients with acute CVA with the standard of ASPEN Safe Practices for Enteral Nutrition Therapy consensus recommendation 2017.

**Methods:** All the patients with CVA on NG feeding, who were admitted to medical wards from 1<sup>st</sup> of August to 31<sup>st</sup> of August 2020 were included in the study. The data were collected during the ward stay by the principal investigator. NG feeding to each patient was observed and assessed with a checklist of the standards. The data was entered to Microsoft Excel 365 version.

**Results:** A total of 32 patients (Male = 15, Female = 17) were taken to the study. Forty seven percent (n= 15) of patients were fed in the correct position. Among them only 47% (n= 7) were kept in that position for at least 30 minutes after feeds. Confirmation of the correct positioning of the tube before feeds were done in 56% (n= 18), but it was done only by auscultatory method, which should not be used alone for confirmation. In none of the instances, the exit site of the tube and length were marked at the time of insertion. Flushing the tube with water, both before and after feeds were done in only 15 patients (47%).

**Conclusion:** Nasogastric feeding technique in patients with acute CVA in medical wards in the tertiary care hospital was not up to the standards and need to be improved to minimize adverse events.

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**Disclosure of Interest:** None declared.

**LB-094**

**CHANGE IN LIVERFUNCTION TESTS IN PATIENTS SWITCHED FROM OLIVE OIL BASED TPN TO FISH OIL CONTAINING TPN**

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**Rationale:** The Nutritional Support Team of the University Medical Center Groningen (UMCG) (consisting of dieticians, registered nurses, nurse practitioners and gastroenterologists) coordinates and monitors an increasing number of adult patients with home Total Parenteral Nutrition (TPN) for mainly type 2 intestinal failure. These patients are initially all treated with olive oil based parenteral nutrition (Olimel N9E, Baxter). When during TPN treatment patients develop signs of liver dysfunction, we change into a fish oil containing TPN (SmofKabiven, Fresenius Kabi). In this study we investigated the course of the liver tests in these patients.

**Methods:** In this retrospective study, we analysed the prospectively gathered liver tests in patients with signs of liver dysfunction. We studied ASAT, ALAT, GGT, ALP, and total bilirubin. These values were measured at the start of TPN (1) and at switch (2), 1 month (3) and 6 months (4) after switch to SmofKabiven and at stop TPN (5).

**Results:** In 2018 and 2019, 104 patients were treated with home TPN. In 17 patients the liver values were elevated. In these patients Olimel N9E was replaced by SmofKabiven. After this switch, in 13 out of these 17 patients, the liver values improved. In the other 4 patients there was no improvement in liver values. In the latter 4 patients, all fatty acids were removed from the TPN (Clinimix N17G35E, Baxter).

**Conclusion:** In practice, in patients with elevated liver function values it seems justified to switch to a fish oil containing TPN before removing all fats from the TPN.

**References:**

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Calder PC, Jensen GL, Koletzko BV, Singer P, Wanten GJA, Lipid emulsions in parenteral nutrition of intensive care patients: current thinking and future directions, *Intensive Care Med*, (2010) 36(5): 735-749

**Disclosure of Interest:** None declared.

#### LB-095

### THE USE OF PARENTERAL NUTRITION IS NOT ASSOCIATED WITH AN INCREASED INCIDENCE OF CATHETER-RELATED BLOODSTREAM INFECTION (CRBSI) IN HOSPITAL SETTING

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**Rationale:** Catheter-related bloodstream infection (CRBSI) is a complication of great impact in patients using Parenteral Nutritional (PN). Historically, PN is considered a risk factor that increases CRBSI rates. However, strict adherence to systematic protocols established by the Nutritional Support Team (NST) can contribute to controlling infections. Therefore, our objective is to evaluate the CRBSI incidence in PN and non-PN patients in a high complexity hospital in Brazil simultaneously, and compare both results.

**Methods:** We conducted a retrospective study of patients using PN for more than 72 hours, during January 2017 and December 2020. CRBSI cases were associated (Chi-square) with data from the hospital Infection Control Committee and analyzed and expressed in infections per 1000 catheter-days. We describe the type of catheter and microorganisms in those infected.

**Results:** The sample consisted of 606 patients hospitalized, in a total of 7904 days of NP, being women (58%) and oncologic patients (63%). The mean rate of CRBSI in patients using NP during the four years was 1.14 in 1,000 catheters/day, not different from the overall hospital rate, which was 1.42 per 1,000 catheters/day at the same period ( $p=0.28$ ). We used the following devices for PN infusion: central venous access, peripherally inserted central catheters (PICC), and peripheral venous access in approximately 53.8%, 44.9%, and 1.3% of the patients, respectively. Considering the type of catheter, there was no difference in CRBSI in central venous access X PICC lines (1.47% x 1.53%,  $p=0.95$ ). The isolated microorganisms associated with infection in NP-catheters were gram-negative bacilli 56% fungi in 22% and multiple germs in 22%.

**Conclusion:** PN use wasn't associated with increased rates of CRBSI. Considering the type of catheter for PN, central venous access and PICC didn't differ in infections rates. The systematization of care for prevention, early identification, and replacement of suspicious catheters can be critical factors to control CRBSI related to PN.

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1. Gavin NC, et al. Does Parenteral Nutrition Increase the Risk of Catheter-Related Bloodstream Infection? A Systematic Literature Review. *JPEN J Parenter Enteral Nutr*. 2017 Aug;41(6):918-928.

**Disclosure of Interest:** J. Alves Grant / Research Support from: Grant from Fresenius Kabi - not on this subject, G. Araujo: None declared, L. Teles: None declared, S. Farias: None declared, D. Waitzberg: None declared.

#### LB-096

### IDDSI FLOW TEST, NDD, AND LINE SPREAD TEST: ANALYSIS WITH A GUM THICKENER

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**Rationale:** Several methods have been used to analyze beverage consistency for dysphagic patients. This study compared the behavior of a thickener with different analysis methods, including the Line Spread Test (LST), which was used for evaluating the behavior of the thickener in a horizontal plane, a position that can be compared to that of the tongue in the oral phase of swallowing, in addition to being a visual test. The objective of this study was to verify agreement between the proposed methods.

**Methods:** A thickener based on guar and xanthan gums, Instanth Clear, was evaluated. The samples were analyzed using viscosity methods, according to the National Dysphagia Diet (NDD); the fork-drip, spoon-tilt, and flow tests proposed by the International Dysphagia Diet Standardization (IDDSI) in the consistencies of nectar, honey, and pudding; and LST, according to Budke (2008), in nectar and honey consistencies. All tests were performed in triplicate.

**Results:** The product met the viscosity level criterion proposed by NDD. In the flow test, in nectar consistency the product corresponded to level 2, mildly thick (7.1 ml); in honey consistency to level 3, moderately thick (9.8 ml); and in pudding consistency to level 4, extremely thick (10 ml). The fork-drip and spoon-tilt tests corroborated the IDDSI, with levels 3 and 4 corresponding to honey and pudding consistencies, respectively. In LST, in nectar consistency, the product spread over 5.3 cm, being consistent with nectar for spreading over more than 4.5 cm. In honey consistency, it spread over 3.3 cm, being consistent with honey for spreading less than 4.5 cm.

**Conclusion:** These results show agreement between methodologies. The LST was consistent with the results obtained by the flow test for this gum-based thickener. These analyses are important for clinical practice, allowing the use of different methods and including more visual methods such as LST for consistency analysis.

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**Disclosure of Interest:** G. Oliveira Other: Prodiat Medical Nutrition Employee, C. Pereira Other: Prodiat Medical Nutrition Employee, K. Nascimento: None declared, L. Shmeil Other: Prodiat Medical Nutrition Employee, L. Dutra Other: Prodiat Medical Nutrition Employee, H. Santos Other: Prodiat Medical Nutrition Employee, A. P. Celes Other: Prodiat Medical Nutrition Employee.

#### LB-097

### IMPLEMENTATION OF A PARENTERAL NUTRITION HOME CARE PROGRAMME (NUTRIHOME) IN A TERTIARY HOSPITAL. PRELIMINARY RESULTS

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**Rationale:** Offering homecare service in home parenteral nutrition (HPN) helps avoid hospital admissions, allows early discharge to free up hospital beds and increases patient choice, all these aspects being especially important during the current COVID-19 pandemic.

**Methods:** Prospective study of the patients included in HPN care programme (Nutrihome), which ran from 2017-2018 as a pilot and Dec 2019-May 2021 as a programme in a tertiary hospital. It includes patient training, nursing visits and over the phone, 24-hour on-call line manned by nurses and scheduled deliveries.

**Results:** We included 8(75% women) patients, aged 54.5(37-67) years and 10(70% women) patients, aged 59.5(37-80) years, in the Nutrihome pilot and programme, respectively. HPN duration was 28.5(12.2-66) days and 140(47.2-355.5) days, respectively (Table 1).

Table 1

	Nutrihome pilot	Nutrihome programme
Malignant disease(%)	87.5	60
HPN started at the hospital(%)	100	60
HPN started at-home(%)		40(30 during the pandemic)
Training sessions/patient	3(3-3.75)	11 (11-19.2)
Training hours/patient	3.75(3.75-5)	13.75(13.75-24)
Training performed at the hospital(%)	58.3(37.5-66.6)	5.7(0-9)
Training performed at-home(%)	41.6(33.3-62.5)	94.2(90.9-100)
Nursing visits	8(7-11.5)	23(18-51.2)
Total adverse events solved(n)	37	102
Technical	26	55
Clinical	9	19
Catheter	1	15
Other	1	13
Infection rate/1000 catheter-days	2.35	0.52
Weaned of HPN(%)Deceased(%)	12.587.5	101080
Still in Nutrihome(%)		

**Conclusion:** Nutrihome has been extremely useful during this pandemic, making possible both the start of HPN and the training at the patient home, without the need of hospitalisation. The adverse events intercepted and solved by Nutrihome not only reduced the physicians' burden during those tough times and the patients' stress of being hospitalised during a pandemic but was a support for the health system.

#### References:

Pironi et al. ESPEN guideline on home parenteral nutrition. *Clinical Nutrition* 39 (2020) 1645-1666

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## Geriatrics

### LB-098

#### DEVELOPMENT OF AN AUSTRALIAN AND NEW ZEALAND GUIDELINE FOR THE IDENTIFICATION AND MANAGEMENT OF MALNUTRITION AND FRAILITY IN THE COMMUNITY SETTING

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**Rationale:** Malnutrition and frailty are common among community-dwelling older adults, resulting in poor outcomes and increased health care costs; yet most patients living with these conditions go unidentified and untreated in the community<sup>1</sup>. There is a need for community health professionals from all disciplines to understand, recognise and act on suspected malnutrition and frailty. Our team has developed a guideline, specific to the Australian and New Zealand (ANZ) context, for identifying and managing malnutrition/frailty in the community setting.

**Methods:** The guideline is underpinned by a program of research, including a comprehensive literature review; a survey of ANZ dietitians' current practices and perceptions; and interviews with dietitians, health consumers, general practitioners and community pharmacists/nurses, to inform the guideline's content and tailor it to the local context. A multidisciplinary panel of experts (dietetics, medicine, nursing, exercise physiology, pharmacy and health consumer representatives) also contributed to the guideline's development.

**Results:** This abstract focuses on the guideline's content (research findings reported elsewhere). The guideline presents an overview of malnutrition and frailty (i.e. definitions, prevalence, consequences, causes) and how these conditions are related. Specific guidance for identifying malnutrition/frailty in the community is provided, including a summary of

screening tools for use in this setting. The management of malnutrition and frailty in the community is covered, including setting goals with the patient/choosing patient-centred outcome measures, selecting/implementing nutrition interventions, monitoring/evaluation, and care transitions.

**Conclusion:** This evidence-based guideline provides information to health professionals of all disciplines on identifying and managing malnutrition and frailty in the community, addressing a gap in ANZ current practice.

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**Disclosure of Interest:** None declared.

### LB-099

#### THE INHIBITION OF THE ENDOCANNABINOID SYSTEM PARTLY RESTORES SKELETAL MUSCLE FUNCTION IN OLD OBESE AND SARCOPENIC MICE

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**Rationale:** Sarcopenia is an age-related loss of skeletal muscle mass and strength associated with changes in protein homeostasis due to lipid accumulation and anabolic resistance. These two latter phenomena are also observed in obesity and worsen when obesity and sarcopenia combined into sarcopenic obesity. The endocannabinoid system (ECS) is overactivated in obesity, but its role in sarcopenic obesity-related muscle dysfunction is unknown. The aim of this study was to evaluate the effect of an inhibition of the ECS by rimonabant on muscle function in a context of sarcopenic obesity.

**Methods:** 18-month old male mice were subjected to a control (CTL) or a high fat high sucrose (HFHS) diet for 24 weeks. Mice were orally administered with saline solution or rimonabant (10 mg/kg/d) for the last 4 week-period of the diet. Locomotor activity, motor coordination and strength were evaluated by openfield, rotarod and grip strength tests, respectively. Comparison between groups were analyzed by a 2-way ANOVA.

**Results:** Body mass was higher in HFHS mice compared to CTL mice (48.0 ± 1.5 vs. 33.5 ± 0.7 g, p<0.01), as a result of fat accumulation (34.8 ± 1.0 vs. 16.7 ± 0.8 %, p<0.01). In response to RIM, body fat mass was significantly reduced in both CTL (-16%, p<0.05) and HFHS condition (-40%, p<0.01), without affecting hindlimb skeletal muscle mass. The distance traveled in openfield was reduced by ≈ 25% in response to HFHS (1745 ± 129 vs 2247 ± 188 cm, p<0.05), but was unaltered by RIM. Grip strength evolution was improved in response to RIM in CTL (-0.045 ± 0.09 vs. -0.62 ± 0.08 g/g lean mass, p = 0.1) and HFHS conditions (-0.29 ± 0.06 vs. -0.49 ± 0.06, p<0.05). Rotarod activity was reduced by ≈ 30% in response to HFHS diet (48.5 ± 5.7 vs 68.8 ± 5.9 sec, p<0.01). The rotarod activity was unaltered in CTL mice regardless the treatment. However, the rotarod activity was increased by ≈ 60% in HFHS mice in response to RIM compared to saline treated mice (45.9 ± 6.3 vs 28.5 ± 4.6, p<0.05).

**Conclusion:** These results demonstrate that the specific inhibition of the endocannabinoid system by rimonabant is able to improve motor coordination and muscle strength in aged mice, without affecting skeletal muscle mass.

#### References:

**Disclosure of Interest:** None declared.

### LB-100

#### ASSOCIATION BETWEEN FRAILITY AND C-TERMINAL AGRIN FRAGMENT WITH 3 MONTHS MORTALITY FOLLOWING ST-ELEVATION AMI

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**Rationale:** Evaluate the association between frailty, evaluated by Clinical Frailty Scale (CFS) and FRAIL scale, and C-terminal agrin fragment (CAF) levels with 3 months mortality following ST-segment elevation myocardial infarction (STEMI).

**Methods:** This was a prospective observational study that included patients over 18 years old with STEMI admitted to the coronary intensive care unit. Within 48 hours of admission, CFS and FRAIL scale were applied and blood samples collected for serum CAF evaluation. Patients were followed during 3 months after hospital discharge, and mortality was recorded.

**Results:** One hundred and eleven patients were included; mean age was  $62.3 \pm 12.4$  years, 61.3% were male and 11.7% died during the 3 months of follow-up. According to CFS, 79.3% of the patients were classified as not frail, 12.6% as pre-frail and 8.1% as frail. According to FRAIL scale, 31.5% of the patients were classified as not frail, 53.2% as pre-frail and 15.3% as frail. In univariate analysis, CFS but not FRAIL scale was associated with mortality. In multiple logistic regression analysis, pre-frail/frail according to CFS (odds ratio [OR]: 6.118; CI 95%: 1.344–27.848;  $p=0.019$ ) and CAF levels (OR: 0.943; CI 95%: 0.896–0.992;  $p=0.024$ ) were associated with increased 3 months mortality, when adjusted by age, gender, and CK-MB levels. In a subanalysis with 53 patients older than 65 years, CFS and CAF levels were also associated with 3 months mortality.

**Conclusion:** In conclusion, frailty evaluated only by CFS and CAF levels were associated with mortality 3 months after STEMI in the general and older population.

#### References:

1. Nicolau JC, Filho GSF, Petriz JL, Furtado RHM, Precoma DB, Lemke W, et al. 2021 Brazilian Society of Cardiology Guidelines on Unstable Angina and Acute Myocardial Infarction without ST-Segment Elevation-2021. *Arq Bras Cardiol* 2021; ahead print.

**Disclosure of Interest:** None declared.

#### LB-101

#### ASSOCIATION BETWEEN INFLAMMATION AND APPETITE IN HEALTHY COMMUNITY-DWELLING OLDER ADULTS – AN ENABLE STUDY

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**Rationale:** Older adults frequently report a decrease in appetite which may increase the risk of malnutrition. Aging is associated with low-grade inflammation which might also contribute to the development of malnutrition. We aimed to evaluate the association between inflammation and appetite in healthy community-dwelling older adults.

**Methods:** In this cross-sectional study, appetite of non-smoking older adults (aged 75–85 y) was evaluated by the question: “How would you roughly estimate your appetite?” with five answer categories and grouped into “(very) good appetite” and “moderate appetite”; no one reported (very) poor appetite. Serum C-reactive Protein (CRP) was analysed according to standard procedures, and values  $>0.5$  mg/dl considered as inflammation. The association between CRP and appetite was analysed by binary logistic regression, unadjusted and adjusted for age, waist circumference (WC) and sex.

**Results:** Appetite was moderate in 13.3% of 158 participants (median age 77.0 years, 49.4% female), without differences in age, sex and WC between both appetite groups. CRP was increased in 10.8% overall, in 8.8% of those with good and 23.8% in those with moderate appetite. In the unadjusted model, participants with an elevated level of CRP were 3.2 times more

likely to have moderate appetite (95%CI: 1.01–10.44,  $p=0.047$ ). In the adjusted model, the odds of having moderate appetite were 3.1 times higher in participants with elevated CRP, but the association was no longer statistically significant (95%CI: 0.92–10.92,  $p=0.068$ ).

**Conclusion:** In healthy community-dwelling older people, we found hints for a potential association between elevated levels of CRP and a slightly reduced appetite. To further explore the role of inflammation in appetite loss of older people longitudinal studies in larger samples are needed.

#### References:

Ballou SP, Lozanski GB, Hodder S *et al.* (1996) Quantitative and qualitative alterations of acute-phase proteins in healthy elderly persons. *Age and ageing* 25, 224–230.

Lee JS, Kritchevsky SB, Tylavsky F *et al.* (2007) Factors associated with impaired appetite in well-functioning community-dwelling older adults. *Journal of Nutrition for the Elderly* 26, 27–43.

**Disclosure of Interest:** None declared.

#### LB-102

#### WEIGHT LOSS IN NURSING HOME OLDER ADULTS DURING THE FIRST COVID-19 PANDEMIC WAVE: VIRAL INFECTION OR DISRUPTION OF NUTRITIONAL CARE ORGANIZATION?

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**Rationale:** During the first COVID-19 pandemic wave, older adults living in nursing homes were severely affected by the viral disease and by disruption of the nutritional care organization at the time of containment. We aimed to measure the residents' weight change and identify the factors involved in weight loss during this period.

**Methods:** Retrospective study in three nursing homes during the 3-months period of first pandemic wave. At the beginning of the containment, collected data included: weight, BMI, disability, legal protection, food texture and required assistance for eating. Weight was also collected at the end of containment. The COVID-19 was confirmed by RT-PCR. Residents deceased during the period were not included.

**Results:** Among the 317 included residents (72% female, mean age 88, 48% with severe disability, 41% under legal protection), 111 developed COVID-19 and survived. A weight loss  $\geq 5\%$  in 3 months was observed in 32% of residents. The COVID-19 (OR 1.97; IC95% [1.06 – 3.71],  $p=0.03$ ) and the need for stimulation to eat (OR 2.59 [1.17 – 5.83],  $p=0.02$ ) were associated with weight loss  $\geq 5\%$  after adjustment for the loss disability severity, legal protection, food texture, BMI, age, and center.

**Conclusion:** The COVID-19 pandemic negatively impacted the nutritional status of older adults living in nursing homes. Weight loss was particularly observed in residents who were affected by the infection and those who needed a stimulation to eat, suggesting direct nutritional consequences of COVID-19, as well as organizational difficulties in providing nutritional care during this period.

#### References:

None

**Disclosure of Interest:** None declared.

#### LB-103

#### ENDOGENOUS PLASMA AND URINARY BETA-HYDROXY-BETA-METHYL BUTYRATE (HMB) LEVELS ARE POSITIVELY ASSOCIATED WITH NUTRITIONAL BIOMARKERS AND MUSCLE HEALTH IN COMMUNITY-DWELLING OLDER ADULTS AT RISK OF MALNUTRITION

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**Rationale:** Beta-hydroxy-beta-methylbutyrate (HMB) is the metabolite of essential amino acid leucine. There are very few studies reporting the relationship between plasma and urinary HMB levels with nutritional biomarkers and muscle health. The objectives of this cross-sectional study were to describe endogenous plasma and urinary HMB levels, and determine factors associated with HMB levels in community-dwelling older adults at risk of malnutrition.

**Methods:** A total of 609 older adults at risk of malnutrition as assessed by Malnutrition Universal Screening Tool participated in this study. Baseline plasma and urinary samples were obtained for HMB analyses. Socio-demographic data, anthropometry, nutritional biomarkers, and muscle health parameters were measured at baseline.

**Results:** Mean baseline plasma HMB level was 199 ng/mL and urinary HMB level was 4481 ng/mL. Urinary HMB levels decreased significantly with increasing age. Compared to participants aged 65 to 75 (mean = 4949 ng/mL), urinary HMB levels were 4074 ng/mL (17.7% lower) for those aged 75 to <85 and 2853 ng/mL (42.4% lower) for very old adults aged ≥85 ( $P = 0.0007$ ). Plasma and urinary HMB levels were positively associated with appendicular skeletal muscle mass index and handgrip strength (all  $P \leq 0.0106$ ). In addition, plasma HMB levels were positively correlated to total protein and 25-hydroxyvitamin D levels (both  $P \leq 0.0175$ ). Urinary HMB levels were positively associated with calf circumference, mid upper arm circumference, and hemoglobin levels (all  $P \leq 0.0136$ ), and a tendency for Modified Barthel Index score and total Short Physical Performance Battery score (both  $P \leq 0.0777$ ). There were also tendencies for positive correlation between urinary HMB levels and total balance test score and gait speed, and negative correlation with the time taken for 5 chair stands (all  $P \leq 0.0866$ ).

**Conclusion:** Urinary HMB levels were strongly and negatively associated with age. Plasma and urinary HMB levels were positively associated with key nutritional biomarkers and muscle health parameters in community-dwelling older adults at risk of malnutrition.

#### References:

N/A

**Disclosure of Interest:** S. L. Tey Other: SLT is an employee of Abbott Nutrition, D. Huynh Other: DTTH is an employee of Abbott Nutrition, Y. Berde Other: YB is an employee of Cognizant Technologies Solution Pvt. Ltd., a Contract Research Organization, which provides statistical services to Abbott Nutrition, G. Baggs Other: GB is an employee of Abbott Nutrition, S. Pereira Other: SP is an employee of Abbott Nutrition, A. McMath Other: AM is an employee of Abbott Nutrition, Y. L. Low Other: YLL is an employee of Abbott Nutrition, C. H. How: None declared, M. Cheong: None declared, W. L. Chow: None declared, N. C. Tan: None declared, S. Chew Other: STHC received honoraria for speaking engagements from Abbott Nutrition.

#### LB-105

##### EFFECTS OF INTENSIVE INDIVIDUALIZED NUTRITION INTERVENTION ON MALNUTRITION RISK AND NUTRITIONAL STATUS AMONG ELDERLY LIVING IN AGRICULTURAL SETTLEMENTS

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**Rationale:** Malnutrition is an issue which is commonly under-recognized among community living elderly.<sup>1</sup> This study aimed to assess the effects of intensive individualized nutrition intervention on malnutrition risk and nutritional status among community living elderly in agricultural settlements.

**Methods:** Malnourished and at-risk elderly aged ≥60 years old were recruited into intervention (n=30) and control groups (n=30). Intervention group received intensive individualized nutrition intervention; whilst control group received dietary counselling only. Malnutrition risk, body

weight, body mass index (BMI) and dietary intake were assessed at baseline and at three months follow-up. Malnutrition risk was assessed using Mini Nutritional Assessment-Short Form (MNA-SF). Repeated measure ANOVA was conducted for data analysis.

**Results:** At three months, mean MNA-SF score for intervention group improved significantly from being in the at risk of malnutrition category (10.6±2.3) to well-nourished category (12.1±3.4) ( $p=0.037$ ). Intervention group showed significantly higher improvement in term of weight gain at three months than control group ( $p=0.048$ ), but no changes in BMI were detected. Energy intake significantly increased from 1623±281 kcal/day to 1643±288 kcal/day ( $p=0.002$ ) in intervention group; while 1601±264 kcal/day to 1613±269 in control group. There were no statistically significant changes in nutrients intake except for carbohydrate ( $p=0.008$ ), fiber ( $p=0.004$ ) and calcium ( $p=0.009$ ).

**Conclusion:** Greater improvement was demonstrated using intensive individualized nutrition intervention approach after three-month among elderly living in agricultural settlements. Routine malnutrition identification with subsequent tailored nutrition intervention is therefore warranted.

#### References:

<sup>1</sup>Hamirudin AH, Charlton K, Walton K. Outcomes related to nutrition screening in community living older adults: a systematic literature review. Archives of Gerontology and Geriatrics. 2016 Jan 1;62:9-25.

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#### LB-106

##### VALIDATION OF PILL -5® QUESTIONNAIRE IN SPANISH

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**Rationale:** Oropharyngeal dysphagia (OD) is a common syndrome in the elderly. Treatment should be based on a multidisciplinary approach, focusing on improving patients' nutritional and functional status and quality of life. Pill dysphagia is a common problem in these patients; PILL-5® questionnaire has been used to test the ability of patients to take their medication. Since it is a questionnaire originally developed in American patients and not available in Spanish, we conducted its validation in Spanish.

**Methods:** PILL-5® was translated into Spanish by two bilingual translators and both translations were reviewed by a panel of experts to check its content and face validity. This panel of experts also redacted the definitive Spanish version of the questionnaire.

The Spanish version was back-translated and evaluated to check if there was any loss of content or significant changes from the original.

A pilot study was conducted to assess patients' understanding of the questionnaire, ambiguity on the items, frequency of response and the time it takes to fill in the questionnaire. Test-retest reliability was determined by administering the questionnaire at two different times.

**Results:** 10 patients were enrolled in the pilot study, 4 of them suffering from OD. The median score of the questionnaire was 1 (maximum 11, minimum 0). The average time to administer the questionnaire was 4,3 minutes. There was no sign of misunderstanding, and response rate was 100% in all items.

The questionnaire was administered twice, with a delay of 7-15 days. The results showed no changes between patients' scores in this second administration.

**Conclusion:** The process of translation of the questionnaire ensures an adequate cultural adaptation, keeping the meaning of the original. Preliminary data show patients' understanding of the PILL-5® Spanish version, with a strong test-retest reliability and an adequate variability between the items.

**References:**

Nativ-Zeltzer N, Bayoumi A, Mandin VP, Kaufman M, Seeni I, Kuhn MA and Belafsky PC (2019) Validation of the PILL-5: A 5-Item Patient Reported Outcome Measure for Pill Dysphagia. *Front. Surg.* 6:43.

**Disclosure of Interest:** None declared.

**Perioperative care****LB-107****PREHABILITATION MODULATES CELL PROTECTION PROTEIN EXPRESSIONS OF GUT IN MICE**

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**Rationale:** Our previous study revealed that a preoperative repeated treadmill running improves survival after gut ischemia reperfusion (gut I/R) in mice. However, the mechanism underlying amelioration of host response to gut I/R has not been clarified. Herein, we examined the expressions of cell protection proteins in mice jejunum.

**Methods:** Five-week-old, male, C57BL/6J mice (n=17) were randomized into the sedentary (SED, n=3) and the exercise group (EX, n=14). While EX mice underwent treadmill running (12 m/min, 60 min, 3 days/week) for 1 week (EX 1 WEEK, n=5), 2 weeks (EX 2 WEEK, n=4) or 3 weeks (EX 3 WEEK, n=5), SED mice received no treadmill exercise for 3 weeks. After the protocols, all mice were sacrificed for measurement of HSP 70, LC3, p62, Bcl-2 protein expression levels in mice jejunum by western blotting. Student's t-test was used for statistical analysis between SED and EX 3 WEEK. A p value < 0.05 was considered significant.

**Results:** HSP 70, Bcl-2 protein expression levels and LC3 II/I ratio were gradually increased and p62 levels were decreased time-dependently. When compared to SED, EX 3 WEEK resulted in significant changes as follows (SED vs EX 3 WEEK, p < 0.05); HSP70/ $\beta$ actin ratio:  $0.03 \pm 0.02$  vs.  $0.23 \pm 0.03$ , LC3II/I ratio:  $0.52 \pm 0.07$  vs.  $1.30 \pm 0.28$ , p62/ $\beta$ actin ratio:  $0.50 \pm 0.06$  vs.  $0.30 \pm 0.02$ , Bcl-2/ $\beta$ actin ratio:  $0.23 \pm 0.03$  vs.  $0.34 \pm 0.03$ .

**Conclusion:** Prehabilitation may reduce inflammatory response after gut I/R by modulating autophagy, anti-apoptosis and heat shock protein expressions in gut.

**References:**

Higashizono K, Fukatsu K, Seto Y, et al. Appropriate treadmill exercise improves survival after gut ischemia reperfusion in mice. *Clinical Nutrition Experiment.* 2019; 25: 36-41.

**Disclosure of Interest:** None declared.

**LB-108****ENHANCED RECOVERY AFTER SURGERY: WHAT ARE THE NUTRITIONAL OUTCOMES?**

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**Rationale:** ERAS protocols are pivotal in improving patient outcomes. Recommendations include preoperative nutritional screening, maximising nutritional intake, preoperative carbohydrate loading and early introduction of dietary intake post operatively. Delays in the reintroduction of oral diet postoperatively are associated with increased infection rates and delayed recovery. Use of oral nutritional supplements (ONS) may reduce length of stay. This audit aimed to examine nutritional outcomes in patients undergoing colorectal surgery as part of an ERAS program and to review our practice with reference to current guidelines.

**Methods:** A retrospective review of 2018 medical records was conducted. Information was gathered on anthropometry, Malnutrition Universal Screening Tool (MUST) score preoperatively, on admission and weekly, reintroduction of diet postoperatively and use of ONS.

**Results:** Forty-four patients were included. 66% of patients were male. The median age was 62 years old, while the median length of stay was 7 days (range 3-27 days). Twenty-seven patients (61%) had a diagnosis of cancer. Good compliance with MUST was observed preoperatively where 43 patients (98%) had a MUST completed. During admission, 17 patients (38%) were missing an admission weight, while 20% were not weighed at all. Twenty-five patients (57%) had a LOS  $\geq 7$  days but only 11 of these had all weight measurements recorded. Weight loss amongst patients that lost weight (n=25) ranged from 3-9.7%, with an average loss of 4.5%. Eight patients (18%) had a percentage weight loss between 5-10%. One third of patients remained on light diet until discharge. No patients could meet their estimated nutritional requirements on the light diet.

**Conclusion:** Increase nutrition education preoperatively to optimise nutritional status perioperatively. Regular screening for malnutrition and adherence to MUST protocol is essential as all groups experienced weight loss. A collaborative approach to progress patients on to a high protein high calorie diet earlier post-operatively is essential. ONS should be introduced post-operatively for all patients on the ERAS pathway.

**References:**

Guidelines for Perioperative Care in Elective Colorectal Surgery: Enhanced Recovery after Surgery (ERAS) Society Recommendations 2018.

**Disclosure of Interest:** None declared.