weight on the plate or individual food items corresponded to ± 15 % before serving or ± 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 ± 15 %. 2) Of returned menu weights (n= 306), 70 % were within ± 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 ± 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
O42

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

X. Zhang *, H.P. Shi. Department of Gastrointestinal Surgery/Department of Clinical Nutrition, Beijingshijitan Hospital, Capital Medical University, 100038, Beijing, China

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.

O43

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

A. Fischer *[1], R. Barazzoni [2], S. Tarantino [3], A. Laviano [4], C. Veraar [1], I. Sulz [3], S. Schneider [5], A. Lassnigg [1], C. Cuerda-Compes [6], E. Pestana [7], M. Hiesmayr [3] on behalf of nutritionDay research group. [1] *Division Cardiac Thoracic Vascular Anaesthesia and Intensive Care, Medical University, Vienna, Vienna, Austria;* [2] *Medicine, Surgery and Health Sciences, University of Trieste, Trieste, Italy;* [3] *CEMSIIS, Medical University Vienna, Vienna, Austria;* [4] *Department of Clinical Medicine, Universita La Sapienza, Roma, Italy;* [5] *Gastroenterology and Nutrition Department, Archet University Hospital, Nice, France;* [6] *Nutrition Unit, Hospital General Universitario Gregorio Maranon, Madrid, Spain;* [7] *Scientific Affairs, Market Access & Education Business Unit Enteral Nutrition - Pharmaceuticals Division, Fresenius-Kabi, Bad Homburg, Germany*

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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O44

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

E. Poggiogalle *[1], M. Fontana [2], M. Di Martino [3], A.M. Giusti [1], F. Frigerio [1], C. Lubrano [1], L. Gnessi [1], S. Mariani [1], A. Lenzi [1], C. Catalano [1], L.M. Donini [3]. [1] *Experimental Medicine, Italy;* [2] *Biochemical Sciences, Italy;* [3] *Radiological Sciences, Sapienza University, Rome, Italy*

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}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}H-MRS). Postprandial lipid metabolism was assessed through hourly measurement of plasma triacilgycerols (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

S. Santini [*,1], N. Vionnet [1], M. Suter [2], J. Pasquier [3], D. Hans [4], N. Pitteloud [1], E. Gonzalez-Rodriguez [4], L. Favre [1]. [1] *Division of Endocrinology, Diabetology, and Metabolism, Switzerland;* [2] *Department of Visceral Surgery, CHUV, Switzerland;* [3] *Center for Primary Care and Public Health, Unisanté, Switzerland;* [4] *Interdisciplinary Center for Bone Diseases, CHUV, Lausanne, Switzerland*

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[SD=6.2] vs 59.4[SD=3.2] yrs (*p*=0.4) and mean BMI was 29.6[SD=4.9] vs 31.1[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%[SD=10] and excess weight loss was 67.5% [SD=29.2]. Compared controls, BS patients showed higher LM percentage (57.7%[SD=8%] vs 52.5%[SD=5%], *p*=0.001) and reduced FM (39.4% [SD=8.4%] vs 45.9%[SD=5.4%] *p*<0.01) associated with lower VAT (750.6 [SD=496] vs 1295.3[SD=688] gr, *p*<0.01), and android fat (44.6%[SD=7.5%] vs 48.21%[SD=4.9%]). Post-BS women showed a better lipid profile compared to controls (total cholesterol 4.8[SD=0.9] vs 5.5[SD=0.94] mmol/l, *p*<0.001; LDL 2.4[SD=0.8] vs 3.4[SD=0.8] mmol/l *p*<0.001; HDL 1.9[SD=0.4] vs 1.6[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

H. Huber [*,1], B. Stoffel-Wagner [2], M. Coenen [2], L. Weinhold [3], M. Schmid [3], P. Stehle [1], M.-C. Simon [1]. [1] *Institute of Nutrition and Food Science, University of Bonn, Germany;* [2] *Institute of Clinical Chemistry and Clinical Pharmacology, Germany;* [3] *Institute of Medical Biometry, Informatics and Epidemiology, University Hospital Bonn, Bonn, Germany*

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 y-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

B.D.A.M. Ferreira [*], D. Fonseca, P. Sala, N. Machado, C. Cardinelli, A. Prudêncio, R. Torrinhas, D. Waitzberg. Dep. of Gastroenterology, FMUSP, São Paulo, Brazil

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).