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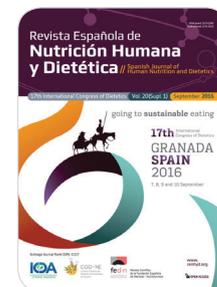


**POSTER
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17th International Congress of Dietetics

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POSTER COMMUNICATIONS

APPLIED DIETETICS

P-001: DEVELOPING A METHODOLOGICAL FRAMEWORK FOR ASSESSING DIETARY DATA QUALITY IN A HEALTHY LIFESTYLE CLINICAL TRIAL

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Introduction: Accurate and valid dietary intake data is the basis for investigating diet-disease relationships. Potential data discrepancies can be introduced both when collecting and analysing data despite rigorous quality assurance protocols. The aim of this pilot study was to develop a framework for assessing dietary data quality (DQ) in a healthy lifestyle clinical trial.

Methods: A 1% random sample (n=4) of paper-based diet history records from participants (n=377) in a registered clinical trial was extracted as a pilot audit. All items listed on the source data underwent a 100% manual verification check with the food output analysis data from FoodWorks software. The observed discrepancies between input and output data relating to intake of food items, quantity and frequency were recorded. Discrepancies involving mixed-dish analyses were also assessed using the basic recipe information and yield factors. DQ assessment and management frameworks, and spreadsheet error classifications from the Information Sciences literature were adapted and simplified to propose a "fit-for-use" coding scheme and process model based on the observed discrepancy incidences related to intake of food items, quantity and frequency. **Results:** There were 17 discrepancy instances observed in the pilot sample, which included intake of food items (n=13), quantity (n=3) and frequency (n=1). A coding scheme comprised of four distinct sections was proposed to assess discrepancy types, food items, meaningfulness related to discrepancies and discrepancy reasons. The process model represented the DQ assessment process, proceeding through to multiple iterations of the proposed coding scheme. **Practical application:** Implementing a standardised dietary DQ assessment is likely to reduce discrepancies between source data and analysis output for dietary intake data. Though needs to carefully consider the methodology behind dietary assessment methods to which DQ is applied. The coding scheme and process model proposed here offers a systematic approach to evaluating dietary DQ in research setting.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-002: WHAT COMMUNICATION SKILLS DO DIETITIANS USE IN PRACTICE?

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Introduction: Communication is essential for establishing patient engagement, with greater patient engagement being linked to increased recall and agreement on decisions made during the consultation. However discrepancy exists between professional's perception of communication skill use and skills utilised in practice. This qualitative study will explore the communication skills used in practice and the relationship to agreement about decisions made during the consultation. **Methods:** Consultations between dietitians and patients were audio-recorded. Immediately following the consultation dietitians and patients independently recorded decisions made in a booklet. Patient and dietitian agreement about consultation decisions were collated. Qualitative analysis was conducted to compare the types of communication skills which resulted in greater agreement between dietitian and patient. (Communication skills included: reflection, clarification, summarising, paraphrasing, supportive and confirming statements and use of exploratory questions). **Results:** Twenty audio-recordings were analysed: ten with complete agreement and ten with complete disagreement about decisions. Reflections and clarifications were most frequent and accounted for 60% of the communication skills used. Consultations with agreement were 1½ times more likely to use reflections, clarifications, summarising, paraphrasing, supportive and confirming statements than consultations with disagreement. Consultations with agreement used exploratory questions to examine patient's thoughts, feelings and self-care management practices. These questions were four times more frequent in consultations with agreement compared to consultations with disagreement. **Conclusions, discussion and/or practical application:** In 'successful' consultations indicated by greater agreement between dietitian and patient about decisions, dietitians employed a number of active listening skills and utilised exploratory questions to understand the patient's perspective. Agreement about decisions can act as a simple indicator of communication skill use. Disagreement about decisions may indicate the need for further communication skills training.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-004: DIETITIAN LED COELIAC ANNUAL REVIEW CLINICS CONCLUSION – THE USE OF DIETITIANS TO UNDERTAKE ANNUAL MEDICAL REVIEW OF COELIACS IS A SAFE AND COSE EFFECTIVE SOLUTION FOR FUTURE SUSTAINABLE SERVICE DELIVERY

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Introduction: There has been a major increase in referrals to Gastroenterology clinics over the last 5yrs and consequent challenges with regards to capacity to review patients with chronic diseases. Collaborative working resulted in the pilot of a Dietitian-led coeliac review clinic to improve consultant capacity. An Extended Scope Practice Dietitian (ESP) was trained to undertake the medical annual reviews. **Objectives and target population:** The objective was to test the safety, effectiveness and efficiency of an ESP Dietitian undertaking the medical annual coeliac review. Previous theories and investigations: The British Society of Gastroenterology (BSG) and NICE (National Institute for Clinical Effectiveness) recommend coeliac's have a medical review annually. Review frequency within South Eastern Trust has increased beyond the 12 months up to 3 years. **Intervention(s):** A protocol was developed and review patients identified. The dietitian was trained in venepuncture and to develop skills discussed selected patients with the Consultant within one week of clinic. A user satisfaction survey was designed. **Evaluation and Results:** 123 patients were reviewed by the dietitian with only 23 (18%) requiring medical intervention. The ESP Dietitians liaised with GP's/Consultants regarding outstanding tests including: pneumococcal Vaccination (61%); bone density – (27 patients referred for DEXA scans); red flag symptoms (23 patients). The user satisfactory survey indicated that: 98% felt the annual review by the Dietitian was beneficial; 100% were satisfied with the diet related questions and felt they were provided with enough information; 100% were satisfied with their appointment at the Dietitian-led coeliac clinic; 86% were

happy to be reviewed at the Dietitian-led coeliac clinic in the future. **Conclusions of authors and discussion:** This initiative was well received by patients and demonstrates safe and efficient use of dietetic services to review patients with coeliac disease. This may provide cost-effective sustainable coeliac disease services for future planning.

COMPETING INTERESTS: The authors of the document can confirm there is no conflict of interest.

P-005: A RETROSPECTIVE INVESTIGATION OF THE EFFECT OF FIBRE MODIFICATION ADVICE FOR PATIENTS RECEIVING CHEMOTHERAPY AND RADIOTHERAPY TREATMENT

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Introduction: Whilst oncology treatments reduce mortality, the side effects can impact on a patient's quality of life, particularly those that affect the gastrointestinal (GI) tract causing GI upset including constipation and diarrhoea. It is thought that 95% of patients receiving treatments develop GI changes (including constipation and diarrhoea), with 50-80% reporting effects on quality of life. The low irritant, high fibre (LIHF) diet is used to alleviate the GI symptoms of other disorders with similar symptoms, however to date, there is no published evidence to support the use in oncology patients. Aim is to evaluate the effects of a (LIHF) diet in patients suffering side effects from chemotherapy and radiotherapy. **Methods:** A retrospective analysis of patients referred to Oncology Dietitians at the Royal Surrey County Hospital in Guildford was conducted. One hundred and seven oncology patients met inclusion criteria (65% females, 35% males) all receiving fibre modification advice as part of their dietetic management, referred with gastrointestinal symptoms due to oncology treatments. Data were collected from dietetic patient record cards, recorded onto excel and analysed using GraphPad. **Results:** Thirty-seven patients (35%) reported gastrointestinal symptoms including diarrhoea, constipation, and fluctuation and bloating to have completely resolved after following a LIHF diet, 13 patients (12%) reported a reduction in symptoms and 41 patients (39%) reported no change in symptoms post diet. Statistical analysis showed no significant benefit of the diet ($p=0.386$). **Conclusions:** This is the first study to investigate the 'LIHF' diet alleviating GI symptoms secondary to oncology treatments. Almost half of patient's GI symptoms associated with chemo- and radiotherapy were improved. Further research with a control group is warranted to investigate the LIHF diet role.

COMPETING INTERESTS: The authors of the document can confirm there is no conflict of interest.

P-006: ASSOCIATION BETWEEN CHANGES IN TASTE THRESHOLDS AND COOKING AND EATING EXPERIENCE IN JAPANESE CUISINE

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Introduction: Taste perception influences eating behavior and hence body mass. Taste thresholds can be improved through training. Traditional Japanese cuisine incorporates a balance of the five basic tastes (sweetness, sourness, saltiness, bitterness and umami). We attempted to demonstrate that taste thresholds could be improved through scheduled training in preparing and eating Japanese cuisine. **Methods:** Forty-one female college students who took a semester-long course in cooking Japanese cuisine participated in this study. Differential thresholds for the five basic tastes were determined according to whole-mouth gustatory methods used in many previous studies. The compounds used were taste solutions dissolved in bottled water. Samples were prepared for the assessment of sweetness (sucrose), sourness (citric acid), saltiness (sodium chloride), bitterness (caffeine) and umami (sodium glutamate hydrate) using five-level dilution techniques. Participants were also asked to answer questionnaires about their lifestyle. All measurements were performed twice: before and after the semester. **Results:** The percentages of correct answers for the five tastes before and after the semester were sweetness (39.0% vs. 63.4%), sourness (85.4% vs. 87.8%), saltiness (75.6% vs. 75.6%), bitterness (39.0% vs. 41.5%) and umami (65.9% vs. 75.6%). The number of subjects who improved or maintained the taste threshold for sweetness increased significantly following the course. For umami, the

taste threshold improved slightly, but the other three taste thresholds did not change. Changes in taste thresholds were not associated with subjects' lifestyle. **Conclusions, discussion and/or practical application:** Gustatory thresholds for sweet taste and umami can be improved through an accumulation of cooking and eating experience in traditional Japanese cuisine, independent of dietary or physical activity patterns. In the long run, these changes in taste perceptions are considered to influence eating behaviors such as food choices, and our results may contribute to good health. Further research is needed on the correlations between taste perception, body mass and continuous cooking and eating of Japanese cuisine.

COMPETING INTERESTS: The authors of the document can confirm there is no conflict of interest.

P-007: IDENTIFICATION OF MALNUTRITION RISK FACTORS AND VALIDATION OF A NUTRITION SCREENING TOOL IN SINGAPORE INTERMEDIATE – AND LONG-TERM CARE SETTINGS

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Introduction: Nutrition screening is important for early identification and management of malnourished patients in intermediate and long term care (ILTC) settings. However, little is known of a validated nutrition screening tool and the malnutrition risk factors in this patient population in Singapore. The study aimed to identify the risk factors for malnutrition and to validate a nutrition screening tool (NST-ILTC) in Singapore ILTC. **Methods:** This cross-sectional case-control study included 120 and 127 patients from a community hospital and nursing home, respectively. Nutrition screening and assessment using the NST-ILTC and Subjective Global Assessment (SGA) were completed by a dietitian. Regression analysis was used to identify the risk factors for malnutrition. Receiver operating characteristic analysis and diagnostic performance of the NST-ILTC was compared against SGA to determine area under the curve (AUC), sensitivity, specificity, positive and negative predictive values. **Results:** Sixty cases (malnourished) and 187 controls (well-nourished) were identified. Malnourished patients were older (77.6 ± 10.7 vs. 73.9 ± 12.4 yrs, $p=0.04$) and had lower body mass index (17.0 ($15.7, 19.9$) vs. 20.5 ($18.0, 23.9$) kg/m^2 , $p<0.01$). Being underweight ($\text{OR}=9.48$), experienced significant weight loss ($\text{OR}=12.28$) and persistently decreased oral intake ($\text{OR}=25.94$) were significant risk factors for malnutrition (all $p<0.01$). The AUC, sensitivity, specificity, positive and negative predictive values of the NST-ILTC against SGA were 0.88, 77%, 83%, 59%, and 92%, respectively. **Conclusion:** The NST-ILTC is a valid nutrition screening tool with good diagnostic performance for early detection of malnutrition in Singapore ILTC. Weight and intake monitoring in ILTC are important in identifying those at risk of malnutrition.

COMPETING INTERESTS: The authors of the document can confirm there is no conflict of interest.

P-008: NOCTURNAL ENERGY INTAKE MODIFIES CARDIAC AUTONOMIC NERVOUS SYSTEM ACTIVITY DURING NIGHTTIME SLEEP IN HEALTHY COLLEGIATE WOMEN

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Objective: Although women experience insomnia more frequently than men, few studies have investigated the effects of nocturnal dietary intake on sleep. This study aimed to examine the effects of nocturnal energy intake on cardiac autonomic nervous system activity during nighttime sleep in healthy women. **Methods:** Twenty four healthy collegiate women (mean \pm SD; age, 21.0 ± 0.8 yrs; body mass index, 19.0 ± 1.7 kg/m^2) participated in this randomized crossover trial, and were assigned to the High Nocturnal Intake group (H-NI) and Low Nocturnal Intake group (L-NI). Energy ratios of each test meal (morning, lunch, and dinner) to total energy intake were 1:1:2 and 1:2:1 in H-NI and L-NI groups, respectively. Participants wore an ECG recorder (RAC3103, Nihon Kohden Corp, Japan) and an activity and sleep monitor (Motionlogger[®] Actigraph, Ambulatory Monitoring, Inc., USA) before dinner, and removed after waking up the next morning. Power spectral analysis of heart rate variability was used to calculate low frequency (0.04-0.15Hz, LF), high frequency (>0.15Hz, HF), and total spectral power (TP). Cardiac sympathetic

(SNS) and parasympathetic (PNS) nervous system activity were evaluated as LF/HF and HF/TP, respectively. **Results:** Mean HF/TP of the entire sleeping period was lower in the H-NI group than in the L-NI group (41.7 ± 11.4 vs. 45.0 ± 12.13 , $P=0.034$). When comparing the means of the initial 3-hour sleeping period, LF/HF (0.87 ± 0.82 vs. 0.66 ± 0.82 , $P=0.013$) and HF/TP (45.6 ± 13.9 vs. 51.5 ± 11.8 , $P=0.002$) were higher and lower, respectively, in the H-NI group compared to the L-NI group. No significant differences in sleep latency and sleep efficiency were observed between the groups. **Conclusion:** High nocturnal energy intake increases and decreases SNS and PNS activities, respectively, indicating nonrestorative nocturnal sleep.

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P-009: THE DELIVERY OF NUTRITION INFORMATION FOR PEOPLE WITH TYPE 2 DIABETES IN COMMUNITY PHARMACIES, A PILOT PROJECT

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Introduction: Community pharmacists (CPs) provide expert and accessible services for people with type 2 diabetes (T2DM). Services may include nutritional advice however it is unknown to what extent this is provided in practice. The aim of the project was to pilot a questionnaire that explored the role of pharmacists in giving nutritional advice for people with T2DM. Ethics approval was obtained from the University of Hertfordshire. **Methods:** An online *ad hoc* questionnaire exploring CPs' perceived role in the delivery of nutritional advice, the format and frequency of the advice and the sources of nutritional information, was developed and pre-piloted with CPs. Two hundred CPs working in one county in England were emailed a link to the questionnaire and given three weeks to respond. Data were analysed using descriptive statistics and thematic analysis. Results: All 16 CPs who responded saw people with T2DM at least daily. They only sometimes gave nutritional advice, taking the form of a general conversation about food. A lack of knowledge was the main barrier to giving advice. Five respondents gave written information and 12 recommended written nutritional information, mainly from a national diabetes charity. Most CPs did not refer people with T2DM to a dietitian as they were not aware that they were able to do so and most had not received any nutritional training. **Conclusions, discussion and/or practical application:** This was a small study aiming to pilot an online questionnaire with CPs. The low numbers of respondents compared to the number of potential respondents suggests that the method of administration of the questionnaire may need review for future projects. This research has confirmed the accessibility of CPs to people with T2DM and thus their potential in supporting their nutritional management. However CPs may need guidance in accessing appropriate resources, in signposting patients to appropriate sources of nutrition information including dietitians and nutrition training.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-010: THE PREDICTION OF ATHLETE RESTING METABOLIC RATE – IS IT TIME TO REASSESS THE METHOD?

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Introduction: Effective energy prescription requires an accurate assessment of the athletes' daily energy expenditure. The use of published prediction equations using total body mass (TBM) or fat-free mass (FFM) with other covariates is common; but there is little evidence to validate their use or to determine which are most predictive in athlete groups. **Methods:** This study compared measured resting metabolic rate (RMR) using indirect calorimetry to RMR using 17 prediction equations. Anthropometric and metabolic data was collected for 23 male rugby athletes and a literature review was conducted for evidence relating to the measurement and prediction of RMR in athlete populations. Paired samples T-tests and root mean square prediction error (RMSPE) were used to compare measured and predicted RMR. **Results:** The prediction equations

significantly and systematically underestimated RMR in rugby players for all equations ($p=0.001$). The Harris Benedict equation provided the most accurate estimate of RMR and predicted energy requirements within ± 189 kcal/d (RMSPE). The commonly-recommended Cunningham equation using FFM was predictive ± 217 kcal/d (RMSPE), but was originally developed using retrospective calculations of FFM from TBM. **Conclusions, discussion and/or practical application:** There are several sources of error that need to be addressed when applying these prediction equations to athletes. While there is a strong, linear relationship between TBM or FFM and RMR, there is a need to identify the unique characteristics of athletes that act as covariates to develop effective prediction equations for athletes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-012: WHAT NUTRITION INFORMATION ARE DIETITIANS USING WITH THEIR PATIENTS WHO HAVE TYPE 2 DIABETES?

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Introduction: Dietitians offer specialist evidence-based dietary advice to their patients. Dietary advice for people with type 2 diabetes (T2DM) including written nutrition information (NI) is a key component of the management plan. The aim of the project was to investigate the NI used by dietitians with people with T2DM. **Methods:** An online *ad hoc* questionnaire exploring whether dietitians produced NI, whether they have had training in the production, any patient involvement in the production, other sources of NIs, factors affecting choice of NIs used and the provision of NIs to other healthcare professionals (HCPs) was developed and pre-piloted. Individual dietitians and departments with dietitians who were working with people with T2DM across England were emailed a link to an online questionnaire. Data were analysed using descriptive statistics and thematic analysis. Ethics approval was obtained from the University of Hertfordshire. **Results:** All 93 respondents used NIs in their consultations. The main sources were a national diabetes charity and a national provider of nutrition information. The main reason given for their use was that the information met the needs of patients. Two thirds of respondents also used NIs produced by their own departments. However almost 40% reported not having any training in the production of NIs and only 10% involved patients in their development. Over 80% of respondents also supplied HCPs with information; nurses and GPs being the main recipients. **Conclusions, discussion and/or practical application:** Dietitians are using evidence-based information and in ensuring HCPs who work with people with T2DM have access to appropriate resources. However their lack of access to training in the development of NIs and in involving patients may limit the effectiveness of resources developed by their own departments. Dietitians could benefit from training in the development of NIs and should be encouraged to involve patients in the development process.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-013: DEVELOPMENT OF A TOOL TO MONITOR DIET QUALITY IN A WEIGHT LOSS INTERVENTION TRIAL: DIET QUALITY TRACKER (DQT)

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Introduction: Diet quality indices (DQIs) are used as food-based holistic tools in nutrition research to help establish trends in diet-disease relationships. Applying the same principles in a trial context enables an assessment on the impact of changing dietary patterns on health outcomes through a whole of diet approach. As advice is given in terms of foods and dietary patterns in trial settings, this has significant implications for assisting with translating research to practice. This study aimed to develop the Diet Quality Tracker (DQT), a novel tool, for use in a weight loss intervention trial. **Methods:** A secondary analysis of baseline data from the HealthTrack study was employed. A published 'ready reckoner' and the Australian Dietary Guidelines were used to provide serving equivalents and daily consumption standards to develop the scoring criteria for 11 food groups

used in the DQT. A score of '1' was awarded if average daily intake met the scoring criteria for a food group, to a maximum of 11. Higher total scores were indicative of higher levels of diet quality. The DQT was compared against five idealised diet models and applied to HealthTrack data to assess relationships with weight, BMI, serum lipids and blood pressure. **Results:** Data on (n=332) participants were included. The idealised energy models achieved total scores of 9 and 10 out of 11. The index was significantly and negatively associated with weight, BMI, total cholesterol, LDL and total cholesterol: HDL. Total scores ranged between 2–8; median total score 5 (IQR:4–5). **Conclusions, discussion and/or practical application:** The DQT has potential utility as a tool for monitoring diet quality in a trial setting. Validation of the tool will be undertaken in the near future.

COMPETING INTERESTS: CW is supported by a PhD scholarship. The HealthTrack study was funded by the Illawarra Health and Medical Research Institute and the California Walnut Commission.

P-014: ANALYSIS OF DIETARY INTAKE AND ADHERENCE TO THE MEDITERRANEAN DIET IN A GROUP OF UNIVERSITY STUDENTS

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Introduction: The current food pattern in developed countries has been associated with an increase in the prevalence of non-communicable chronic diseases. University students eating habits are moving away increasingly from the Mediterranean Diet (MD) due to high intake of processed and fast foods, meat, and soft drinks. Both nutrition and physical activity are essential to preserve an appropriate health. **Objective:** To analyze food intake, Mediterranean diet adherence, and physical activity in a group of University students. **Methods:** Cross-sectional study conducted on 49 students from the University of Valladolid. The weight and height were determined. The physical activity was evaluated by the GPAQ questionnaire. A food frequency questionnaire and a three-day food record were completed for the food intake analysis. The MD adherence was estimated by the Mediterranean Diet Score (MDS). Differences by sex and sport practice were analyzed with the T-test or with the Mann-Whitney-test. Statistical significance was reached at $p < 0.05$. **Results:** According to the BMI, all subjects had normal weight, with no significant differences depending on the sports practice. Women had a lower physical activity level than men. The diet in the whole sample was slightly hyperproteic, rich in fats and cholesterol, with an inadequate fat profile and poor in carbohydrates and fiber. Generally, the students covered the micronutrients requirements, although the calcium was low. From a qualitative point of view, there was a scarce consumption of fruits and vegetables, cereals, olive oil, fish and nuts; and an excessive intake of meat, butter, processed bakery foods, sweets, snacks and soft drinks. Around 50% of the sample had a low or very low MD adherence. **Conclusion:** The University student food pattern does not accomplish the nutritional objectives within the Spanish population and have a medium-low Mediterranean diet adherence.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-015: SUPPORTIVE DIETITIAN-PATIENT RELATIONSHIPS IMPROVE BEHAVIOURS AND PROGRAM SATISFACTION IN PATIENTS WITH DEPRESSION AND ANXIETY

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Introduction: Strong associations between depression, anxiety and metabolic conditions mean that dietitians see patients with depression and anxiety in practice even when referred for other physical health conditions. The aim of this study was to determine characteristics of dietary consultations that may assist dietitians to facilitate behaviour change in their patients with depression and anxiety. **Methods:** General practitioners (GP) referred 94 patients currently being treated for depression and/or anxiety to a randomised controlled trial aiming to improve symptoms of depression and anxiety. Patients were randomised by GP to either a 12-week individually tailored lifestyle counselling intervention with dual qualified dietitian/exercise physiologists (DEPs), or a 12-week attention control condition that involved telephone contact with the DEPs. Mental health and dietary outcomes are presented elsewhere; this paper reports on feasibility, patient goals

and experiences. Patient goals were documented throughout the study, and all participants were invited to attend an interview using a semi-structured questionnaire to provide feedback on the study. **Results:** Over the course of the intervention, patients in the intervention group identified dietary (74%), physical activity (84%) and other (13%) lifestyle-related goals, with physical activity goals often selected earlier in the intervention. Patients reported that their relationship with the DEP was important in improving their self-efficacy and making behaviour changes. Patients reporting the highest levels of success focused on improvements in behaviours rather than outcomes. **Conclusions:** Patients with depression and anxiety were willing to attempt behaviour change and many adopted physical activity prior to making dietary changes. Building rapport with patients and focusing on improvements in behaviours led to greater patient satisfaction with the intervention. These findings are based on one small study. More behavioural nutrition interventions are needed in patients with depression and anxiety that evaluate mental health and dietary outcomes as well as factors influencing patients' experiences and behaviours.

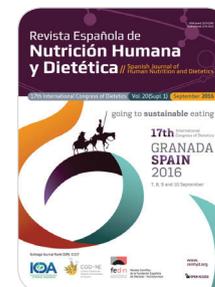
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CLINICAL NUTRITION AND DIET THERAPY

P-016: NUTRIENTS AND ITS ASSOCIATION WITH GLYCOSILATED HEMOGLOBIN IN DIABETIC TYPE 2

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Introduction: Hyperglycemia is the main characteristic of diabetes (DM). CHO restriction in diet has the greatest effect decreasing blood glucose levels in both 1 and 2 DM. **Methods:** 714 type 2 diabetic men and women, between 27 and 90 years were interviewed each subject at Family Health Centers of Santiago de Chile, we applied a food survey and anthropometric assessment. logistic regression test was performed, was also estimated the value of the odds ratio (OR) and its confidence interval (CI). **Results:** The mean BMI was $30.8 \pm 5.7 \text{ kg/m}^2$, 29.8% of the subjects had HbA1c compensated. Only the high intake of carbohydrates (75th percentile) was associated with an increased risk of elevated HbA1c OR=2.7 (95% CI 1.5 to 4.8; $p < 0.001$). **Conclusions, discussion and/or practical application:** The high intake of rapidly absorbed carbohydrates, high in sucrose and low in fiber is associated as a risk factor to increase HbA1c. The total energy intake and healthy eating patterns should be prioritized on the distribution of macronutrients. It is important to advice from a nutrition expert specialized in diabetes, who together with the medical team determine the best treatment to meet the patients individual goals.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-017: DIFFERENT STOOL CHARACTERISTICS IN RATS AFTER ADMINISTRATION OF LIQUID DIET CONTAINING VARIOUS PECTINS

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Introduction: Dietary fibers are included in liquid diets to prevent diarrhea. Pectin, a dietary fiber, has not been well studied to determine what type of pectin is suitable for that purpose. In this study, the effects of liquid diets containing various pectins on stool characteristics were examined in rats. **Methods:** Five test liquid diets (LD) were given *ad libitum* to male Sprague-Dawley rats (body weight 360-410g, n=5 for each group) for 2 weeks. The LDs contained high methoxy pectin (HM group), low methoxy amidated pectin (LMA group), low methoxy pectin (LM group), or very low methoxy amidated pectin (VLMA group). The LD without pectin was given to the pectin-free (PF) group. Stool characteristics were evaluated for the last 5 days. The fermentability of the pectins was analyzed by measuring galacturonic acid in the samples. **Results:** Normal stools were observed in the LM and VLMA groups, watery stools in the HM and PF groups, and muddy stool in the LMA group. The gelation of the LD after mixing with artificial gastric fluid occurred only in the LM and VLMA groups. The average fermentability of the pectin was 95%, 72%, 76% and 55% for the HM, LMA, LM and VLMA groups, respectively. **Conclusions, discussion and/or practical application:** The stool characteristics differed among the LDs containing different pectins, probably because of the gel-forming ability of the pectin in the LD. The fermentation of the pectins differed significantly among each other, suggesting the possibility that undigested pectin might also affect stool consistency. Thus, appropriate pectin should be used to prevent diarrhea during LD administration. Whether this phenomenon could be observed in humans deserves further evaluation.

COMPETING INTERESTS: All authors are employees of Otsuka Pharmaceutical Factory, Inc.

P-018: A STUDY TO EXPLORE CURRENT PRACTICE FOR THE REINTRODUCTION OF DIET AFTER A PERIOD OF EXCLUSIVE ENTERAL NUTRITION (EEN) FOR THE TREATMENT OF CROHN'S DISEASE (CD)

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Introduction: The NICE guidelines (2012) for the management of Crohns disease (CD) offers no detailed treatment plan for the reintroduction of food after the EN. This study aims to examine current practices in the reintroduction of food following EEN and will gather information about current practice from dietitians and service users/carers experiences of this. **Methods:** An observational cohort study using an online questionnaire was used to explore current practice for the reintroduction of diet after EEN in the treatment of CD. Ethical approval was obtained Leeds Beckett University LoREC. **Results:** There were 41 surveys completed by Dietitians and 39 by service users. There is varying practice in this area: 63% dietitians report a LOFFLEX approach, 17% elimination diet, 27% a Trusts own policy, 33% another approach including FODMAP, modified LOFFLEX and low fibre/low residue, 0% paediatric dietitians used LOFFLEX approach. There was no consensus from dietitians about the length of time reintroduction of food may take; 18 either do not stagger reintroduction of foods or complete within 1week. The most common duration advised was 1-3weeks. 73% didn't feel there is currently enough guidance. Service users ate 10 foods from day one of the reintroduction stage; dietitians' allowed an average of 16 foods. **Discussion:** Results are consistent with the findings of Whitten *et al.* (2012). For some service users, the treatment was some time ago which means the results may be bias by recall. Whilst there was some consensus amongst the paediatric dietitians in this study, 24% of dietitians are not in specialist posts; a consensus document would be a useful update to the original LOFFLEX research. Further research is needed but in interim, a consensus document is needed particularly on structuring the food challenge process. **Conclusions:** There was little consensus amongst dietitians about the process of food reintroduction following EEN. This is an area requiring further study. The experiences of service users varied.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-019: EFFECT OF NUTRITION ON THE FUNCTIONAL STATUS OF INPATIENTS UNDERGOING STROKE REHABILITATION

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Introduction: Dietitians have an integral role in preventing under-nutrition and in maintaining energy/stamina of patients to participate in intense rehab therapies. This study evaluated the effect of nutrition on functional outcomes hypothesizing that nutrition interventions positively affect functional independence. **Methods:** A prospective chart review of 100 medically stable, non-demented patients admitted to the stroke unit between April 2010–May 2012 was conducted. The electronic record of Functional Independence Measure (FIM), a national benchmarking instrument used by inpatient rehab programs, provided the admission/discharge scores for 11 functions (from the Self-Care/Transfers/Locomotion domains). The total score ranged from 11 (total assist) – 77 (complete independence). The Rehab Nutrition Template, a tool developed by the study facility and endorsed by a provincial committee of dietitians as an outcome template for the mobility impaired, provided the nutrition data. This template has 7 indicators (appetite, intake, weight loss, affect, mobility, albumin and BMI). The scores ranged from 7 (under-nutrition) – 28 (adequate nutrition). Non-nutritional factors that might affect nutritional/functional status were also collected. **Results:** Length of stay (LOS) ranged from 7-169days. 68.0% participants reached level one (minimal) care needs by discharge and 72.0% were discharged to their homes. Paired T-test showed significant difference in nutrition/functional scores from admission to discharge ($p<.01$). Bi-variate correlation analysis indicated that admission/discharge nutrition scores had: a) linear correlation with admission/discharge functional scores ($p<.01$) and b) negative correlation with LOS ($p<.001$). Discharge care level and nutrition scores were negatively correlated ($p<.001$). **Conclusion:** Patients progressed nutritionally since admission. Nutrition contributed to functional improvement and decreased LOS/care needs. The strength of relationship between nutrition and functional outcomes, though significant, varied from weak to moderate. Nutrition Template could be modified/validated with rehab-specific, sensitive indicators. Rehab benchmarking instruments should incorporate nutrition indicators.

COMPETING INTERESTS: The authors acknowledge the financial support from Health Care Foundation of St. John's, Newfoundland, Canada to conduct this study.

P-020: ESTIMATION OF ENERGY EXPENDITURE USING PREDICTION EQUATIONS IN OVERWEIGHT AND OBESE ADULTS – TWO SYSTEMATIC REVIEWS

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Introduction: Estimates of energy requirements are needed in weight management and are usually determined using prediction equations. The objective of these two systematic reviews was to identify which equations based on anthropometric and demographic variables provide the most accurate and precise estimates of (1) resting energy expenditure (REE) and (2) total energy expenditure (TEE) in healthy adults with body mass index (BMI) ≥ 25 kg/m². **Methods:** Systematic searches for relevant studies in healthy adults with BMI ≥ 25 kg/m² and published in English were undertaken using Cinahl, Cochrane Library, OpenGrey, PubMed and Web of Science. Search terms included metabolism, calorimetry, obesity and prediction equations. Accuracy was evaluated by closeness of mean predicted values to mean measurements; precision was evaluated by the proportion of predicted values within 10% of measured. Data extraction, study appraisal and synthesis followed PRISMA guidelines (Preferred Reporting Items for Systematic reviews and Meta-Analyses). **Results:** From 243 REE papers and 254 TEE papers identified, 21 and 4 studies respectively met the inclusion criteria. (1) The most accurate REE predictions varied with BMI subgroup: WHO (weight and height) ≥ 25 and ≥ 30 kg/m²; Mifflin 30-39.9 kg/m²; Henry ≥ 40 kg/m². The most precise REE predictions were obtained using Mifflin in BMI 30-39.9 and ≥ 40 kg/m² where approximately 75% of predictions were within 10% of measured REE. (2) No accurate or precise predictions of TEE were identified. **Conclusion:** No single prediction equation

provides accurate and precise REE estimates in this population. It is recommended that Mifflin equations are used to estimate REE in all overweight and obese adults due to the importance of precision and the convenience of using a single equation for all BMI groups. Practitioners should recognise that errors exceed 10% in approximately 25% of predictions. There is no evidence to support the use of prediction equations in estimating TEE in obesity.

COMPETING INTERESTS: The British Dietetic Association Obesity Specialist Group provided initial funding to undertake this study.

P-021: HIGH PREVALENCE OF FRAILTY AND MALNUTRITION IN INSTITUTIONALIZED ELDER PEOPLE. ARE THESE FACTORS ASSOCIATED?

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Introduction: Protein-energy malnutrition and frailty are frequent and comorbid conditions in elderly people. This study aimed to analyze the relationships between nutritional status and frailty within a comprehensive assessment program for community dwelling in elderly people. **Methods:** We studied 104 institutionalized elders, mean age: 85.9±6.3 years; women 73.1%; time institutionalization: 28.2±20 months). Clinical, demographic, comorbidities, nutritional indicators and body composition parameters were recorded. Frailty was assessed through Fried questionnaire whereas nutritional status was measured through the Mini Nutritional Assessment (MNA). Frailty was classified in three groups: robust, pre-frail and frail. The quality of life by Euroqol questionnaire, anxiety and depression state was also evaluated. Statistical analysis by SPSS. **Results:** Among 104 elders, were frail 17 (16,3%), pre-frail 61 (58.7%) and 26 (25%) were robust. Given their MNA-SF scores, were well-nourished 29 (27.9%), at risk of malnutrition 63 (60.8%), and 12 (11.5%) malnourished. 58 elders (55.7%) had malnutrition and frailty. Frailty showed significant differences between three groups with quality of life, anxiety and depression, percentage of usual body weight, MNA and leukocytes (at least, $p < 0.05$). Robust elder people did higher time of physical activity and were well-nourished. Multivariate analysis by frail was associated significantly with age, percentage of usual body weight while the interaction of being frail and nutritional status were significant related with percentage of usual body weight and time on institutionalization in elderly living in a nursing homes. **Conclusions, discussion and/or practical application:** Frailty and malnutrition are distinct concepts that share common determinants in elderly population. Nutritional assessment within a comprehensive geriatric evaluation is needed.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-022: IMPROVING ACADEMIC EDUCATION AND NUTRITIONAL PRACTICE IN HUMAN NUTRITION AND DIETETIC DEGREE. ON PURPOSE A RESEARCH PROJECT

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Introduction: Clinical practice on Nutrition for students of Human and Nutrition Degree is an important issue in this field. **Objectives and target.** The project aimed to study nutritional risk factors in institutionalized older people and potentiate nutritional practical skills. **Intervention(s):** Research study in 2 phases: cross-sectional study in 116 elderly people without cognitive impairment living in nursing homes and, longitudinal study for 5yrs. Onset of study: 2015. **Valuation:** Demographic data, quality of life and nutritional screening by Mini-Nutritional Assessment, anthropometric measures, hand-grip strength and biochemical parameters were performed. Body composition analysis measured bioelectrical impedance. Statistical analysis by SPSS. **Results:** Cross-sectional study in 116 elders (25.9% men, mean age 84.5±6.3yrs, and time of institutionalization 29.5±27.9 months). Prevalence of nutritional risk and PEM were 58.6% and 16.3%, respectively. MNA showed significantly positive correlation with fat and muscle mass, intracellular water and serum albumin (at least, $P < 0.05$). Only 8,2% of institutionalized elderly subjects had oral nutritional supplement prescription. Linear regression analysis showed that the percentage of standard body weight, mediterranean diet questionnaire, hemoglobin and serum albumin were predictors

of nutritional status (at least, $p < 0.05$; $R = 0.62$; $R^2 = 0.38$). **Conclusions of authors and discussion:** Periodical nutritional assessment in elderly people in a training program for dietitians is effective identifying the potential nutritional risk or PEM. The acquisition of clinical practical skills is mandatory in the health-professional learning for nutritional monitoring in health and disease.

COMPETING INTERESTS: Research project granted in VII Research projects call by Santander Foundation Alfonso X University. Faculty of Health Sciences. Lead researcher Dr. Maria del Mar Ruperto Lopez. May 2015 - May 2016.

P-023: INDIVIDUAL BEDSIDE NUTRITIONAL VARIABLES DO NOT PREDICT SURVIVAL AFTER LIVER TRANSPLANTATION

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Introduction: Impaired nutritional status is adversely associated with clinical outcome after liver transplantation with significantly lower survival rates in severely malnourished patients. This study aimed to evaluate whether nutritional data collected routinely before transplantation can be used to predict patient or graft survival after surgery. **Methods:** Nutritional data recorded prior to liver transplantation during routine care was extracted retrospectively from the clinical records of 542 patients who later underwent transplantation. Extracted nutritional variables included body mass index (BMI), handgrip-strength (HGS), mid-upper arm circumference (MUAC), mid arm muscle circumference (MAMC), triceps skinfold thickness (TSF) and values were compared against reference values. Outcome variables included the date of last follow up appointment, death and re-transplantation. Data were analysed using Kaplan Meier survival curves using quartiles for all variables except BMI which was categorised as < 18.5 , $18.5-24.9$, $25.0-30.0$ and $> 30.0 \text{ kg/m}^2$. **Results:** Complete data, collected over a 9-year period, were available for 447 patients with a mean age of 53 years at assessment. Sixty-seven percent of patients were male and alcoholic cirrhosis was the most common cause of liver disease. Transplantation was undertaken a mean of 4.7 months after nutritional assessment. BMI ranged between $14-47 \text{ kg/m}^2$ with 4% of patients identified as underweight and 18% as obese based on BMI. HGS ranged between 25-128% of reference values with 29% identified as malnourished based on $\text{HGS} < 85\%$ of reference values. Twenty percent were identified as malnourished based on MAMC $< 5^{\text{th}}$ percentile of reference values. No significant trends for either patient or graft survival were seen for any of the variables examined. **Conclusions:** This large study population comprised patients with a range of nutritional status from malnourished to obese but none of the individual bedside variables evaluated was predictive of patient or graft survival after transplantation.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-024: INTAKE OF SIMPLE SUGAR-S FROM SWEETENED BEVERAGES IS ASSOCIATED WITH CANCER INCIDENCE AND MORTALITY IN THE PREDIMED STUDY COHORT

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Introduction: Purpose To assess associations between intake of simple sugars (SS) and cancer incidence and mortality and cardiovascular and total mortality in a Mediterranean population. **Methods:** PREDIMED is a multicenter, randomized controlled clinical trial of 2 Mediterranean diets *versus* a control diet for primary cardiovascular prevention in 7747 individuals at high cardiovascular risk. In the present post-hoc study data were data were analyzed considering the cohort as an observational one. Baseline SS intake was estimated from validated 137-item food frequency questionnaires. Incidence of cancer and

deaths were ascertained through contact with families and general practitioners, review of medical records and consultation of the National Death Index. Cox regression models were fitted to assess hazard ratios (Hazard (HR) of cancer incidence and cancer, cardiovascular and total mortality for SS intake after adjustment for recruiting center, sex, age, BMI, and alcohol intake, physical activity, treatment group, and presence of diabetes, hypercholesterolemia and hypertension. **Results:** After omitting subjects who lacked SS intake data or had implausible energy intake, 7369 subjects remained for analysis. Median follow-up was 5.9 years. We observed 743 cases of incident cancer, 170 cancer deaths, 103 cardiovascular deaths and 431 all-causes. For each 1g/day increase in intake of SS (sucrose, glucose and fructose) - from beverages significant associations with cancer incidence and mortality were detected, with highest values for fructose from juices: HR 1.035 (95% CI, 1.002-1.068), for cancer incidence and 1.087 (1.029-1.148) for cancer mortality. Considering 18g of fructose as the average serving content of SS sweetened beverages, HRs for consuming ≥ 1 serving per week were 1.323 (1.120-1.563) for cancer incidence and 1.512 (1.072-2.134) for cancer mortality. SS intake was unrelated to cardiovascular or all-cause mortality. **Conclusions, discussion and/or practical application:** SS intake in sweetened beverages, particularly fructose, is associated with an increased risk of both incident and fatal cancer in individuals at high cardiovascular risk.

COMPETING INTERESTS: Trial registration: <http://www.controlled-trials.com/ISRCTN35739639>. Registration date: 5 October 2005.

P-025: MALNUTRITION AND IMPORTANCE OF NUTRITION IN INSTITUTIONALIZED ELDERLY

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Introduction: Malnutrition is an illness that prevails in institutionalized centers and which normally, is not given the importance it represents; however, undernourishment and obesity are both caused by different pathologies. The aim of this study is to prove that in these centers there is prevalence of malnutrition and the improvements that could be done with the assistance of professional nutritionists regarding malnutrition as well as other illnesses. **Methods:** This is an observational and transversal study, which took place at the San Diego (Lorca) elderly home with 78 participants aged 59 to 96. On the first days of the study the elderly were anthropometrically assessed, and fulfilled a survey to know about their eating habits, medical history... They also underwent a MNA questionnaire (Mini Nutritional Assessment) to get to know their nutritional state; then they were tracked and divided into 2 main groups, Group 1, the one being intervened and Control Group. **Results:** The results were analyzed and processed with the statistical programme SPSS, with a significance level of $p < 0,05$. In general, the elderly show levels of obesity and undernourishment of 52.56% and 14.10% respectively. Group 1 presented average weight reduction of 1,570kg after the intervention. Meanwhile the control group presented and average increase of 1,870kg. Regarding glucose levels, group 1 presented a reduction of glucose in blood during fasting periods, measured with a significance level of $p = 0.002$ in diabetics, compared to control group levels remained elevated. **Conclusions:** In conclusion, the prevalence of malnutrition in institutionalized elderly was proved and the improvement appeared after being intervened. This should be further studied to demonstrate the importance of good intervention through a specialist, focusing on other values important and which have not been taken into account in this study due to lack of means and in order not to disturb the routine of the elderly.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-028: THE LOW FODMAP DIET REDUCES SYMPTOMS IN IRRITABLE BOWEL SYNDROME COMPARED WITH PLACEBO DIET AND THE MICROBIOTA ALTERATIONS MAY BE PREVENTED BY PROBIOTIC CO-ADMINISTRATION: A 2X2 FACTORIAL RANDOMIZED CONTROLLED TRIAL

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Introduction: Feeding studies demonstrate a low FODMAP diet (LFD) reduces symptoms of irritable bowel syndrome (IBS). However, a placebo-controlled dietary advice trial has not been performed. Also, LFD has a marked impact on the gastrointestinal (GI) microbiota, and approaches to preventing this have not been investigated. This randomised controlled trial aimed to investigate the clinical effectiveness of LFD dietary advice compared with placebo dietary advice (sham diet), and the effect of LFD with probiotic on GI microbiota in IBS. **Methods:** Adults fulfilling Rome III criteria for IBS were screened (n=162). Eligible patients were randomised to LFD or sham diet and to probiotic (VSL#3) or placebo for 4 weeks. Validated instruments were used to measure symptoms (IBS-SSS, GSRS) and quality of life (HRQOL; IBS-QOL). Microbiota was quantified using qPCR. **Results:** A total of 104 patients were recruited (70 females, 67%) and 95 completed the study. FODMAP intake was lower on LFD than sham diet (9.9 vs. 17.4g/day, p<0.001). LFD resulted in a lower IBS-SSS score than sham diet at follow-up (173 vs. 224, p=0.001). More patients on LFD achieved the minimal clinical important difference for IBS-QOL (51% vs. 26%, p<0.023). However, LFD resulted in a lower abundance of Bifidobacteria (8.8 vs. 9.0 log₁₀ cells/g faeces, p=0.028). Probiotic had no significant effect on IBS-SSS or HRQOL score compared with placebo, however, did result in higher stool Bifidobacteria abundance (9.1 vs. 8.7 log₁₀ cells/g faeces, p=0.021). Combination treatment of LFD/probiotic preserved Bifidobacteria abundance compared with sham diet/placebo (8.9 vs. 8.8 log₁₀ cells/g faeces, p=0.985). **Conclusions, discussion and/or practical application:** This randomised placebo-controlled dietary advice trial demonstrates for the first time that LFD advice is clinically effective compared with sham dietary advice. LFD-probiotic combination ameliorates the effect on Bifidobacteria abundance. The effect of FODMAP reintroduction on the GI microbiota requires exploration before LFD-probiotic combination therapy should be recommended as standard practice.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-029: MOVING EVIDENCE INTO PRACTICE: MEETING CLINICAL NUTRITION INDICATORS FOR JOINT COMMISSION INTERNATIONAL ACCREDITATION

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Introduction: Evidence-based dietetics practice provides a framework of standardized care for dietitians resulting in better patient care and outcomes. Research shows that a standardized evidence-based nutrition care is an essential component for clinical nutrition practice resulting in positive outcomes. **Main Objective:** Despite all the research on evidence-based practice resulting in better patient outcomes, most health care facilities in developing countries do not have access to evidence-based resources and tools due to lack of expertise, manpower and costs involved in developing these. I volunteered as a nutrition consultant at the AgaKhan University Hospital in Nairobi, Kenya and the objectives of this project were two-fold: a) To explore if there were any practice gaps in adapting evidence-based practice to meet the Joint Commission International Accreditation; b) To pilot and develop supporting tools to implement an evidence-based dietetics practice. The target audience were the onsite dietitians. **Main Theories:** Rogers' diffusion of innovations theory was used to support the innovation process of moving evidence into practice. **Intervention:** In collaboration with the three-onsite local dietitians, knowledge gaps were identified. Nutrition assessment forms, nutrition assessment keys, nutrition protocols and guidelines were developed and implemented

based on the nutrition competencies outlined in Joint Commission International Accreditation (JCIA) to meet accreditation. **Evaluation and Results:** The implementing of the JCIA indicators included three onsite visits and remote work over a span of three years (2011-2013). Subsequent steps included developing easily accessible tools to support the day-to-day work of the onsite dietitians to promote an evidence-based dietetics practice. **Conclusion:** The dietetics department met the JCIA nutrition competencies. The hospital was successful in receiving JCIA in 2013. Research shows that JCIA brings value to the institution, the professionals, and patients being treated at a hospital, which meets the highest international standards in providing evidence-based care with positive patient outcomes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-030: ASSESSMENT OF THE LEVEL OF ALIMENTARY SATISFACTION RECEIVED BY PATIENTS IN A TERTIARY HOSPITAL

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Introduction: The food is a key element of nutritional support of hospitalized patients. To assess the level of food acceptance is essential to fight hospitalary malnutrition. Aim 1) Determine the level of satisfaction of patients to our hospital diets. 2) Analyse variables associated with a higher level of satisfaction (type of diet). **Methods:** Cross-sectional descriptive study. A survey is used from the Unit of Quality with socio-demographic data, and a qualitative data: variety, presentation, organoleptic and sanitary quality. It consists of 17 questions. The answers have four-five choices, except from yes/no questions. The global level of satisfaction was compared depending on the type of diet (therapeutic *versus* basal; with salt *versus* soda) (T-students for independent samples). **Results:** 1413 patients. Age: 53,9±19 year old; 51,3% women. Level of overall study: Intermediate-basic (68,4%). A 65,1% of patients received therapeutic diet. Only 39,4% took a salt content diet. The 66,8% confirmed previous admissions. The food hospital for 43% of patients was "as expected", while for 44,1% "better than it was expected". The meal times were adequate for 89,1% and the time for eating enough in 96,4%. About the food served, the percentage of patients who considered as good or very good such foods: taste (56,3%), smell (65,5%), cooked (69,2%), variety (67,6%), temperature (70,4%). The global assessment of food on scale 1 to 10 was 6,8±2,3. The type of diet or the presence of salt were not related to a relevant increase of satisfaction with the patients' diet ($p=0.99$ y 0.35 , respectively). **Conclusions:** 1) Although the level of satisfaction of our hospital diet is reasonable, we must introduce improvements which enhance its acceptance. 2) The presence of salt or the type of diet (basal *versus* therapeutic) is not related to an outstanding improvement of the overall assessment of the diet.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-031: DIFFERENCE IN APPETITE RATINGS AMONG THREE LUNCH MEALS CONTAINING DIFFERENT STARCHY FOODS

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Introduction: Dietitians use carbohydrate counting as a means of recommending appropriate portion sizes of starchy foods. We hypothesized that different starchy foods incorporated into equi-carbohydrate, equi-energetic lunch meals would induce different appetite ratings. **Methods:** Beef mince, non-starchy vegetables and tomato-based sauce were combined with 45g available carbohydrate from potato (337g), rice (142g) or pasta (138g). Fourteen volunteers ate freshly-heated meals in random order whilst rating appetite on 10cm Visual Analog Scales (VAS) before the meal (baseline) and 10, 30, 60, 120 and 180min. The questions were "How hungry"; "How full"; and "How satisfied do you feel?" and "How much do you think you can eat?".

Fourteen people crossed-over had 90% power to detect 40% difference in VAS at an alpha of 0.05. VAS were analyzed as total area-under-the-curve (AUC), as initial drop (from baseline to 10min), and as return of appetite (10 to 180min). Comparisons were tested in STATA (Statacorp) using generalized least squares regression and if significant, pairwise comparisons with Bonferroni adjustment. The New Zealand Health and Disability Ethics Committee approved the study (15/CEN/71). **Results:** All meals contained 3010kJ. In AUC pairwise comparison, people felt less hungry [mean (SD)] following potato 263 (230) than rice 374 (237) or pasta 444 (254) mm.min. People also felt more full, more satisfied, and wanted to eat less following the potato meal compared with the rice and pasta meals (P all 0.05). Over time, scores of hunger, fullness and how much were different between potato and rice meals. **Conclusions, discussion and/or practical application:** The potato meal repressed appetite more than the rice and pasta meals. Using potato as the source of carbohydrate in meals could be beneficial either by reducing appetite if equi-energetic meals are consumed, or by maintaining appetite with smaller quantity.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-032: EFFECT OF THE MENSTRUAL CYCLE ON BODY COMPOSITION, NUTRITIONAL HABITS AND SOME SERUM MINERALS

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Introduction: This study is planned and carried out on healthy, young women to determine food consumption and nutritional habits with body composition and some biochemical alterations during menstrual cycle. **Methods:** Forty voluntary young, adult women were enrolled the study. Women are followed in three periods. Questionnaire form was used to assess individual general conditions, health and nutritional habits. In every three periods, individual's anthropometric measurements, blood pressure, body compositions (with bioelectrical impedance analysis method) and three days dietary records were taken and some serum minerals (sodium, potassium, phosphorus, calcium, chlorine, iron, zinc and magnesium) were analyzed. **Results:** The mean age of women was 22.1±1.23yrs and all of the women were menstruate regularly. Sixty-five percent of the women were using drugs in menstrual cycle. Sweet foods cravings (e.g., chocolate, candy, paste and dairy desserts) were increased in premenstrual and menstrual term than postmenstrual term (p<0.05). When serum mineral levels were examined, just serum zinc and magnesium levels declined significantly during menstruation, no significant changed was determined in other serum mineral levels among the cycle (p>0.05). **Conclusions, discussion and/or practical application:** During the menstruation, it was determined that women body weight, waist circumference, BMI, body composition and serum mineral levels were changed. Thus, at the evaluation of nutrition status of women, it is important to pay attention to the changes that may occur, in terms of achieving correct results and commenting throughout the menstrual cycle.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-033: GRADUAL INTRODUCTION OF FODMAP DIET MODIFIED IN IRRITABLE BOWEL SYNDROME PATIENTS

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Introduction: The Irritable Bowel Syndrome (IBS) is a functional digestive disorder which affects 7.8% of Spanish population. There is a causal link difficult to prove among certain foods and the appearance of symptoms which attribute patients. Today the FODMAP diet (Fermentable Oligosaccharides, Disaccharides, Monosaccharides and Polyols) emerges as a new nutritional therapy. However this diet relates mainly to general recommendations. The Nutrition Area of Hospital Universitario de Nuestra

Señora de Candelaria (HUNSC) has come up with a dietary plan. **Objectives and target population:** Validate and formalize the diet FODMAP, introducing it as internal protocol of HUNSC in order to facilitate affected patients with IBS. **Previous theories and investigations:** IBS patients limit without professional supervision foods in their diet provoking nutritional deficiencies. In addition, the new FODMAP therapy includes poorly and well tolerated foods. Therefore it is essential to formalise the food re-entry facilitating a correct diet. **Intervention(s):** Prospective observational study. (C.P. MO-C.I. PI-15/15). It includes 23 IBS diagnosed patients seen in Nutrition and/or Digestive appointments (15/March-31/August 2015). It excludes 18 year old and denial informed consent. It consists of three phases. Initial phase: complete restriction of food FODMAP (30yrs). Second phase: low FODMAP food diet (30days). Third phase: reintroduction of excluded food until then (60days). Main symptoms will be analysed with the Irritable Bowel Syndrome Severity Score (IBSSS) questionnaire, the stool characteristics through the King's School Chart, and the quality of life through the questionnaire IBS-36. The body composition is analysed by bioelectrical impedance (TBF300A). **Evaluation:** The effect of food about gastrointestinal symptoms and the quality of life together with the dietetic-nutritional differences, will be assessed. **Restrictions:** Scarce and recent bibliography threon, concerning the introduction of medium-low FODMAP foods. Impossibility to perform more frequent appointments which increase the adherence to study.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-034: NUTRITIONAL STATUS IN THE PREOPERATIVE AND IN THE LATE POSTOPERATIVE PERIOD OF PATIENTS UNDERGOING DIGESTIVE SYSTEM SURGERY

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Introduction: Malnutrition, changes in body composition and decreased performance status are common in patients with digestive system diseases. Preoperative nutritional status influences early postoperative outcome but also may be associated with long-term adverse outcomes. Therefore, nutritional assessment should be performed both in the preoperative and postoperative periods. **Objective:** To evaluate the frequency of preoperative and late postoperative malnutrition and to compare the preoperative hand grip strength and body composition with those obtained in the same patients in the late postoperative period. **Methods:** Prospective longitudinal clinical study from Jun 2011 to October 2013 (preoperative) and October 2013 to May 2014 (late postoperative). Nutritional status was assessed with the Subjective Global Assessment (SGA). Bioelectrical impedance phase angle was used to assess cellular mass and integrity. Non-dominant hand grip strength was measured by hand grip dynamometer to assess the functional capacity. Statistical analysis were performed applying Independent sample T-tests, at 95% confidence interval. **Results:** Preoperative nutritional assessment was performed in 37 patients. Time between preoperative and postoperative assessments was 18.5±8.5months. The late postoperative final sample was 17 patients, 82.4% (n=14) male, and the mean age was 62.2±13.2years. Cancer was present in 52.9% (n=9), 52.9% (n=9) had early postoperative complications. At the preoperative, 52.9% (n=9) were suspected of being malnourished or were malnourished, while in late postoperative evaluation only 17.6% (n=3) were a suspected of being malnourished or were malnourished. Phase angle was similar at preoperative and late postoperative (6.6°±1.6 and 6.1°±1.1; p=0.162). Handgrip strength was superior at late postoperative compared to the preoperative (34.0kg±10.7 and 29.8kg±9.0; p=0.013). **Conclusion:** Malnutrition is more frequent at the preoperative period. The functional capacity is superior at late postoperative period, but cellular mass and integrity are similar at the preoperative and late postoperative periods. Phase angle measurement is not useful to detect changes in nutritional status.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.



P-035: COMPARISON OF BODY COMPOSITION AND ANTHROPOMETRIC ASSESSMENT BETWEEN CASES WITH AND WITHOUT ACROMEGALY

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Introduction: Our aim was to compare the body composition and anthropometric measurements of acromegaly patients with control group. **Methods:** 49 acromegaly patients (25M, 24F) were recruited for this study. 39 healthy subjects (13M, 26F) were taken as control group. Height was measured by stadiometer. Tanita BC 418 MA was used to assess the body weight and composition (fat mass, fat free mass, total body water). Percentage of trunk fat and visceral fat level were measured by Viscan AB-101. Circumferences of waist, hip, mid-upper arm, wrist, neck were measured by measuring tape. Holtain caliper was used for the measurement of skinfold thickness of triceps, biceps, subscapular and suprailiac regions. Hand grip strength was evaluated by using Takei T.K.K.5401 hand dynamometer. Data was analyzed by SPSS 15.0. Mann Whitney-U test was performed according to the normality test. **Results:** The mean age of male subjects was 47.0±11.54 and 45.7±11.81yrs in acromegaly and control groups, respectively. The mean age of the female subjects was 48.2±13.29 and 52.0±8.15yrs in acromegaly and control groups, respectively. While neck circumference was higher (p=0.03), biceps (p=0.023) and suprailiac (p=0.006) skinfold thickness were lower significantly in male acromegalic patients compared to male control subjects. Weight (p=0.026), body mass index (p=0.024), hip circumference (p=0.01), neck circumference (p=0.001), wrist circumference (p=0.001), skinfold thickness of subscapular region (p=0.047), fat free mass (p<0.001), total body water (p<0.001) were higher significantly in female acromegalic patients compared to female control subjects. **Conclusions, discussion and/or practical application:** It was found that there was significant differences in body composition and anthropometric measurements between acromegaly patients and control group. Further studies are needed to evaluate the outcomes of those anthropometric diversities.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-036: DIETARY COMPLIANCE IS DIFFICULT TO ASSESS IN FEEDING TRIALS INVOLVING FREE-LIVING INDIVIDUALS. MEASURING DIETARY COMPLIANCE RELIES ON SELF-REPORTS AND, WHEN AVAILABLE, OBJECTIVE BIOMARKERS

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Introduction: Dietary compliance is difficult to assess in feeding trials involving free-living individuals. Measuring dietary compliance relies on self-reports and, when available, objective biomarkers. **Objective:** In the context of a randomized clinical trial conducted in older individuals, we assessed compliance at 1year with a walnut diet wherein walnuts were given to participants for daily consumption compared with a control diet (usual diet without walnuts). **Methods:** Dietary compliance was measured after intervention for 1year in a sub-cohort of the WAHA study, a large dual-center trial assessing the effect of daily walnut consumption for 2yrs on age-related health outcomes in free-living elders (63 to 79years-old). This report involves 1year data of 140 participants (93 women; mean age 69yrs) recruited in the Barcelona node. Within their habitual lifestyle, the walnut group (WG) (n=74) was given walnut allotments to provide ~15% energy (30 to 60g/day). Participants in the control group (CG) followed their habitual diet and were allowed walnuts ≤1serving/day. Participants were assessed quarterly by dietitians for consultation on diet-related problems. In all participants, compliance was estimated from self-reports (7days food records [FR]) and changes in red blood cell (RBC) membrane α-linolenic acid (ALA), a key constituent of walnuts. **Results:** As estimated from FR, all participants in the WG increased ALA intake from baseline (median [interquartile range], 3.85 [2.78 to 4.12] g/d) compared to the CG (0.15 [-0.21 to 0.13] g/d). Respective changes in RBC %ALA were 0.24 (0.17 to 0.38) and 0.07 (0.03 to 0.17). Changes in ALA estimated from FR correlated with changes in %ALA in RBC (Pearson regression coefficient 0.497, p<0.001). **Conclusions, discussion and/or practical application:** In this WAHA sub-cohort there was congruence between changes in ALA

estimated from FR and from RBC. Thus, simple self-reported measures of dietary intake could suffice to estimate adherence in long-term clinical trials of nut consumption.

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P-037: EVALUATION OF ADIPOSITY MARKERS IN PEOPLE WITH TYPE 2 DIABETES

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Introduction: Adiposity may play an important role in the development of coronary heart disease (CHD) in people with type 2 diabetes; thus, strategies to control adiposity markers are of clinical importance. This cross-sectional study aimed to evaluating the association between body adiposity markers and risk of CHD in patients with type 2 diabetes. **Methods:** A total of 100 patients were evaluated according to latest adiposity markers [waist-to-height ratio (WHtR), conicity index (C-index), visceral adiposity index (VAI) and body adiposity index (BAI)], classic markers [BMI, waist circumference and waist-to-hip ratio (WHR)] and bioelectric impedance analysis results [percent of body fat (BF%)]. **Results:** The mean age of participants was 52.8±10.4yrs and 66.3% were female. According to latest adiposity markers, 98% of patients WHtR, 53% of patients C-index, 92% of patients VAI and 94% of patients BAI values were in the risky level. When classic adiposity markers were evaluated 88% WHR, 80% of patients' waist circumference, 96% of patients BMI and 83% of patients BF% were found in the risky level. BAI was found to be the highest correlation adiposity index markers than the others (p<0.05). **Conclusions, discussion and/or practical application:** The BIA was the body adiposity marker best associated with the other markers in patients with type 2 diabetes and it can be readily used as a non-laboratory tool for CHD risk screening in patients with diabetes. Furthermore, the potential role of this latest adiposity index should be confirmed in prospective and large studies using.

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P-038: RELATIONSHIP BETWEEN PNPLA3 GENE POLYMORPHISM AND EATING BEHAVIOR IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Introduction: The genetic variant of patatin-like phospholipase 3 (PNPLA3, rs738409[G], encoding I148M) has been shown to be an important factor associated with nonalcoholic fatty liver disease (NAFLD), which is the hepatic manifestation of metabolic syndrome. To the best of our knowledge, the link between the PNPLA3 polymorphisms and eating behavior has not yet been fully elucidated. **Methods:** A cross-sectional study with 51 Japanese patients undergoing treatment for NAFLD in an out-patient department was conducted. Dietary restraint and overeating tendencies (emotional and external eating) were measured with the Dutch Eating Behavior Questionnaire (DEBQ). The subjects were divided into two groups based on the presence of the G allele, which is reported to be a risk factor of NAFLD: CC group (n=9) and CG/GG group (n=42). We compared the eating behavior scores, BMI, and medication status between groups. **Results:** The CC group showed a significantly higher score with respect to external eating (median 2.9) than the CG/GG group (2.7; p=0.047). The median controlled attenuation parameter (CAP; db/m), which was used for evaluating steatosis, was 338.0 in the CC group and 286.0 in the CG/GG group. Additionally, the median BMI was 338.0 in the CC group and 286.0 in the CG/GG group. The CAP and BMI were significantly high in the CC group (p=0.015, p=0.019, respectively), indicating that CC type patients tended to overeat in the presence of tempting food

cues and develop NAFLD, despite the low risk. **Conclusions:** In this study, low risk CC patients tended to show inadequate eating behavior, and thus, it is necessary to account for dietary habits in light of the patient's genetic polymorphisms when considering dietary intervention for NAFLD treatment.

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P-039: PROCESS FOR NUTRITION AND DIETETIC PRACTICE – IMPLEMENTATION IN NORTHERN IRELAND

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Introduction: ICDA 2004 introduced the author to the Nutrition Care Process. The BDA Process was updated in 2012 and members in Northern Ireland (NI) began implementing it to ensure dietetic practice demonstrates best outcomes in line with our AHP Strategy. **Objectives and Target population:** The objective is to test implementation of the Process for Nutrition and Dietetic Practice in two Trusts to demonstrate outcomes that are achieved for patients through appropriate dietetic intervention. Patient groups were selected including community nutrition support, acute inpatients, critical care and gastroenterology initially. **Previous theories and Investigations:** The BDA Process is adapted from the ADA Nutrition Care Process and Model. Both assist dietitians in demonstrating our value through evidence of outcomes in practice. The NI AHP Strategy challenges dietitians to maximise resources for success by ensuring dietetic practice demonstrates best outcomes for patients. **Intervention:** The two Trusts shared a workshop to introduce the Process to selected dietitians. Training included an overview of the Process, nutritional diagnosis, goal setting and measurement of outcomes. **Results and Evaluation:** This work is still in its implementation stage. Testing so far has led to an agreed tool for use across a range of clinical areas. Southern Trust has demonstrated >80% outcomes achieved in 7/9 goals in community nutrition support. South Eastern Trust is also testing in gastroenterology and paediatrics. Application in acute inpatients has been less positive to date. **Conclusion of authors and discussion:** Early experience of implementing the Process confirms its value in demonstrating achievement of clinical outcomes for nutrition support. All results will be available for sharing at ICDA in 2016. The development of materials for use in NI has provided the opportunity to lead regional training for dietitians in other Trusts to spread the Process and further promote the clinical outcomes and benefits for dietetic intervention.

COMPETING INTERESTS: The author of the document can confirm there is no conflict of interests.

P-040: FERMENTABLE CARBOHYDRATES (FODMAPS) AS TRIGGERS OF FUNCTIONAL GASTROINTESTINAL SYMPTOMS IN PATIENTS WITH QUIESCENT INFLAMMATORY BOWEL DISEASE: A DOUBLE-BLIND, PLACEBO-CONTROLLED, RANDOMISED, CROSS-OVER RE-CHALLENGE TRIAL

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Introduction: There is evidence that a low FODMAP diet (LFD) may ameliorate functional gastrointestinal symptoms (FGS) in quiescent inflammatory bowel disease (IBD), however, whether fermentable carbohydrates induce FGS in IBD is unknown. Our aim was to determine whether fermentable carbohydrates induce FGS in IBD using a double-blinded, placebo-controlled, randomised, cross-over re-challenge trial. **Methods:** Patients with IBD in clinical and biochemical remission and with co-existent FGS responsive to a LFD were allocated in random order to 3-day fermentable carbohydrate challenges at plausible dietary doses (fructans 12g/d; galacto-oligosaccharides GOS 6g/d; sorbitol 6g/d) and glucose placebo (12g/d), separated by a 4-day washout. During challenges, symptoms and stool output were measured using the Gastrointestinal Symptom Rating Scale and the Bristol Stool Form Scale, respectively. Data were compared between the challenge arms using repeated-measures ANOVA and Bonferroni post-hoc adjustment. **Results:** Trial data were available for 29 patients who completed all arms of

the trial (12 Crohn's, 17 ulcerative colitis; mean age 40.1±14.4yrs; 32% male). All met Rome III criteria for irritable bowel syndrome (IBS) (n=12), functional bloating (n=12) or functional diarrhoea (n=5). During the fructan challenge compared to placebo, there were significantly more days of moderate or severe pain (0.9 vs. 0.2, p=0.014), bloating (1.0 vs. 0.3, p=0.017) and flatulence (1.2 vs. 0.4, p=0.034). Compared to placebo (3.5, SD 1.0) there was a significant difference in mean stool consistency during the fructan (4.2, SD 1.3, p=0.007) and GOS challenges (4.0, SD 1.0, p=0.033). **Conclusions, discussion and/or practical application:** Fructans, but not GOS or sorbitol, induced FGS in patients with quiescent IBD. These findings are consistent with those of a re-challenge trial in IBS that also demonstrated induction of symptoms following fructan re-challenge. Further research is required to determine the effects of fermentable carbohydrate dose on FGS in IBD, and whether a LFD is effective in managing FGS in IBD in clinical practice.

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P-041: TRENDS OF WEIGHT AMONGST PEOPLE WITH SEVERE MENTAL ILLNESS

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Introduction: Mental illness comprises a very complex group of diseases in which the individual severity determines the implications for a patient's physical health and quality of life. Schizophrenia is the most severe of these conditions which catastrophically affects a person's life reducing their motivation and ability to perform even basic living skills such as cooking, shopping, personal hygiene, walking or exercising. The psychotropic medications such as clozapine and olanzapine, available for treating these patients, have in many cases, successfully reduced the effects of the positive symptoms of this illness. However, poor lifestyle habits, such as heavy smoking, lethargy, sedentary activity or attachment to take away meals, appear or are often exacerbated by the side effects commonly associated with these treatment regimens. Additionally, these medications, are known to reduce a patient's capacity for normal physical activity as they become lethargic and extremely hungry, two major risk factors for the development of metabolic syndrome in mentally ill patients. Weight gain is one of the most devastating consequences of these treatments, leading to morbid levels of obesity, and therefore severe vital organ function damage. **Methods:** This study centres around the observation of trends in weight over a 17 year period in the largest psychiatric hospital in Australia. These trends have been measured and recorded in the hospital's Dietetics and Nutrition Clinic which is run by the clinical dietitian who provides nutritional assessment and counselling to patients with the ultimate aim being the reduction of dangerous weight gain in patients with severe mental illness. **Results:** The results demonstrated the need for large numbers of reviews in order to achieve an alteration of patients' weight and dietary habits. **Conclusions, discussion and/or practical application:** These results also offer the potential for helping clinicians and health executives in approaching this issue in the development of models for the prevention of metabolic syndrome within this population.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interest.

P-042: A HIGH PROTEIN DIET CAN INFLUENCE ON METABOLIC PROFILE BUT NOT ON ACTIVITY INDEXES IN PATIENTS WITH PSORIATIC ARTHRITIS

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Introduction: Dietetic advice is not routinely performed in clinical practice in patients with inflammatory arthropathies and the potential effect of diet on inflammatory activity is little known. The aims of this research were to describe the dietetic habits of a cohort of patients with psoriatic arthritis (PA) and to investigate whether these habits influence on metabolic profile and inflammatory activity. **Methods:** In this cross-sectional study, forty outpatients with PA were included. Qualitative and quantitative characteristics of food intake were recorded. According to characteristics of diet, patients were classified in three groups: High protein, balanced or high carbohydrate diet. Demographic data and metabolic profile were collected. Inflammatory activity was measured by erythrocyte sedimentation rate (ESR), reactive C protein (RPC) and disease activity

score (DAS 28). **Results:** Balanced, high carbohydrate and high protein diet were followed by 54%, 30% and 17% of the cohort respectively. High protein diet was linked to lower total cholesterol levels when compared to those with other kind of diet (177.1 ± 31.6 mg/dL vs. 215.8 ± 37 mg/dL vs. 200.5 ± 27.2 mg/dL respectively; $p=0.037$). Fish was the main source of proteins in high protein diet group. With regard to inflammatory indexes, ESR and RCP were lower in patients with high protein diet but DAS 28 score was lower in high carbohydrate diet group but significant differences were not reached. **Conclusions, discussion and/or practical application:** There is a lack of evidence concerning to benefits of dietetic habits in rheumatologic diseases. Our research shows that metabolic benefits, at least on lipid profile, are more likely to be found in patients with PA that follow a high protein diet when fishes are the main sources of proteins. However, diet habits were not linked to lower inflammatory activity and we cannot recommend any kind of dietetic advice to improve PA.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interest.

P-043: ASSOCIATION BETWEEN SLEEP QUALITY AND NUTRITIONAL STATUS AND INTAKE OF THE HAEMODIALYSIS PATIENTS

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Introduction: Haemodialysis (HD) patients have sleeping problems which decrease quality of life. Although many factors affect patients' sleep quality such as age, comorbidity, protein status, blood pressure along with provoking pathophysiology of chronic kidney disease, nutritional factors are of great importance and curiosity in understanding their impact on sleep difficulties. This study was conducted to determine sleep quality and relating nutritional factors in HD patients in Turkey.

Methods: This cross-sectional study was conducted on 103 voluntary HD patients. Sleep quality was checked with Pittsburgh Sleep Quality Index, data were collected with socio-demographic questionnaire, 3-day dietary records were analysed. Energy-nutrients intake was determined with BEBIS 7 nutritional software. Mean energy-nutrients intake of 3-days was calculated. Biochemical findings were obtained. Chi-square, Student's T, Mann Whitney U Tests, Logistic Regression Analysis were performed. Results: Mean age was 59.19 ± 14.57 yrs, 51.5% were female. Global PSQI score was 7.33 ± 3.94 ; 37.9% had good sleep quality, 62.1% had bad sleep quality. Age and gender did not affect whereas appetite influenced sleep quality. Patients with bad appetite compared to good appetite had 4.194 fold higher risk of low sleep quality (95% CI; 1.085-16.209, $p=0.038$). Potassium and serum creatinine were significantly higher in good sleepers ($p=0.024$, $p=0.043$; respectively). Energy-nutrients intake was lower than recommended levels. Patients with good sleep quality had significantly higher dietary intake of vitamins B1 (0.56 ± 0.21 mg vs. 0.47 ± 0.16 mg), B6 (0.83 ± 0.31 mg vs. 0.71 ± 0.25 mg), folate (233.9 ± 91.6 mcg vs. 198.1 ± 62.8 mcg) ($p=0.030$, $p=0.036$, $p=0.034$, respectively) despite being inadequate. **Conclusions, discussion and/or practical application:** HD patients had generally bad sleep quality. Despite dietary inadequacy, eating a diet including somewhat higher amounts of vitamins B1, B6 and folate led to better sleep quality. Dietetic practitioners should take precautions to improve sleep quality by adequate and balanced medical nutrition therapy.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interest.

P-044: CHARACTERISTICS OF MORBIDLY OBESE PATIENTS REFERRED TO AN OBESITY UNIT: WHAT DO GENERAL PHYSICIANS EXPECT FROM US?

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Introduction: A proper coordination between primary and specialty care is critical. The objectives of this study were to monitor the appropriateness of referrals due to morbid obesity made from Primary Care (PC) to an obesity unit (OU) and evaluate aspects that generalist physicians (GP) value most when assessment by OU is requested. **Methods:** Descriptive study of clinical characteristics of obese patients referred from PC to OU in a period of 3 months. "Appropriate referral" was considered if one

of the following criteria was met: A) Body mass index (BMI) $\geq 35 \text{ kg/m}^2$ with co-morbidities or B) BMI $\geq 40 \text{ kg/m}^2$. Co-morbidity was considered "newly diagnosed" if it was diagnosed at the prior visit to referral. Clinical aspects that GP value most for referring to OU were registered using an anonymous survey. **Results:** Data from 51 patients were recorded. The duration of obesity was over 10 years in 33%. 90.2% of the referrals were "adequate". Prevalence of type 2 diabetes and dyslipidemia was 31.4% and 56.9% respectively and were the most newly diagnosed co-morbidities (23.5%). The proportion of patients with co-morbidities was not significantly different according to the criteria used (A or B). 75% of the GP requested to participate in survey, knew the referral criteria but, BMI $\geq 40 \text{ kg/m}^2$ even without co-morbidities, was the most ignored criterion. 40% of them chose BMI $\geq 50 \text{ kg/m}^2$ as the primary reason for referral and 20% the need for bariatric surgery. 25% referred patients after 1 to 5 years of follow up. **Conclusions, discussion and/or practical application:** The appropriateness of referrals from PC to OU is high but, when patients are referred, have very high BMI, chronic obesity and a high rate of newly diagnosed metabolic complications. This observation is consistent with the overall results of the survey. To disclose these results to GP would optimize the pattern of referrals.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-045: COMPARISON OF THE EFFECT OF TWO DIFFERENCE WAYS IN FORTIFIED HUMAN MILK ON CLINICAL OUTCOMES IN PRETERM INFANTS

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Introduction: Preterm infants should be fed fortified human milk via a multi-nutrient supplement, such as a powdered human milk fortifier (PHMF), to meet their high nutrients requirements. However, PHMF is higher contamination risk to preterm infants in neonatal intensive care unit (NICU) and much more economic burden for parents. Fortification of human milk with liquid ready-to-feed preterm formula (LPF) was implemented in practice to address these concerns. The purpose of this study was to compare the clinical outcome differences between groups receiving the PHMF vs. receiving LPF. **Methods:** This retrospective study collected and evaluated growth parameters, feeding intolerance, metabolic acidosis, late-onset infection and necrotizing enterocolitis (NEC) incidence of preterm infants ≤ 37 weeks gestational age with birth weight $\leq 2 \text{ kg}$ who received fortified human milk with either PHMF (n=11) or LPF (n=12). 5 infants who was congenital abnormality, switching to formula fed or NEC before fed fortified human milk were excluded from this study. **Results:** The body weight of preterm infants fed human milk fortified with LPF at discharge was significantly higher than infants fed human milk fortified with PHMF (2145g vs. 1720g, p .049). However, there were no differences in growth velocity, Z-score of weight, the incidence of feeding intolerance, metabolic acidosis, late-onset infection and NEC. **Conclusions, discussion and/or practical application:** Although fortified human milk with LPF is clinically safe for preterm infants in NICU, there may be still deficits in nutrients, such as protein and minerals, to support preterm infants to achieve optimal growth velocity in either fortified ways. Therefore growth parameters of preterm infants should be assessed routinely, so that we could modify feeding formula to promote optimal growth.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.



P-046: DUTCH NATIONAL UNDERNUTRITION SCREENING SURVEY IN 564.083 PATIENTS: PATIENT WITH A POSITIVE UNDERNUTRITION SCREENING SCORE STAY IN HOSPITAL 1.4 DAY LONGER

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Introduction: To ensure nutritional intervention for patients when needed, Dutch hospitals are obliged to screen for undernutrition within the first day of admission. The objective was to investigate: 1) The prevalence of screening score "undernourished" in the general hospital population and per medical specialism?; 2) The relationship of undernutrition screening (SNAQ/MUST) and Length of Hospital Stay (LOS). **Methods:** Observational study in thirteen hospitals. All adult inpatients (≥ 18 yrs) with a LOS of at least 1 day were included. In the period 2007-2014, all data on registered undernutrition screening in the hospital chart system were used. SNAQ/MUST score, admitting medical specialism, LOS, age and gender were extracted from the digital hospital chart system. Since LOS was skewed to the right, natural logarithmic transformation was applied to normalize the distribution (LnLOS). Regression analysis with LnLOS as a dependent variable and SNAQ ≥ 3 points / MUST ≥ 2 points and age as independent variables, was used to test the relation between SNAQ/MUST score and LOS. **Results:** 564.083 patients were included (48% male, age 62 \pm 18). 74% (419.086) were screened with SNAQ and 26% (144.977) with MUST. 14.0% of the patients had a screening score "undernourished" (SNAQ 13.7%; MUST 14.9%). Medical specialisms with the highest percentage of screening score "undernourished" were Geriatrics (38%), Oncology (33%), Gastroenterology (27%) and Internal medicine (27%). Patients with screening score "undernourished" had a higher LOS (median 6.8 days vs. screening "not undernourished" median 4.0 days ($P < 0.001$)). **Conclusions:** In this national survey of more than half a million patients, one in seven patients had a screening score undernourished", and for Geriatrics Oncology Gastroenterology and Internal medicine this was even one in 3-4 patients. Hospital stay was 1.4 days longer in undernourished patients compared to well-nourished patients.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-047: EFFICACY OF LIFESTYLE AND SURGICAL INTERVENTIONS FOR OVERWEIGHT AND OBESITY IN ADULT LIVER TRANSPLANT RECIPIENTS

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Introduction: Obesity is a growing problem among adults who have undergone liver transplantation (LTx). Guidelines for management of adult LTx recipients promote lifestyle changes for preventing excessive weight gain and obesity long-term. Despite this, the efficacy of such interventions is not well described in this patient group. This study aims to review current evidence for lifestyle and surgical interventions for weight loss in adult liver transplant recipients. **Methods:** A literature search was conducted using Medline, Scopus and the Cochrane Central Register of studies assessing the effect of diet, physical activity or surgery in adult populations post LTx. The primary outcomes of interest were body weight and BMI. **Results:** Eight studies were identified for inclusion with 159 participants. Only one study was a randomised controlled trial of diet counselling and exercise prescription (n=119). Body weight increased in the intervention and usual post transplant care control group (+7kg vs. 7.2kg). BMI increased +4.5 points in the lifestyle intervention group compared with control (+1.5 points). All seven studies reporting surgical interventions were observational (n=22). After follow-up (3-59 months) body weight decreased (24.6-60.1kg) and BMI decreased (4-32.3kg/m²). All but one study was at high risk of bias. **Conclusions, discussion and/or practical application:** There is insufficient high quality evidence for diet, exercise and surgical approaches for weight loss in

this patient group. High quality randomised controlled trials are needed to determine most effective approach for weight loss and preventing excess weight gain and associated comorbidities in this patient group long term.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-048: ESTIMATING ENERGY EXPENDITURE IN VASCULAR PATIENTS: PREDICTIVE EQUATIONS VERSUS INDIRECT CALORIMETRY

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Introduction: Medical treatment in conjunction with nutrition support is pertinent for vascular patients who commonly seek tertiary care in the advanced stages of their disease. Both over and undernutrition are prevalent, exacerbating the need to accurately determine energy expenditure and subsequent energy requirements to negate consequences related to excessive or suboptimal energy intake. This study aims to compare resting energy expenditure (REE) measured by indirect calorimetry and REE estimated by commonly-used predictive equations (Schofield and Harris-Benedict equations) and an elderly specific equation (Miller equation) to determine the most suitable equation for vascular patients. **Methods:** Data was collected from four studies that measured REE in seventy-seven vascular patients admitted to an outpatient clinic or tertiary hospital. Standard protocols were used for all anthropometric measurements. Bland-Altman analyses were conducted to explore the agreement between measured REE and estimated REE. Presence of fixed or proportional bias was assessed by linear regression analyses. **Results:** On average, REE was overestimated when Schofield (+857kJ/day), Harris-Benedict (+801kJ/day) and Miller (+71kJ/day) equations were used. Wide limits of agreement lead to an over or underestimation from 1552-1755kJ. Proportional bias was absent in Schofield and Harris-Benedict equations but was present in the Miller equation, even after logarithmic transformation. **Conclusions, discussion and/or practical application:** Whilst the Miller equation tended to overestimate REE and was affected by proportional bias, the limits of agreement and mean bias were smaller compared to Schofield and Harris-Benedict equations suggesting that it is the preferred predictive equation for vascular patients. Future research to refine the Miller equation to improve its overall accuracy will lead to improvements in the provision of nutritional support for vascular patients.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-049: GROWTH VELOCITY OF PRETERM INFANTS IS DESCRIBED USING A WIDE RANGE OF CALCULATIONS METHODS

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Introduction: Clinicians assess growth of preterm infants in part by comparing to published values of growth velocity. In a systematic review we determined the frequency of use of numerical methods used to quantify growth (g/kg/day, g/d, cm/week, z-scores) in preterm infants (<37 weeks at birth). **Methods:** A search was conducted of the MEDLINE Database using PubMed up to April 2015 for studies that measured growth as a main outcome in preterm neonates between birth and hospital discharge or 40 weeks postmenstrual age. English, French, German and Spanish papers were included. Two reviewers extracted the data, with any disagreements being resolved in discussion with a third reviewer. **Results:** Of 1542 studies located in the search of MedLine in May 2015, 366 (24%) calculated growth velocity of the infants studied. Preliminary results revealed a wide range of methods used. Methods used for weight: g/kg/day: 40%, g/day: 35%, change in

z-scores/standard deviation scores: 24%. For g/kg/day, the time for the calculations varied: 63% began at birth/admission, 39% began at the weight nadir or after birth weight was regained; 16% used a unit-less exponential formula. For the denominators used in g/kg/day calculations, 59% did not define the denominator, 34% used an average weight, 19% used the initial weight, 12% used birthweight. Methods used for head circumference: 37% cm/week, 30% z-scores or percentiles and for length: 38% cm/week, 29% z-scores or percentiles. **Conclusions, discussion and/or practical application:** The lack of standardization of methods used to calculate preterm infant growth velocity makes comparisons between studies difficult and presents an obstacle to the use of research results to guide clinical practice.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-050: HAS DYSPHAGIA MEASURED BY EATING ASSESSMENT TOOL (EAT-10) A GOOD CORRELATION WITH ANY METHOD FOR NUTRITIONAL DIAGNOSIS IN PATIENTS WITH CANCER?

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Introduction: Dysphagia and malnutrition are the main problems that nutritionists must face in patients with cancer. The main aim of our study was determine if dysphagia measured by Eating Assessment Tool (EAT-10) in patients with cancer, is associated with nutritional diagnosis obtained through different methods. **Methods:** Cross-sectional study. Patients with head and neck or upper digestive tract cancer were included. During a single visit, all patients completed the EAT-10 and patient-generated subjective global assessment (PG-SGA) questionnaires. In addition to PG-SGA, nutritional status was also evaluated by three independent researches, using Malnutrition Universal Screening Tool (MUST) and body mass index (BMI). **Results:** Data from 35 patients were collected. Dysphagia was present in 74.1%. Mean EAT-10 score for overall cohort was 12.3±11.7 (range:0-32). Patients classified as "nutritional risk" by PG-SGA, MUST or BMI had higher EAT-10 score but significant difference only was observed when PG-SGA was used (21.4±9.6 vs. 4.7±1.6; p<0.001). Patients who met three criteria for malnutrition had higher EAT-10 score when compared with those who met one (26.3±5.5 vs. 13.7±12.8, p=0.027). Also, diagnosis of dysphagia using EAT-10 criteria, was associated with higher nutritional risk only when PG-SGA was used (RR 1.8, CI95% 1.1-2.8, p=0.01). **Conclusions, discussion and/or practical application:** Interestingly, when formularies were completed by patients (EAT-10 and PG-SGA) there was significant association between dysphagia and malnutrition that was not observed when others nutritional screenings were used by researches. Perception of a high degree of dysphagia affects on patient's own subjective nutritional status perception that is not observed when others more objective methods are used.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-051: HIGH FIBRE DIET REDUCES RADIATION-INDUCED GASTROINTESTINAL TOXICITY BOTH ACUTELY AND CHRONICALLY IN PATIENTS UNDERGOING PELVIC RADIOTHERAPY: A MULTI-CENTRE, RANDOMISED CONTROLLED TRIAL OF DIETITIAN-LED DIETARY ADVICE

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Introduction: Radiotherapy is an effective treatment for pelvic cancers, though many patients develop gastrointestinal symptoms. Historically, low fibre diets were recommended, despite both a lack of evidence and potential mechanisms through which fibre might actually be beneficial in preventing gastrointestinal mucosal toxicity. The aim was to compare high fibre, low fibre and habitual fibre diets for the prevention of gastrointestinal toxicity in patients undergoing pelvic radiotherapy.

Methods: Patients were randomised to high fibre (target \geq 18g/d non-starch polysaccharide, NSP), low fibre (\leq 10g/d NSP) or habitual fibre (control) diets. Patients received individualised dietary counselling from a dietitian at the start of radiotherapy to achieve these targets. Gastrointestinal toxicity was measured using the IBDQ-B score (standard validated questionnaire). Patients completed two 7-day food diaries and a sub-group provided stool samples for short-chain fatty acid (SCFA) analysis. **Results:** A total of 166 patients were randomised (high fibre 56, low fibre 55, control 55). Dietary advice resulted in significantly different fibre intakes between the three groups ($p<0.001$). The IBDQ-B scores reduced (worsening symptoms) in all groups between first and final week of radiotherapy, however, the reduction was smaller in the high fibre group (mean -3.1, SD \pm 13.0) compared with control (-10.8 \pm 13.6, $p=0.007$). No significant differences were observed in stool SCFA concentrations. At the 1-year time point, data were available for 121 patients. IBDQ-B scores improved in all groups compared to the first week, and the difference between high fibre (+1.6 \pm 11.9) and control (-6.9 \pm 12.5) groups was significant ($p=0.010$). No differences in IBDQ-B scores were identified between the low fibre and control groups at either time point. **Conclusion:** Dietary advice from a dietitian resulted in higher fibre intake in patients receiving radiotherapy for pelvic cancer and this resulted in reduced radiation-induced toxicity both acutely and chronically compared with habitual fibre intake.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-052: NUTRITIONAL STATUS AND RESTING ENERGY EXPENDITURE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction: The occurrence of malnutrition in patients with chronic obstructive pulmonary disease (COPD) is associated with a poor prognosis. In the malnutrition of COPD patients, a decrease in lean body mass (LBM) is characteristic. It is necessary to review the correlation between % arm muscle circumference (%AMC) and % basal metabolic rate (%BMR) as a reflection of LBM. **Aims:** To examine the causes of malnutrition in COPD patients, energy expenditure was observed and its relation to nutritional status was reviewed. **Methods:** In the case of twenty-two hospitalized COPD patients, resting energy expenditure (REE), basal metabolic rate (BMR), and respiratory quotient (RQ) were determined by body composition measurements and indirect calorimeter. %BMR was compared between two weight groups and by use or non-use of oxygen. **Results:** Average age 69 \pm 2.7years old. %IBW 75.7 \pm 15.4, %TSF 62.6 \pm 39.6, %AMC 83.1 \pm 10.2, %BMR 119.3 \pm 15.3, RQ 0.91 \pm 0.08. To compare %BMR and RQ among the patients, not using oxygen and the patients using oxygen, those using oxygen exhibited hypermetabolism and an increased tendency toward protein burning. **Conclusions, discussion and/or practical application:** The COPD patients showed a high frequency of malnutrition, and in this, the involvement of hypermetabolism was deemed to be one factor. No significant correlation was observed between %AMC and %BMR as a reflection of LBM, and it was determined that some other factor must be at play. For COPD patients, it was deemed important, to implement nutrition management that takes into account the individual patients and that is carried out in consideration of nutritional status and hypermetabolism.

COMPETING interests: The authors indicated no potential conflicts of interest.

P-053: THE CORRELATION OF POSTPARTUM NUTRIENT OF HUMAN MILK FOR SIX MONTHS WITH HER MOTHER DIET AND BODY OF COMPOSITION

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Introduction: In this study, we want to know the relation of newborn to six-month old baby's growth with whole breast milk feeding, whole formula milk feeding and combination feeding, and whether mother's eating pattern of body fat will affect the breast milk contents. **Methods:** Total recruited 42 mothers which were 36 completed the six-month tracking. There were 16 whole breast milk feeding, 11 whole formula feeding and 9 combination feeding. They were asked to record 3 days diet content, body composition analyzed and breast milk content analyzed after the 1, 3 and 6 month postpartum. Newborn growth was compared

with Children's Health Booklet. **Results:** The daily energy intakes were 31.5-32.4kcal/kg, 29.6-33.9kcal/kg, 26.0-30.7kcal/kg of whole breast feeding, combination feeding and whole formula feeding. Average of mother body weight were 59.2±8.2kg, 62.2±9.2kg and 59.8±6.3kg after 1month, and 55.4±8.3kg, 59.3±9.5kg and 58.3±7.4kg after 6months. Body fat ratios were 30.9±4.6%, 30.7a±4.2% and 31.5±6.2% after 1month, and 28.3±5.3%, 29.7±4.3% and 29.5±5.5% after 6months. Breast milk content was 65.2±9.8kcal/dL after 1month, 59.7±7.1kcal/dL after 3months and 60.7±9.4kcal/dL after 6months. **Conclusions, discussion and/or practical application:** There is no significant relation between breast milk contents and mother's body fat or daily dietary intake. One month postpartum breast milk contents are slightly higher than 3 or 6month. Whole breast milk feeding energy intake was higher than the others, and body weight and body fat were lower than the other two.

COMPETING INTERESTS: The authors indicated no potential conflicts of interest.

P-054: THE EFFECT OF ORDER OF CONSUMPTION ON POSTPRANDIAL BLOOD SUGAR LEVELS

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Introduction: Previous studies have shown that starting a meal with a salad can mitigate the increase in blood glucose levels. To extend this research, this study examined the effects of the order of consumption on postprandial blood glucose levels in meals high in protein (P), fat (F) or carbohydrate (C), assuming the null hypothesis that these variables would have no effect. **Methods:** Convenience sampling recruited eight Japanese university undergraduate volunteer participants. After obtaining their informed consent, they received instructions regarding meals and sleep for the 24 hour period prior to the experiment to standardise the pre-treatment measure. Immediately before consuming the test meal, participants' preprandial glucose level was measured using Terumo's Medisafe Mini GR-102. Each participant then ate a meal containing a salad, a P, F or C entrée then rice (order 1), totalling approximately 600kcal. Postprandial glucose levels were measured at 15, 30, 45, 60, 90 and 120 minutes post-consumption. This procedure was repeated one week later with the same participants eating the same type of meal as before but in a different order of consumption: rice, a P, F or C entrée then the salad (order 2). **Results:** Significant differences were observed between all matched pair order 1 and order 2 postprandial measures of blood glucose levels. Meals P and F also showed significant differences in insulin area under the curve (IAUC). **Conclusions, discussion and/or practical application:** These results confirm previous research showing that eating a salad before a meal can mitigate the increase in blood glucose levels. That the IAUC for C type meals did not decrease even when a salad was consumed first has implications for diabetics and those with weight issues. These results will be useful for nutritionists and dieticians in counselling patients to control their postprandial blood sugar levels through appropriate eating behaviours. Limitations are acknowledged and methodological improvements suggested.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-055: THE MALNOURISHED BRAIN

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Background: Psychiatric treatment of patients with serious mental illnesses is usually done via a combination of psychotherapy and cognitive behaviour therapy. However, in practice it seems not always feasible to apply these therapies in an effective way. A potential reason could be the nutritional condition of the psychiatric patient. Of all malnourished people in The Netherlands 17% are people with a psychiatric illness. Malnutrition can deteriorate health, which may result in: an increase in drug-use, extended hospital-stays, a decrease of the quality of life and an increase of the mortality risk. **Objectives:** The aim of the literature research is to examine the effect of malnutrition on the cognitive abilities of the malnourished psychiatric patient and to examine entry criteria for psychiatric treatment. In addition, compulsion/forced treatment and ethical aspects are taken into account. **Methods:** Literature research was done using four different databases. Full-text articles assessing the effects of malnutrition on brain function are searched. In addition, (multidisciplinary) guidelines are used. **Results:** Literature

research produced 16 systematic review and 22 cross-sectional studies. There is a growing interest among researchers in the effect of nutrition on the brain function. Several studies concluded that nutritional interventions are an important component in the treatment of psychiatric patients in order to contribute to the duration and effectiveness of treatment. However, there is no 'golden standard' for the treatment of severe malnourished patients. **Conclusion:** It is important that malnutrition is recognised at an early stage in order to improve the effectiveness of the treatment of malnourished psychiatric patients. A practical implication could be: dietary intervention prior to treatment of mental disorders is necessary for improving the effectiveness of psychiatric treatment.

COMPETING INTERESTS: The authors have declared that no competing interests exist.

P-056: MALNUTRITION RISK, MALNUTRITION PREVALENCE AND NUTRITIONAL THERAPY OF HOSPITALIZED CHILDREN IN TERTIARY LEVEL HOSPITAL IN INDONESIA

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Introduction: Pediatrics patients are critically vulnerable population to experience malnutrition even prior to admission. The presence of malnutrition will worsen growth and development of the population. Identifying malnutrition risk, defining nutritional status and malnutrition are very critical in order to plan adequate nutritional therapy to achieve better outcome including preventing hospital malnutrition. The objective of this study was to identify malnutrition risk, nutritional status, malnutrition prevalence and nutritional therapy of such population in the tertiary level hospital in Indonesia. **Methods:** It was a cross sectional descriptive research taken for 2 weeks in 2014. Inclusion criteria were ≥ 48 hours admitted, age ≥ 1 month, no organomegaly, fluid imbalance and critically ill conditions. Subjects were screened by the modified Strong-Kids screening tool, assessed by WHO-NCHS for nutritional status and assessed by SGNA for malnutrition status. Nutritional therapy was identified by categorizing with standard or modified diet therapy. **Results:** There were 169 subjects satisfied inclusion criteria with 52.1% of subjects were boys and 47.9% girls. Prevalence of malnutrition risk was 52.1% at moderate risk and 42.6% at high risk. Prevalence of stunted children was 50.3% and wasting was 53.8%, while overweight and obese was 9.5% of subjects. Prevalence of malnourished children were 43.8% (28.4% at moderate and 15.4% at severe malnourished). Hence, there were 60.4% of subjects requiring modified diet which 37.25% were supported by ONS. **Conclusions, discussion and/or practical application:** Prevalence of malnutrition risk and malnourished conditions of pediatrics patients in tertiary level hospital in Indonesia were enormously. It was higher compared to its neighborhood countries. Its consequences numerous modified diet therapy performed to achieve better outcome and prevent hospital malnutrition.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-057: ASPIRATION THERAPY: A MINIMAL INVASIVE THERAPY FOR THE TREATMENT OF MORBID OBESITY. PRELIMINARY RESULTS

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Introduction: Obesity is one of the most important risk factors for chronic disease since it causes about 2,5 million of deaths each year. The obesity treatment is a challenge for health professionals as it is a multifactorial disease. In recent years, there has been a surge of bariatric endoscopic techniques. One of these new systems for treating obesity is the AspireAssist. **Method:** Placing a modified endoscopic gastronomy tube, called the A-Tube, in the stomach, the patient is able to suck and empty about one third of the caloric intake by connecting a suction pump in the outer harbor of the probe. The emptying process takes place 20 minutes after the main meals before the nutrients reach the intestine. When the treatment is complete, the tube is removed doing another endoscopy called withdrawal PEG that lasts for 15 minutes. **Nutritional therapy:** The patient has to follow a 2-3 day liquid diet in order to help digestion. Afterwards, a low calories Mediterranean dietary pattern is delivered to the patient. The dietary pattern includes images and explanations of the food rations and distribution during the day. The nutritionist educates the patient about how to adopt a healthy lifestyle combining both healthy eating behaviours and

physical activity. Each month the patient is treated by a multidisciplinary team of specialists that coordinate all aspects of the treatment. **Results:** In the Endoscopy unit we have done 24 interventions to obese patients with average BMI of 46.80 kg/m² and an average weight of 131.06kg. After six months, the average weight loss of the patient was about 25.6kg (n=12). **Discussion:** The results show that Aspire method is safe and effective in losing weight. However, long term studies are still needed so it is not certain if it is an appropriate technique to treat obesity.

COMPETING INTERESTS: The study was funded by Aspireassist.

P-059: EFFECT OF SMART GOAL SETTING AND NUTRITIONAL ASSESSMENT ON TREATMENT CONTINUATION IN PRIMARY CARE DIETETIC TREATMENT

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Introduction: Primary care dietitians need to demonstrate their effectiveness to both patients and stakeholders. Treatment compliance influences overall treatment effectiveness. We studied the influence of (SMART) goal setting and the use of nutritional assessment on treatment continuation after one consultation. **Methods:** This study was part of the DIEET study (DIEtetics: Effective and Towards a sustainable profession). Trained students performed structured observations during first dietetic consultations in the primary care setting. Primary focus was on SMART goal setting and nutritional assessment. Data on treatment termination or continuation after one consultation was obtained at 6month study follow-up. Univariate logistic regression analysis was used to express associations between goal setting and nutritional assessment and treatment continuation after one consultation. **Results:** Complete data were obtained from 407 patients (40% male; mean age 56±14yrs) with overweight (46%), DM2 (36%), hypercholesterolemia (10%), hypertension (3%), or malnutrition (7%) visiting 182 dietitians. During first consultation, treatment goals were defined in 292 patients (72%), and SMART goals in 80 (20%). Nutritional assessment was performed in 327 patients (80%). 63 patients (16%) had only one dietetic consultation. Treatment continuation after one consultation was associated with goal setting in general (OR 3.2 [95%CI 1.8-5.6] p<0.01) and SMART goal setting (OR 3.2 [95%CI 1.3-8.4] p=0.02), and performing nutritional assessment (OR 3.5 [95%CI 1.9-6.2] p<0.01). **Conclusions, discussion and/or practical application:** Setting SMART treatment goals and performing nutritional assessment during the first dietetic consultation are related to higher treatment continuation in primary care setting. The DIEET study will further explore whether SMART goal setting and performing nutritional assessment during the first consultation will result in higher long-term effectiveness.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-060: FODMAP IN THE DIET OF CHILDREN. LIGHTS AND SHADOWS

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Introduction: In last years poorly absorbed, osmotically active, short-chain carbohydrates names FODMAP (Fermentable Oligo-, Di-, Mono-saccharides, and Polyols) are identified as potential triggers for the symptoms of functional gastrointestinal disorders. However in the diet of healthy people they have significant functions as a natural laxative, regulate the rhythm of bowel movements, have a prebiotic effect and they are a source of short chain fatty acids. **Methods:** Retrospective study of 44 children, age range 4-17yrs with gastrointestinal functional disorders (constipation, functional abdominal pain and coeliac disease) hospitalized in Department of Pediatrics, Gastroenterology and Nutrition Children's Hospital in Olsztyn. A food frequency questionnaire was used to collected information about consumption of food sources of FODMAPs categorized in 6 groups: sweets and snacks, dairy products, cereal products, fruits, vegetables and drinks. The test results of serum levels of C-reactive proteins (CRP), alanine aminotransferase (ALT), aspartate aminotransferase (AST) were obtained from medical

history. **Results:** The results of analyzing frequency of consumption food sources of FODMAPs indicate that in diet of children with functional disorders of gastrointestinal tract the main sources are group of dairy products ($2,70 \pm 1,07$ times/day) and sweets and snacks ($2,05 \pm 1,46$ times/day). The average of daily intake in the other groups was lower and amounted to cereal products $1,63 \pm 1,03$ times/day, to drinks $1,17 \pm 0,87$ times/day, to fruits $1,14 \pm 0,71$ times/day and to vegetables $0,65 \pm 0,59$ times/day. Analysis of the associations between frequency of consumption food sources of FODMAPs and test results of serum levels of CRP, ALT and AST didn't show statistically significant correlations. **Conclusions, discussion and/or practical application:** Current evidence on the effectiveness of low FODMAP diet is insufficient. Moreover, there are no official recommendations regarding low FODMAP diet. More research, with larger sample of children is needed to confirm the influence of FODMAPs consumption on inflammatory markers, long-term efficacy and safety of applying low FODMAP diet.

COMPETING INTERESTS: Katarzyna Boradyn, Elżbieta Jarocka-Cyrta and Katarzyna Przybyłowicz declare that they have no conflict of interest.

P-061: HOSPITAL FOOD AND BEVERAGE PACKAGING: EXPLORING THE IMPACTS ON DIETARY INTAKES BY OLDER PEOPLE

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Introduction: Previous research has identified that hospital food and beverage packaging presents a barrier to dietary intakes for older hospitalised adults. This study, conducted in a simulated hospital setting explored the impact of packaging in sealed and pre-opened formats on dietary intakes of well older people (65yrs and over). **Methods:** Nutritional status was measured using the Mini Nutritional Assessment Short Form (MNA-SF[®]) and intake was measured from weighed plate waste. Subjects were allocated to either a breakfast and snack meal or a lunch and snack meal on two occasions one week apart. Meals were served in a shared ward environment and each subject experienced a 'sealed' and 'pre-opened' meal and snack condition. **Results:** Sixty-two subjects took part in the study at the University of Wollongong. Differences in intakes were determined by paired samples T-tests and effect size. Overall findings were not significant for intake and the 'sealed' versus 'pre-opened' conditions. However, effect size of the intake differences for the subjects identified by the MNA-SF[®] as 'at risk', indicate that this vulnerable group ate less of the high protein snack (cheese and biscuits) in the 'sealed' condition. **Conclusions:** This study has implications for the provision of packaged high protein snacks for the older inpatient. Further research is indicated with 'at risk' and frail older people in the hospital environment; to investigate the impact of packaging on dietary intakes and opportunities for packaging redesign to improve the 'openability' of food and beverage packages.

COMPETING INTERESTS: University of Wollongong (UOW) Global Challenges funding and UOW Food and Health Strategic Research Initiative funding has contributed to this research.

P-063: OUTCOMES IN COELIAC DISEASE: A QUALITATIVE EXPLORATION OF PATIENTS' VIEWS ON WHAT THEY WANT TO ACHIEVE WHEN SEEING A DIETITIAN

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Introduction: Coeliac disease (CD) is managed by life-long adherence to a gluten-free diet and dietitians have the potential to facilitate this. Patient involvement through shared decision-making is important in behaviour-change approaches used by dietitians but there is little evidence supporting its inclusion in evaluating dietetic interventions. The aim of this qualitative study was to explore patients' preferences for diet and nutrition-related outcomes in CD. **Methods:** Adults with CD and adult carers of children with CD were invited to participate through coeliac support networks. Participants took part in either a telephone or face-to-face interview or a focus group which were audio-recorded. Records were transcribed verbatim and then analysed using a framework method to identify themes. Ethical approval was obtained. **Results:** Twenty-nine adult patients aged 55.4 ± 14.9 yrs and five parents of CD children aged 10.8 ± 4.1 yrs participated in the study. Data were collected

from individuals a mean of 7.4±8.4yrs after diagnosis with coeliac disease. Three main outcome-related themes emerged: (1) Participants wanted information specific to their lifestyle and time since diagnosis, focussing on gluten-containing foods, practical issues, prescribable items and general nutrition: 'what I hope to get from the dietitian [is] am I still getting the same nutrition from this food?' (2) The consultation process impacted on some participants' experience, including the dietitian's CD expertise, consistency of dietitian seen and the frequency and length of appointments. (3) Participants wanted help with concerns about short- and long-term health including osteoporosis risk, unwanted weight gain and the 'dangers of [high levels of] sugar in gluten-free products'. Clinical monitoring, e.g. bone scans and antibody measurements, were not described as being of importance for most participants. **Conclusions:** The outcomes preferred by these participants focussed on their desire for individualised information and resources, their consultation experience and specific health concerns.

COMPETING INTERESTS: The British Dietetic Association General and Educational Trust provided funding to undertake this study.

P-064: THE AUSMED HEART TRIAL: IMPLEMENTING AN AUSTRALIAN MEDITERRANEAN DIET FOR SECONDARY PREVENTION OF CORONARY HEART DISEASE

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Introduction: Adherence to a traditional Mediterranean diet is recognised to prevent coronary artery disease, a major cause of global deaths, and to reduce the risk of secondary complications of the disease. Despite this, Mediterranean diet intervention trials have predominantly focused on primary prevention of coronary artery disease. Additionally, they have also mostly been conducted in Europe. The landmark secondary prevention trial, The Lyon Diet Heart Study, showed a 70% reduction in cardiac death and event rates with Mediterranean diet intervention. This study was conducted pre-statin era and has never been repeated. A secondary prevention trial in the multi-ethnic Australian population, where coronary artery disease is prominent, is warranted. **Methods:** The AusMed Heart Trial is a randomised control trial of a Greek-style Mediterranean diet *versus* standard care diet (low fat, National Heart Foundation guidelines) for patients with diagnosed coronary artery disease. Key effect measurements are 6month compliance to diet intervention and cardiac risk markers (including body composition, lipids, inflammatory markers, endothelial function) and 12month cardiac re-event rate and diet sustainability. Current recruitment sites are St Vincent's Private Hospital and the Northern Hospital in Melbourne. Both diet groups receive intensive counselling and resource provision with a Dietitian at 0, 3 and 6months, plus phone contact. **Results:** Recruitment commenced October 2014 and is ongoing; pilot cohort characteristics (n=33, 32 males) at baseline include: mean age 65±8yrs, 30% of participants have type 2 diabetes, mean BMI 29.6±5.4kg/m². Common dietary changes recorded at 3 and 6months include increased olive oil, nuts, fish, legumes, leafy greens and herbs with reduced red meat consumption (Mediterranean diet group) and reduced saturated fat intake, plus adherence to fruit and vegetable recommendations (low fat diet group). **Conclusions, discussion and/or practical application:** Evidence of efficacy of a Mediterranean diet intervention in Australian patients with coronary artery disease would inform practice in secondary prevention.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-065: THE ROLE OF DIET IN ENDOMETRIOSIS RISK

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Introduction: Endometriosis is a hormone-dependent, chronic inflammatory gynaecological disease. Characterized by the presence of endometrial tissue outside the cavity of uterus. This condition causes pelvic pain symptoms impacting on the physical, mental and social wellbeing of reproductive-age women. The aim is to elucidate risk and beneficial effects of dietary factors

in the risk and progression of endometriosis and to devise effective dietary strategies for prevention endometriosis. **Methods:** Searches in the electronic databases MEDLINE were conducted. The relevant worldwide literature including prospective data from the Nurses' Health Study II (1989-2001) and two case control studies conducted in Northern Italy between 1984 and 1999 were reviewed and discussed. **Results:** Expert reviews of epidemiologic studies on nutrition and endometriosis show that a diet is a potentially modifiable risk factor for endometriosis. Green vegetables and fresh fruit, fish oil dairy products rich in calcium and vitamin D are probably associated with a lower risk of endometriosis. Convincing risk factors include trans-unsaturated fats, saturated fat, beef and another red meat. Reports of the relationship between the consumption of fibre, whole grain foods, soy and phyto-oestrogens, coffee (caffeine), and risk of endometriosis are contradictory. However, increased levels of estrogen in women consuming large amounts of caffeine per day have been observed. Consumption of alcohol, butter, liver were not found related to endometriosis. 12 month-study had shown that gluten free diet decrease painful symptoms of endometriosis. Vitamin C and E, due to their antioxidant properties, may reduce the clinical symptoms of endometriosis. **Conclusions, discussion and/or practical application:** Currently, there is evidence of a significant relationship between the diet and the risk of endometriosis, but further studies are needed to clarify the effect of food intake on the risk of disease and its progression.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-066: NUTRITIONAL ASSESSMENT IN A COHORT OF PATIENTS WITH SCLERODERMA

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Introduction: Systemic sclerosis (SSc) is an autoimmune disease characterized by thickening and tightness of multiple organs. The gastrointestinal tract (TGI) is the most commonly involved internal organ, it's occurs in 75 to 90% of the patients, increasing morbimortality. Objective: To evaluate the nutritional status and the prevalence of gastrointestinal symptoms in patients with SSc. **Methods:** This observational, cross-sectional study compared patients with SSc and healthy controls were carried out at a ratio of 1 to 1.5. We included consecutive patients, meet ACR 2013 SSc criteria. We defined severity by modified Medsger score. Nutritional status was assessed by Cribage Malnutrition Universal Screening Tool (MUST) categorizing patients into low, moderate and high malnutrition risk. The proportion of body fat was quantified by bioelectric impedance analysis (BIA), assigning the categories of low, recommended, high or very high percentage of body fat. Gastrointestinal symptoms were collected using the CSRG questionnaire. **Results:** Included 18 patients with SSc and 27 healthy controls. The 17% and 50% of patients with SSc presented moderate risk and high risk of malnutrition, as compared to 0% in healthy controls ($P < 0.001$). No found differences in body fat composition. The 31%, 15% and 8% of patients with scleroderma had a low, moderate and severe involvement in the gastrointestinal subdomain of the modified Medsger severity score respectively. The order of most frequency gastrointestinal symptoms were: early satiety, abdomen swelling or bloating, reflux symptoms, dysphagia, and retrosternal burning. **Conclusions:** The 50% of patients with SSc revealed high risks of malnutrition and more than two thirds presented symptoms from the TGI. In our country, the amount of information about on correlation between nutritional condition and gastrointestinal symptoms is very small. Early detection and intervention of a multidisciplinary team, that includes an early nutritional evaluation is a priority and must be performed in the clinical evaluation.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-067: ADHERENCE AND NUTRITIONAL STATUS IN PATIENTS ATTENDING A PRIVATE PRACTICE OF NUTRITION FOR WEIGHT REDUCTION IN NORTHERN ARGENTINA

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Introduction: Analyze treatment adherence allows to evaluate the effectiveness of the tools provided for weight reduction and nutrition professional work. It aimed to assess nutritional status and adherence to treatment in patients who attended

a private practice. **Methods:** Nutritional status was classified according to WHO parameters (BMI and waist circumference). Adherence to treatment was measured evaluating if the patients were able to achieve three months of treatment and if they reached down 10% from the initial weight within this period of time. All patients older than 18 who attended between March 23 and August 23, 2015 were included. **Results:** The sample was composed of: n=153. 74% of them were women. The most representative range was 25 to 40yrs, for both men and women (67% and 62%, respectively). In relation to nutritional status of men 33% were overweight, 30% obese Class 1 and 22%, Class 2 obesity. Waist circumference: 65% had high risk and 25% moderate risk. In women 40% were overweight; 24% Obesity Class 1 24% and 20% normal weight. Waist circumference: 25% had slight risk and 62% had no risk. With respect to adherence, in both sexes, it was 26%. 33% of that reached three months of treatment, weight reduction was 10% of initial weight. 70% of participants had already made weight loss treatments before and 82% recover the lost weight. **Conclusions, discussion and/or practical application:** In a previous study conducted in 2015 at the same institution with sample with similar characteristics, adherence was 33%. Our job is to provide tools to change bad habits and improve the ratio of patients with their own body image and food. Another competency is to provide healthy and not restrictive treatment; empathize; motivate to increase adherence; that treatment is a path to healthier styles and not a torture for weight reduction.

COMPETING INTERESTS: The author of this communication states that it has no conflict of interest.

P-069: COMPARING RESTING ENERGY EXPENDITURE MEASUREMENTS OF HEALTHY YOUNG ADULTS USING INDIRECT CALORIMETRY AND PUBLISHED PREDICTIVE EQUATIONS

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Introduction: Accurate measure of Resting Energy Expenditure (REE) is the cornerstone of nutritional assessment to determine an individual's energy requirements consistent with long-term good health. Although the metabolic cart is a validated indirect calorimetry tool to measure REE, its use is limited due to high cost and difficulty to use. Predictive equations derived through linear regression of data from the population studied are frequently used instead even though only 50-75% of the variability in RMR measurement is explained. This study aims to compare REE measurements obtained from the established Vmax Spectra (SensorMedics, Yorba Linda, CA) metabolic cart and commonly used predictive equations. **Methods:** Post telephonic screening, 76 adults (45 women, 31 men) aged 19.3±0.1yrs, BMI 22±0.27kg/m² were recruited from the university campus. Using standardized procedures, duplicate body weight, height and REE measurements (using the Vmax Spectra) were obtained ensuring that subjects abstained from food and physical activity for 12hrs prior to appointment. REE were calculated using 5 prediction equations: the Harris-Benedict Equation (HBE), Mifflin-St. Jeor (MSJE), Owen, WHO/FAO/UNU, and Energy Per Kilogram. **Results:** Pearson's correlations were significant between each of the equations and the REE measurement (P<0.01) with % accuracy (±5%) ranging from 7-88%. Paired T-test values were significant between the Vmax Spectra and the kcal/kg and HBE prediction equations (P<0.05). **Conclusions, discussion and/or practical application:** The HBE emerged as the most accurate and reliable tool for predicting REE for healthy young adults. However, limitations of prediction equations should be kept in mind while determining REE for the sampled population. Studies on diverse groups living under different environmental, economic, and social conditions are needed.

COMPETING INTERESTS: The authors of this communication state that it has no conflict of interest.



P-070: COMPARISON OF A NOVEL, DIGITAL NUTRITION ASSESSMENT TOOL (PT-GLOBAL APP) AGAINST THE VALIDATED SCORED PATIENT-GENERATED SUBJECTIVE GLOBAL ASSESSMENT (PG-SGA) IN PATIENTS WITH HEAD AND NECK CANCER

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Introduction: Malnutrition is common in patients with head and neck cancer thus early identification of at risk patients through nutrition assessment is critical. The aim of this study was to evaluate the agreement of the Pt-Global app against the paper version of the scored Patient-Generated Subjective Global Assessment (standard PG-SGA), in patients with head and neck cancer receiving radiation therapy (RT). **Methods:** Nutritional assessment using the standard PG-SGA and the Pt-Global app was completed in 152 patients with head and neck cancer (83% male, 17% female; aged 58.2±9.8) at week one and eight RT at six Australian sites. To determine agreement between methods, Bland-Altman analysis was used for scores and Kappa Statistic for global categorisation of nutritional status. **Results:** Median scores of the Pt-Global app and standard PG-SGA were both 3 (1-20) at week one and 15 (2-37) at week eight respectively. The scoring by the two measures was significantly correlated at week one ($r=0.994$) and week eight ($r=0.999$). The bias was small at week one RT (0.04) and week eight RT (0.05). The limits of agreement (0.6% difference week one and 0.3% at week eight) are not clinically significant and therefore the scoring by both methods shows good agreement. There was disagreement in the global classification of nutritional status by the Pt-Global app against the standard PG-SGA (week one 15.7%, Kappa 0.618; week eight 57.1% week 8, Kappa 0.234) with the majority of patients misclassified into moderate and severe malnutrition ratings. The level of agreement for the global categorisation is not acceptable for the clinical setting and suggests the algorithm for global classification requires review. **Conclusions, discussion and/or practical application:** Although there was good agreement between the scoring of the Pt-Global app and standard PG-SGA, the misclassification of global nutritional status by the Pt-Global app warrants further investigation.

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P-071: METABOLIC EVALUATION IN UNIVERSITY STUDENTS IN MONTEVIDEO

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Introduction: Chronic non-communicable diseases are a growing problem. Various risk factors involved in their evolution, associated with lifestyles, habits and customs. The aim of the study was to determine the visceral adiposity and insulin sensitivity via an indicator of cardiometabolic risk. **Methods:** Undergraduate university health was studied. It was tested in a random sub-sample of 38 university, triglycerides (TG), HDL-*col*, BMI, and waist circumference (WC). With these values the VAI (Visceral adiposity index) was calculated. The VAI is the application of a formula by sex and the optimal cut-off point of point of VAI (PC stratifying for age patients quintiles) to detect subjects Metabolic Syndrome (ATP criteria): 2,52 (quintile age first age < 30yrs for both sexes). **Results:** The median age was 23yrs (IQR, 21.00-25.75). Predominated female, 33 women 87% (CI:71.91-95.59%) and 5 men. 13% (CI:4.41-28.09%). The average WC in women was 0.82 (CI:0.82-0.82) in men and 0.97 (0.93-0.94) $p<0.001$. The TG showed a mean of 89 (IQR:72-129). The mean HDL-*col* in males was 46.1 (CI:45.8-46.3) and 59 female (CI:58,8-59.1). $p=0.029$ Student T. The median BMI was 21.91 (IQR:21.22-24.39). The VAI applied in the study population was 1.09 (1.21-1.65). **Conclusions, discussion and/or practical application:** In these young individual indicators studied population was within normal parameters. Through measurement VAI population not presented metabolic risk. The usefulness of this indicator stands out because it includes lab values, anthropometric measurements and also includes gender and age differences.

COMPETING INTERESTS: The authors of this communication state that it has no conflict of interest.

P-073: PRE & PROBIOTIC THERAPY IN CHRONIC KIDNEY DISEASE: A RANDOMISED CONTROLLED TRIAL

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Introduction and aims: The generation of uremic nephrovascular toxins in patients with chronic kidney disease (CKD), specifically indoxyl sulphate (IS) and p-cresyl sulphate (PCS), is attributed to the dysbiotic gut microbiota. The aim of this study was to evaluate whether synbiotic (pre- and probiotic) therapy alters the gut microbiota and reduces serum concentrations IS and PCS in patients with CKD. This abstract presents a sensitivity analysis of the subgroup not exposed to antibiotic treatment during the trial. **Methods:** Pre-dialysis adult CKD participants (estimated glomerular filtration rate [eGFR] 10-30mL/min/1.73m²) were recruited between 1/5/2013 and 11/12/2013 to a randomised, double-blind, placebo-controlled, crossover trial of synbiotic therapy over 6 weeks (4-week washout). The primary outcome was serum IS. Secondary outcomes included serum PCS, stool microbiota profile, eGFR, proteinuria-albuminuria, urinary kidney injury molecule-1, serum inflammatory biomarkers (interleukin [IL]-1 β , IL-6, IL-10, tumour necrosis factor- α), serum oxidative stress biomarkers (F2-isoprostanes, glutathione peroxidase), serum lipopolysaccharide, patient-reported health, Gastrointestinal Symptom Score, and dietary intake. **Results:** Of the 37 individuals randomised (age 69 \pm 10yrs, 57% male, eGFR 24 \pm 8mL/min/1.73m²), 21 remained antibiotic-free throughout the study. Synbiotic therapy significantly reduced both serum IS (-5 μ mol/L, 95%CI -8 to -1 μ mol/L) and PCS (-25 μ mol/L, 95%CI -38 to -12 μ mol/L). Synbiotics also altered the stool microbiome, particularly with enrichment of Bifidobacterium and Faecalibacterium and depletion of Ruminococcaceae. No changes were observed in the other secondary outcomes. **Conclusions:** Synbiotics decrease serum uremic toxin levels in CKD patients not exposed to antibiotic treatment. The medication was well tolerated and patient adherence was high. Large-scale clinical trials of the impact of synbiotic therapy on patient-level outcomes in CKD are needed to explore the clinical relevance of this low cost nutrition-based therapy.

COMPETING INTERESTS: The authors of this communication state that it has no conflict of interest.

P-075: THE IMPACT OF SHORT-TERM DIETARY INTERVENTION ON THE ANTIOXIDANT CAPACITY AND LIPIDS PROFILE IN CARDIOVASCULAR PATIENTS

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Introduction: Increasing diet oxygen radical antioxidant capacity is discussed as promising intervention in lowering of oxidative stress and improving lipids profile in cardiovascular diseases (CVD) but no conclusion was found. **Objectives:** To study the impact of the short-term dietary intervention increasing natural antioxidants supply on oxidative stress markers and lipids profile in CVD patients. **Methods:** In total 48 patients with diagnosed CVD were included into the 6-weeks of dietary intervention. Patients received foods high in natural antioxidants measured by oxygen radical antioxidant capacity (ORAC, μ mol Tx/day). Oxidative stress markers concentration in serum (oxLDL, alfa-tocopherol, retinol, uric acid) and lipids profile before and after the dietary intervention were measured. Cluster analysis was used to find initially Low-Stress and High-Stress patients based on markers concentration before the dietary intervention. **Results:** During dietary intervention total ORAC of daily diet was increased by 96% in Low-Stress (n=18) and 86% in High-Stress (n=30) patients. After the dietary intervention in Low-Stress patients the significant increase of beta-carotene (by 21.4%; from 1.00 to 1.17 μ g/mL) and decrease of IL6 (by 23.4%; from

7.74 to 2.40pg/mL) were observed. In High-Stress patients the significant increase of alfa-tocopherol (by 12.9%; from 13.53 to 14.96ug/mL), beta-carotene (by 29.6%; from 0.92 to 1.15ug/mL), retinol (by 11.3%; from 2.45 to 2.72ug/mL) and decrease of IL6 (by 22.7%; from 5.64 to 2.69pg/mL), oxLDL (by 16.5%; from 2.36 to 2.00ug/mL), LDL (by 8.0%; from 120 to 111mg/dL) were observed. **Conclusions:** The favorable changes in markers of oxidative stress and lipids profile depended on initial level of oxidative stress markers, the worse initial oxidative stress status, the better improving of oxidative stress markers and lipids profile in CVD patients after dietary intervention increasing natural antioxidants supply.

COMPETING INTERESTS: The author of this communication states that it has no conflict of interest.

P-076: WEIGHT GAIN AND CARDIOVASCULAR RISK FACTORS IN LIVER TRANSPLANT RECIPIENTS

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Introduction: Excessive weight gain is increasingly common after liver transplantation as is the prevalence of cardiovascular risk factors, leading to increased CVD morbidity and mortality. Currently there is no Australian data published or evidence based practice guidelines for excessive weight gain or obesity in this patient group. The aim was to characterise weight and cardiovascular risk factor profiles of adult's pre and post-liver transplantation. **Methods:** A retrospective case note audit of 171 adults who received a orthotopic liver transplantation, between 1992-2011 at Flinders Medical Centre in Adelaide, South Australia. Anthropometric, socio-demographic and clinical data were collected pre-transplant, 4months, and 12months post-transplant and yearly thereafter for five years. The proportion of participants with risk factors pre and post-transplant were compared and predictors of post-transplant weight gain were assessed. **Results:** Weight significantly increased from 4months to 5yrs after transplantation ($p<0.001$), with the greatest increase of 5.3kg (7%) occurring between 4months and 1year post-transplant. Pre-transplant the prevalence of dyslipidaemia was 61%, hypertension 35%, diabetes 33%, and obesity 26%. Compared with pre-transplant, a significantly greater proportion of the sample presented with hypertension (62%), diabetes (47%) and obesity (43%) within 5yrs post-transplant ($p<0.05$). Patients' age, pre-transplant obesity and use of immunosuppressant medications were significant predictors of weight gain post-transplant. **Conclusions, discussion and/or practical application:** Rapid weight gain tends to occur between 4months and 1year post-transplant. A focus on preventing excessive weight gain pre and post-transplant may have a clinically significant impact on decreasing the risk of obesity and cardiovascular related morbidity and mortality.

COMPETING INTERESTS: The authors of this communication state that it has no conflict of interest.

P-077: FAT-FREE MASS, BODY MASS INDEX, SLEEP DURATION AND BLOOD PRESSURE BUT NOT PHYSICAL ACTIVITY INFLUENCE INTERINDIVIDUAL VARIATION IN RESTING ENERGY EXPENDITURE

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Introduction: The major factor determining daily energy expenditure is resting energy expenditure (REE) (60-80%). Knowing the factors determining the high interindividual variation of REE have a great potential in prevention and treatment of overweight and obesity. The aim of the study was, therefore, to define the role of fat-free mass (FFM), body mass index (BMI), sleep duration, blood pressure (BP) and physical activity (PA) in REE. Additionally, the results obtained by four predictive equations (Mifflin 1990, Harris-Benedict 1918, Müller 2005, Owen 1988) were compared to the results measured by indirect calorimetry (Quark RMR). **Methods:** REE was measured in 84 healthy subjects (33 ± 12 yrs) under standardized conditions. Further, body composition via bioelectrical impedance analysis, BP and BMI were calculated. PA and sleep duration were assessed via standardized questionnaires. Comparisons between measured and calculated REE-values were performed with

paired T-test. A stepwise regression analysis was performed using REE as dependent variable. **Results:** In the study population (BMI $24,1\pm 3,4\text{kg/m}^2$, FFM $54,5\pm 2,6\text{kg}$, blood pressure $128/81\pm 17/12\text{mmHg}$, sleep duration $7,2\pm 0,6\text{h}$) the major determinant of REE was FFM, which accounted for 72% of the trait variance (R^2). Additional effect of systolic BP and BMI increased total R^2 to 77% in a subgroup analysis ($\leq 30\text{yrs}$). In non adjusted models FFM, BMI, sleep duration and systolic BP correlated with REE significantly but adjusted (age, BMI, PA and FFM for BP), only FFM and systolic BP correlated ($r=0,7$; $r=0,38$). The effects of PA were not significant. All equations significantly overestimated measured REE, except for the Mifflin equation, for which there were no significant differences. **Conclusions, discussion and/or practical application:** Further research is needed to identify more determinants of REE. In particular sleep duration and PA are good starting points to counter obesity. Valid equations are necessary especially to help critically ill patients.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-079: ASSOCIATIONS BETWEEN DIETARY PATTERNS AND INSULIN RESISTANCE IN PATIENTS WITH NON ALCOHOLIC FATTY LIVER DISEASE

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Introduction: Non-alcoholic fatty liver disease (NAFLD) is considered as the hepatic manifestation of metabolic syndrome. Insulin resistance (IR) plays key role both in the development and progression of NAFLD. Besides its role in obesity, diet has been associated with IR, with high fat and particularly high saturated fatty acids intake, as well as high carbohydrate consumption being positively associated with IR. **Aim:** To investigate associations between a-posterior dietary patterns and IR in patients with NAFLD. **Methods:** A cross-sectional study, in which patients were prospectively enrolled from July 2009 to November 2015 in two outpatient liver clinics. One hundred thirty individuals (age: $47\pm 12\text{yrs}$, 70% males, BMI: $30.7\pm 4.9\text{kg/m}^2$) with NAFLD (defined by elevated ALT and/or GGT, liver steatosis at ultrasonography and exclusion of other causes of liver injury) were included in the study. Biochemical analyses were performed through established procedures, after 12h fasting. Dietary characteristics were recorded using a food frequency questionnaire. Principal component analysis (PCA) was performed to identify participants' dietary patterns. Associations between the IR Homeostasis Model Assessment index (HOMA-IR) and dietary patterns were further evaluated using multiple linear regression analyses. **Results:** PCA identified eight dietary patterns explaining 76.5% of the total variance of dietary habits. A dietary pattern characterized by low-fat dairy, non-refined cereals and fish was negatively associated with logHOMA-IR (standardized $\beta=-0.17$, $P=0.04$), after controlling for age, sex, waist circumference, smoking habits, high-sensitivity CRP and adiponectin levels. On the contrary, a Western-type dietary pattern rich in full-fat dairy products, refined cereals, potatoes and red meat tended to be positively associated with logHOMA-IR (standardized $\beta=0.16$, $P=0.07$), after controlling for the aforementioned confounders. **Conclusion:** Adherence to a dietary pattern rich in low-fat dairy, non-refined cereals and fish was negatively associated with insulin resistance, which is involved in both development and progression of NAFLD.

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P-080: BEHAVIORAL FEEDING PROBLEMS OF NORMALLY DEVELOPING CHILDREN UNDER 4 YEARS OF AGE

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Introduction: It is estimated that 25-45% of normally developing children experience feeding difficulties of varying severities with variable health outcomes such as faltering growth and psychological complications. The management of feeding difficulties in childhood is poorly understood. One objective of the study was to identify common problematic behaviours of normally-developing children, less than four years of age, who were referred to a specialized clinic where feeding issues are addressed. Another objective was to determine associations between responsiveness to treatment and number of presenting problematic behaviours and clinic visits. **Methods:** Secondary data was collected retrospectively from 106 medical charts of patients seen over the last five years. Data included age, gender, anthropometric measures, all medical history, dietary history and all feeding-related behaviours. Patients who demonstrated clinical improvements within first four appointments were categorized as responsive, those with no progress by fourth appointment were considered non-responsive and thus a more complex case. Data abstraction sheets were completed by trained researchers. Data analysis included two-tailed T-tests to determine the association between responsiveness to treatment and the number of problematic behaviours, frequency of visits to the clinic, presence of a medical condition and weight. **Results:** There were statistically significant differences between the responsive and non-responsive groups in the total number of problematic behaviours ($p < 0.0001$), specific problematic behaviours, total number of visits ($p < 0.0001$) and presence of concurrent medical condition ($p < 0.0001$). **Conclusions, discussion and/or practical application:** It is useful to establish better definitions of responsive cases of feeding difficulties as they differed significantly from the non-responsive group. Using the number of problematic behaviors and clinic visits may help determine the severity of the cases. The study addressed gaps in the literature by characterizing the target population, acquiring data to better establish consistent nomenclature of feeding difficulties, and information to help design a screening tool for treatment protocols.

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P-081: BODY IMAGE DRAWINGS IN ADOLESCENT GIRLS: ROBUST SCREEN FOR RISK OF EATING DISORDER?

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Introduction: We examined the cross-cultural robustness of a simple instrument (figure drawings) for evaluating body image (BI) in schoolgirls from 3 divergent and ethnically separated schools and communities in Israel: Jewish secular, Jewish Haredi, and Christian Arab. To gain insight into the clinical relevance, we compared them to a group of severely restricting anorexic girls (AN) using the identical instrument. **Methods:** 200 Schoolgirls and anorexic girls completed a standard figure drawings selection task and related questions. **Results:** BI assessment was similar across the different schoolgirl ethnicities; all preferred a thinner ideal BI, and were similarly dissatisfied with their BI. However, minor ethnic differences emerged: Christian schoolgirls underestimated their BI and how others viewed them, and Haredi own and ideal BI evaluations correlated, unlike the other groups. The differences we find are consistent with a gradation of media/social pressure on BI dissatisfaction as a function of proximity to western cultural norms. Despite this variability, and in stark contrast, the anorexic girls show a gross misperception of their BI, even in comparison to girls of similar BMI. **Conclusions, discussion and/or practical application:** Together these suggest that figure drawing BI evaluation might be a simple instrument for physicians and health workers for first-line recognition of adolescent girl patients presenting with rapid weight loss (or other non-specific symptoms) and high BI dissatisfaction, for risk of developing eating disorders. The utility of the tool for diagnosis deserves further study.

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P-082: CARBOHYDRATE COUNTING IN DIABETES MELLITUS TYPE 2: A CASE REPORT WHO IS ON ORAL ANTIDIABETIC TREATMENT

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Introduction: Carbohydrate (CHO) counting a menu planning approach which provides flexibility in food choices for patients. In patients with type 2 Diabetes Mellitus (DM) who is on oral antidiabetic (OAD) treatment, it is not widely used. Our aim is to report that CHO counting is an alternative and convenient method in these patients to provide blood glucose regulation. Therefore we present a patient with type 2 DM who performed CHO counting. **Results/Case:** A 62-year-old female patient admitted to Endocrinology outpatient clinic of Akdeniz University Hospital for routine control. She have been using gliclazid (1x30mg), metformin (2x1000mg), pioglitazone (1x30mg) for nine years. Her fasting blood glucose (FBG) was 128mg/dL, postprandial glucose (PPG) was 199mg/dL, HbA1c was %7.0, and LDL cholesterol (LDL-C) was 142.3mg/dL. On physical examination, her weight was 91.8kg, height was 1.50m, and BMI was 40.8kg/m². She also had central obesity and was referred to a dietitian for nutrition therapy. Ideal body weight was determined as 66kg. Medical nutrition therapy of 1550kcal/day proper for diabetes was prescribed. Carbohydrate counts step 1 and 2 were described in accordance with Type 2 diabetes. In the control examination, amounts of CHO she would consume were determined as 45g at breakfast, 60g at lunch and dinner, 15g at mid-morning and afternoon and 20g for night meals. At the control examination on the third month, laboratory test results were as follows: FBG 94mg/dL, PPG 145mg/dL, HbA1c %5.8, LDL 124.5mg/dL. And at the control examination on the sixth month, laboratory test results were as follows FBG 88mg/dL, PPG 117mg/dL, HbA1c %5.6, LDL 115.7mg/dL. Her body weights on the third and sixth month were 81kg and 70.7kg, respectively. BMI decreased to 31.87kg/m² from 40.8kg/m² in six months. **Conclusions, discussion and/or practical application:** As it was seen in this case report, CHO counting may be an effective method in blood glucose regulation in patients with DM who are on OAD treatment, and can help to control lipid profile and obesity, as well.

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P-084: DO DIETITIANS AND PATIENTS WITH INFLAMMATORY BOWEL DISEASE (IBD) HAVE THE SAME DIETARY INTERVENTION GOALS?

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Introduction: A patient-centered approach, with jointly established goals, is a key element in developing a realistic plan, and has a high probability of positively influencing the outcome of our dietetic intervention. The aim of this study was to gather more knowledge about the similarity of dietary treatment goals of patients with IBD and dietitians. **Methods:** We made a questionnaire, which included questions about dietary intervention goals to which multiple answers were possible. We asked IBD patients (member of the Crohn- en Colitis Ulcerosa Vereniging Nederland) and dietitians, following a course in Gastroenterology and Hepatology for Registered Dietitians, to fill out the questionnaire. All participants were asked to indicate their three most important dietary intervention goals, in order of importance. Dietitians where also asked about how they expected the patients would answer. **Results:** 150 Dietitians (response >97%) and 486 patients (response 40%) completed the questionnaire. The top three priority goals of dietitians was 1) maintenance or improvement of nutritional status, followed by 2) reduction of symptoms and complaints and 3) gaining knowledge/understanding about the relationship between IBD and diet. Patients prioritised the same top 2, followed by prevention/reduction of nutrient deficiency. However, there was a great diversity in patient goals. Dietitians expected that the most important goal of IBD patients would be the reduction of symptoms and complaints, respectively followed by reduction of inflammation and more skills to handle the symptoms and complaints. **Conclusions, discussion and/or practical application:** In general IBD patients and dietitians share the same dietary goals

in the treatment of IBD. However, every patient is unique and has his/her own view on its dietary goals. Dietitians must ask patients to their own dietary goals to come to a patient-centered intervention plan. Such a plan enhances patients adherence and satisfaction and increases the efficacy of nutrition intervention.

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P-085: EVALUATION OF MALNUTRITION IN CANCER PATIENTS

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Introduction: Malnutrition consists of a common problem among cancer patients, affecting up to 85% of patients with certain cancers depending on the evaluation tools used. The aim of the present study was to assess malnutrition among various cancer patients in Crete, Greece. **Methods:** A total of 35 adult cancer patients (26M+9F), aged 63.6±14.6 years old, were recruited from the University Hospital of Crete. Nutritional assessment included anthropometric measurements, hand-grip strength (HGS), phase-angle (PA), blood tests and the use of MedDietScore in order to assess adherence to the Mediterranean diet. Malnutrition was evaluated with MNA and SGA questionnaires, depending on the age of the patient. **Results:** A total of 60% of the patients were diagnosed with malnutrition and another 34.3% were at risk for malnutrition, using either the MNA questionnaire or the SGA scoring system. Overall, patients exhibited low values of MNA, PA and HGS. Age was significantly correlated to MNA and SGA score and inversely associated with triceps skinfold (TSF) and phase angle. Phase angle was significantly correlated to mid upper arm circumference (MUAC), TSF and hand-grip strength. MedDietScore was inversely correlated to diastolic blood pressure. γ GT was highly correlated to the patients' HGS. **Conclusions, discussion and/or practical application:** As expected, cancer patients exhibited increased malnutrition risk, associated with age and several anthropometric parameters. PA seems to be a reliable marker of nutritional status in cancer patients useful in the daily clinical practice of a dietitian.

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P-086: EXAMINATION OF EATING HABITS AND ATTITUDES OF PATIENTS WITH HYPERTENSION

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Introduction: The frequency of hypertension shows a rising tendency in Hungary. In respect of the cardiovascular diseases, hypertension (itself and even associated with other diseases) can pose a significant risk factor. In order to treat the disease and prevent complications not only medication is required but also dietary changes. The object of the study was to assess the degree of knowledge of the test group regarding the main nutritional risk factors associated with hypertension. Furthermore the subject was to determine that to what extent has expanded the knowledge, and to what extent has changed the willingness to change lifestyle and food consumption. **Methods:** The sample involved hypertensive men and women from the age 40 to 60. The study contained two self-made questionnaires, which use validated methods of data collection. The first measured the eating habits with FFQ and attitudes with Likert scale of 85 patients. The second measured the extent of changes of food consumption, attitudes and knowledge about nutrition with Schwering-scale after the education. **Results:** Half of the patients recognize the role of nutrition in the health protection and treatment. In relation to hypertension diet, patients are not looking for a dietician, therefore their knowledge proved incomplete on the diet therapy. Their attitudes are correlated to sex and level of education. After education their eating habits have changed partly. A certain degree of attitudinal change was observed, but it was not significant (average: 7±3, p <0.05). **Conclusions, discussion and/or practical application:** It would be useful

to continue research with high number of representative samples although the results so far are interesting. The patient education is great help in the treatment of hypertension, which may have an effect on eating habits and on attitude as well. On this basis is recommended employment of dietitians in primary care. At present this is not realized in Hungary.

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P-088: INTERDISCIPLINARY TREATMENT EFFECT IN OVERWEIGHT SUBJECTS AND THEIR RELATIONSHIP TO EMOTIONAL EATING, SELF-ESTEEM AND PALATABILITY

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Introduction: Obesity rates are increasing, and dietary treatment is not enough to reduce these quantities. Thus, it is necessary to study the feeding behavior and the reasons behind its associated alteration to weight gain. **Objectives and target population:** The objective of this study is to determine the effect of interdisciplinary treatment in subjects with overweight and identify whether obese population shows differences in emotional eating, palatability and esteem respect to normal weight subjects, in order to perform a psychological, nutritional and physical activity intervention comprehensively to achieve long-term weight goals. **Previous theories and investigations:** Emotions are known to have a powerful effect on our choice of food and eating habits, and the most desirable food intake influences weight loss strategies. Identify differences in these areas between obese and non-obese population and the reasons why overweight subjects modify their food behavior is crucial for proper treatment. **Intervention(s):** Two groups (overweight and normal weight) of 40 people are being studied, to whom questionnaires about emotional eating, palatability and self-esteem are passed. The group of overweight underwent a comprehensive intervention (nutritional+psychological+physical activity) for 3-6months depending on weight. **Evaluation:** We will evaluate the questionnaires, the BMI, life habits and other social factors. The results will be evaluated statistically using SPSS. **Results:** Previous results show that more than 20% of normal-weight people are emotional eaters. Also a large percentage of the overweight population have similar scores. The first results in the interdisciplinary treatment. **Conclusions of authors and discussion:** The few differences that seem to appear in both groups may be due to certain shortcomings in the questionnaires used. It is important to highlight the importance of detecting emotional eating in overweight people and analyze the effects of comprehensive treatment in these patients.

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P-090: MENSTRUATION HISTORY, DIETARY HABITS AND WEIGHT CONTROL

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Introduction: Menopausal transition has been associated with weight gain and fat mass gain, mostly as a consequence of hormonal changes occurring in the body. Lifestyle interventions aim to reduce weight and fat mass gains; however successful long term weight loss maintenance has not been studied enough. Adherence to healthy dietary patterns is inversely associated with overweight and obesity in postmenopausal women. Purpose of this work is to investigate weight, weight loss maintenance and dietary habits in relation to menopause status in women. **Methods:** The sample of this study consisted of 228 pre-menopausal and 51 post-menopausal women from the MedWeight Study. The MedWeight Study is a registry of individuals who had intentionally lost $\geq 10\%$ of initial body weight in the past and either maintained the loss for ≥ 1 year (maintainers) or regained weight (regainers). Participants were asked to complete 8 questionnaires (including weight history and menstruation history) and reported on two 24 hour telephone dietary recalls. **Results:** Post-menopausal women aged 43 ± 14.8 yrs and pre-menopausal aged 31 ± 8.7 yrs. Post-menopausal women had higher BMI than pre-menopausal women (28.9 kg/m^2 vs. 26.6 kg/m^2 respectively, $p=0.004$). Post-menopausal women were more likely to be regainers compared to pre-menopausal women, who seemed to maintain weight loss successfully ($p=0.065$). Regarding dietary habits, post-menopausal women consumed less sugar/honey/jam (0.80 vs. 1.13 servings/day, $p=0.025$), cold cuts (0.34 vs.

0.52servings/day, $p=0.031$) and high fat cheese (0.80 vs. 1.10 servings/day, $p=0.059$) than pre-menopausal. **Conclusions, discussion and/or practical application:** Our results imply that menopause is related to higher BMI and is associated with unsuccessful long term weight loss maintenance. Interestingly, post-menopausal women consumed fewer servings of sweeteners, cold cuts and high fat cheese than pre-menopausal women. However, MedWeight study is an observational study thus we cannot conclude causative mechanisms.

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P-091: PREVALENCE OF OBESITY AND CARDIOVASCULAR RISK IN ADULTS IN THE CITY OF PROGRESSO, RIO GRANDE DO SUL, BRAZIL

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Introduction: The prevalence of obesity has increased at alarming rates in recent decades worldwide and is currently considered a public health problem. The objective was to evaluate the prevalence of obesity and cardiovascular risk in adults living in the city of Progresso, Rio Grande do Sul, Brazil. **Methods:** A population-based cross-sectional study, conducted in 2013, involving 822 individuals aged 20-60yrs. The diagnosis of obesity was defined as body mass index (BMI) $\geq 30\text{kg/m}^2$, considered overweight $\geq 25\text{kg/m}^2$ and abdominal obesity was defined as increased for males between 94 and 102cm, and for females between 80 and 88cm. Greatly increased waist circumference in males greater than or equal to 102cm, and for females greater than or equal to 88cm. The study also assessed sociodemographic and socioeconomic variables. This study was approved by the Research Ethics Committee, Univates University Center, in protocol nº 211783. Student T test, Mann-Whitney and Pearson's Chi-square test were applied. The 5% significance level was adopted. **Results:** The prevalence of overweight in the total sample was 53.3% (95% CI:49.9-56.7%), where as the proportion was 53.3% for both genders by BMI. Obesity prevalence in the total sample was 15.7% (95% CI:13.3-18.3%) in men was 12.4% (95% CI:14.3-20.5%) and in women was 17.2% (95% CI:8.8-16.8%). Regarding the classification of abdominal circumference, it was observed that women had a much greater risk for cardiovascular disease ($p<0.001$) compared to men. **Conclusions, discussion and/or practical application:** We observed high prevalence of overweight and obesity affecting both genders in the evaluated individuals. And women had a much greater risk for cardiovascular disease

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P-092: PREVALENCE IN EATING DISORDERS ON FIRST YEAR OF UNIVERSITY

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Introduction: The university population is subject to a series of sociological and cultural changes. Several observational studies show that when students move from school to college there is a tendency to gain weight and bad eating habits acquired. This phenomenon of weight gain during the first year university known as "Freshman 15". This refers to students who gain weight on average 15lb (6.8kg). Although, at present, the latest studies show that weight gain is between 0.68kg and 4kg is still worrying as the fact of being away from home this condition and weight gain there is no relation to gender. The aims of this project are: determine the prevalence of behavioral of eating habits disorders in freshmen students; determine the appearance of changes in eating habits during the first year of college; assess changes in weight, waist circumference and triceps fold individual participants. **Methods:** The participants was recruited from the university college and we answered for: A survey will collect a series of parameters related to their habits, physical activity, eating habits and habits related to their intake. Anthropometric measurements: weight, height, waist circumference and triceps fold. Assessment of the risk of anorexia nervosa - EAT 26. Adolescent Scale Figure Drawings. SCOFF Test. Bulimia Investigatory Test Edinburgh (BITE). **Results:** The study involved 15 students who were able to observe changes on weight as well as their eating habits during their first year of college. **Conclusions, discussion and/or practical application:** The first year of university modify the eating habits about his childhood and this can cause disorders in weight throughout their adult life.

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P-094: SUPPORTING HIGH QUALITY NUTRITION CARE WITH A MALNUTRITION GOVERNANCE TOOLKIT

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Introduction: Malnutrition is common in patients receiving anticancer treatment and is associated with reduced treatment tolerance, increased morbidity and mortality and higher healthcare costs. Results of the Malnutrition in Victorian Cancer Services (VCS) point prevalence study (2012) showed a wide variation amongst participating public health services in provision of appropriate nutrition care for malnourished patients. Patients from health services with strong nutrition governance systems were more likely to receive individualised nutrition care from a dietitian. **Objectives and target population:** The VCS Project Governance Committee identified a need for an information resource and toolkit for health service clinicians and teams with the aim to promote evidence based malnutrition practice, guide system-wide practice improvements to embed hospital quality and safety accreditation standards for nutrition care, and help close the gap in treatment variation. **Previous theories and investigations and interventions:** Key stakeholders were identified and invited to participate. Working groups involving clinicians with expertise including dietetic, nursing, medical, clinical governance, accreditation and health service management were recruited and surveyed to determine target audience and content needs. The toolkit was developed comprising four chapters, namely: 1) Nutrition Governance Practices; 2) Key Performance Indicators (KPIs) for malnutrition care; 3) Identification, prevention and management of cancer malnutrition; 4) Nutrition Service Delivery Models. Existing evidence was compiled and policy and documents were sourced and included from participating health services. Content was further developed and refined. **Results and conclusions:** The toolkit will be available on the public domain via www.health.vic.gov.au/cancer/cancer-projects/malnutrition.htm. Key recommendations include: a) Use toolkit to advocate for nutrition KPIs as integral performance indicator on hospital-level scorecards; b) Advocate for embedding nutrition KPIs in the next Victorian Health Department Cancer Action Plan providing clear direction at an organisation level; c) Use toolkit to advocate for a National nutrition accreditation standard; d) Evaluation of the toolkit – funding for review and evaluation within two years to effectiveness and update content accordingly.

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P-464: RELATIONSHIP BETWEEN THE LIFESTYLE-RELATED DISEASES AND EATING BEHAVIOR

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Introduction: Recently the numbers of the patients with lifestyle-related diseases such as diabetes mellitus, metabolic syndrome, etc., have become increased. We investigated the relationship between the lifestyle-related diseases and the eating behavior, especially the hungry feeling and the dietary habits or metabolic situations. **Methods:** The 38 healthy female subjects of a regional diet promotion committee (mean age: 64yrs) in Japan were recruited. BMI, blood pressure, dietary methods and blood chemical data were assessed before a meal and 120min after the meal. The hungry feeling were divided into three groups: (1) Always "no hungry" in the fasting condition was one subjects. Therefore she was excluded following analysis. (2) "Sometimes hungry" group in the fasting condition (n=10). (3) "Always hungry" group in the fasting condition (n=27). **Results:** The duration of dinner time was significantly shorter (p=0.043) in "always hungry" group than that of "sometimes hungry" group. The percentages of "full stomach" in the dinner were significantly higher (p=0.043) in the "always hungry" group than that of "sometimes hungry" group. Positive correlations existed between duration of breakfast time and HDL-C in the fasting and after the meal. Negative correlations existed between breakfast time and body weight, fasting TG, IRI, HOMA-R and TG, RLP after the meal. **Conclusions, discussion and/or practical application:** These results might suggest that appropriate eating behavior is important for the prevention of lifestyle-related diseases such as type 2 diabetes mellitus.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-465: TO INVESTIGATE SUGAR CONTROL LEVEL WHICH CLINICAL OUTCOMES, METABOLIC COMPLICATIONS AND ELECTROLYTE ABNORMALITIES IN PATIENTS RECEIVING TOTAL PARENTERAL NUTRITION

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Introduction: Use total parenteral nutrition often leads to blood sugar and other metabolic abnormalities and central venous catheter-related sepsis occurs via monitoring and care can reduce the incidence of metabolic complications. Therefore, this study was done to explore for the use of total parenteral nutrition caused by the abnormal glucose metabolism-related factors, the further prevention of metabolic complications in patients. **Methods:** Patient use total parenteral nutrition were enrolled from January 2014 to June 2015. When patient blood sugar higher than 180mg/dL add insulin therapy. A logistic regression analysis was performed to determine whether the degree of hyperglycemia was associated with the adverse outcomes. **Results:** A total of 150 cases were recruited in the study. If blood glucose poor control that was associated with an increased risk factor of infection. **Conclusions, discussion and/or practical application:** Hyperglycemia is a risk factor for increased mortality in ill patients receiving total parenteral nutrition. Use of PN should therefore comply with the instructions accepted in the main clinical practice guidelines and requires careful monitoring by experienced professionals. If patient's gastrointestinal tract function improved, we should try enteral feeding as soon as possible.

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P-466: THE EXPECTATIONS OF PATIENTS WITH INFLAMMATORY BOWEL DISEASE (IBD) REGARDING GUIDANCE PROVIDED BY DIETITIANS

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Introduction: IBD patients seek guidance provided by a dietitian for many reasons and have certain expectations of the dietitian. The aim of this study was to explore the expectations of IBD patients regarding the guidance provided by dietitians and to compare these expectations with what dietitians assumed the patients would expect. **Methods:** The questionnaire contained one question about expectations regarding the guidance provided by dietitians, with ten possible answers. We asked IBD patients (members of the *Crohn- en Colitis Ulcerosa Vereniging Nederland*) to indicate their three most important expectations, in order of importance. Dietitians were asked to estimate the patients' priorities. Dietitians (following a course in Gastroenterology and Hepatology for Registered Dietitians), were asked what they assumed the patients' expectations would be. **Results:** 150 Dietitians (response >97%) and 486 patients (response 40%) completed the questionnaire. The top three expectations of IBD patients regarding guidance provided by dietitians was: 1) explain relationship between nutrition and IBD and complaints, 2) dietary advice on food choice, 3) advice and support on specific diet. The dietitians expected the patients to appoint these three items, but in reverse order. Less common expectations were: act as source of information, arrange practical matters (for example compensation sip feeding) and show understanding for complaints. **Conclusions, discussion and/or practical application:** In general, dietitians are aware of the IBD patients' expectations regarding guidance provided by dietitians. However, every patient is unique and has his own expectations concerning the dietitian. Therefore, it is effective to ask the patient what their expectations are and what they hope to obtain from guidance provided by the dietitian and the nutrition intervention.

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P-467: STUDY OF POSTPRANDIAL LIPOPROTEIN METABOLISM IN MIDDLE-AGED JAPANESE MEN USING AN ORAL FAT TOLERANCE TEST

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Introduction: Postprandial lipidemia, characterized by a rise in triglycerides (TG) after meal, is associated with metabolic syndrome, and is known as an independent risk factor of coronary heart disease. After meal, chylomicron is secreted from the intestine, carrying apoB48 (exogenous lipoproteins), while VLDL is secreted from the liver, carrying apoB100 (endogenous lipoproteins). We studied postprandial, especially exogenous lipoprotein metabolism in middle-aged men. **Methods:** Ten middle-aged Japanese men were selected as participants. All subjects had no illness, and were not taking any medicine or dietary supplement. Subjects abstained from consuming caffeine and alcohol on the day before experiment, and ingested OFTT cream (0.35g/kg as fat) after 12hrs overnight fast. The venous blood samples were drawn before (0hrs) and 1, 2, 4, and 6hrs after fat loading for the determination of TG, remnant-like particle (RLP)-TG, RLP-C, apolipoprotein B-48 (apoB48), apoB, free fatty acids (FFA), glucose, and insulin. During the experiment, subjects avoided exercise and eating, but were allowed to drink water *ad libitum*. **Results:** Serum concentrations of TG and RLP-C peaked at 4hrs ($p > 0.01$), and did not return to baseline at 6hrs ($p < 0.05$). The concentrations of RLP-TG and apoB48 increased at 2hrs ($p < 0.01$), plateaued from 2hrs to 4hrs and did not return to baseline at 6hrs ($p < 0.05$). Serum apoB concentration plateaued from 0hrs to 2hrs, and increased at 4hrs ($p < 0.05$) and 6hrs ($p < 0.01$). **Conclusions:** In our previous study in healthy young women, the concentration of TG peaked at 2hrs, but in this study, it peaked at 4hrs, and apoB48 did not return to baseline at 6hrs. Our findings suggest that even apparently in healthy middle-aged men, postprandial lipoprotein clearance is delayed.

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P-468: WEIGHT-LOSS DIETS IN HUNGARY – IN A DIETITIAN’S VIEW

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Background: The obesity is a world-wide disease, meanwhile high rate of the women are discontent with their shape. Magical chocolate diet, “losing 15kg within 8days” dream diet. Just some theory from the well-known, fast weight-loss methods. Do they have real weight-loss effects in such a short interval? Is it possible to keep our reached body-weight after we stop following our diet? Can complications or negative outcomes take shape, if we follow a long-term radical diet? Finally, can these diets become the part of a healthy lifestyle? **Method:** I have made my research at Szent Imre University Teaching Hospital’s (Budapest) Department of Obesitology. By questioning 100 overweight or obese patients (average BMI of the 80 women and 20 men was 40,6kg/m²), I have measured their past and present weight-loss diet habits (fashion-diet knowledge and practice, current eating habits with FFQ). **Results:** The startling results show these diets’ unnecessary practice: the most popular diets were The 90 Day Diet (35%), Hungarian Norbi Update low carb (21%), Fit for Life (14%), Atkins (12%) and Paleolit (5%), but therefrom only 5% of the diet-triors kept the lost weight after stop using the diet. One fifth of the patients have tried other known fashion-diets. They recorded 21 different diets such as Cabbage soup-, Cider vinegar diet, Juice cure, etc., but the 100% of these people has mentioned that these diets can’t reduce the body weight in the long run, because after an occurrent decrease the pounds have come back. 37% don’t do physical activity beneath the diet and simply near 40% achieved the daily recommended adequate water intake. **Conclusions:** In the labyrinth of numberless diets, the dietitian should be an important person, who can help in planning a personal, well-constructed diet, which could be the key of a productive, but also a long-term weight-loss method.

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P-469: EXAMINATION OF THE MINIMUM REQUIRED NUTRITION IN THE CHEMOTHERAPY TREATMENT OF MALIGNANT BLOOD DISEASE PATIENTS

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Introduction: Patients with malignant blood disorders needing treatments such as transplants and chemotherapy, we calculate necessary caloric intakes based on their basal energy expenditures (BEE). In this study, we investigated patients' food intake which leads to determining the minimum required nutrition amounts by blood disease patients undergoing chemotherapy. We also confirmed the nutritional status of patients with previous allogeneic transplantation. **Methods:** 18 hospitalized patients undergoing chemotherapy from November 21 to December 27, 2013: the sum of the food recorded plus intravenous nutrition amounts calculated by the medical records. 12 outpatients during chemotherapy and 25 outpatients after allogeneic transplantation from May 31 to July 26, 2013: according to the "Food Frequency Questionnaire Based on Food Groups" investigation. **Results:** Inpatients whose average BMI was 22.1 and average treatment period was 15days, were categorized into two groups with weight loss by 12 people and with no reduction or increased body weight by six. The average intake based on the current body weight at the time of the start of the survey was 1.10 times and 1.21 times their BEEs, respectively. There were no significant differences between the groups. In contrast, outpatients on chemotherapy had an average BMI of 22.7, and the average intake was 1.28 times. In addition, the average BMI of post-transplant patients was 20.1, and the intake amount was 1.38 times. Furthermore, limited to the patients living longer than 5yrs, it was 1.31 times. **Conclusions:** Since hospitalized malignant blood disorder patients with intakes of 1.2 times or less of BEE may result in weight loss, minimum necessary intake of the patients under treatments to maintain the current body weights was approximately estimated at 1.3 times at least. Moreover, it is considered that it is reasonable to assume that the minimum necessary amount of 1.3 times is the same in outpatients.

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P-470: DIETARY PATTERNS ASSOCIATED WITH BLOOD PRESSURE IN A CLINICAL SAMPLE OF OVERWEIGHT ADULTS VOLUNTEERING FOR A WEIGHT LOSS TRIAL

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Introduction: Dietary patterns analysis has recently been recommended in nutritional epidemiology to establish relationships between diet and chronic diseases. The aim of this study was to explore the association between dietary patterns and blood pressure (BP) in a sample of overweight adults volunteering for a weight loss trial. **Methods:** Secondary analysis of baseline data from the 12month HealthTrack randomised controlled trial (n=328, mean age: 43.6±8.0yrs; mean BMI:32.4±4.2kg/m²) was conducted. Resting BP was measured (mean systolic BP(SBP)/diastolic BP(DBP): 124.9±14.5/73.3±9.9mmHg). Dietary intake was assessed using 4days food records. Principal component analysis (PCA) was applied to derive dietary patterns from the AUSNUT 2011-2013 major food groups. Multiple regression analysis was performed to assess the association between the extracted dietary patterns and BP. **Results:** Six principal components were derived explaining 46% of the total variance. Component 1 was characterized by the consumption of seeds/nuts, fruit, fish, and confectionery; component 2 by consumption of non-alcoholic beverages, milk, and meat; component 3 by intake of snacks and cereal based products and dishes; component 4 by intake of cereals and cereal products, and fats and oils; component 5 by alcohol, eggs, and legumes and component 6 by savoury sauces and condiments. After adjusting for age, sex, BMI and hypertension medication, component 1 was significantly and inversely associated with lower SBP (F(5,322)=20.161, p<0.0005; adjusted R²=0.227) and DBP (F(5,322)=23.529, p<0.0005; adjusted R²=0.256). **Conclusions, discussion and/or practical application:** A dietary pattern characterised by a high intake of seeds/nuts, fruit, fish and confectionery is inversely associated with both SBP and DBP in a

clinical sample of overweight adults. Limitations of the study include the subjective nature of the PCA method to extract dietary components. Greater understanding of the relationship between dietary intake and BP may help inform clinical practice in the management of high BP.

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P-471: EVALUATION OF SOME RISK FACTORS OF IN PATIENT TO BE DONE CORONARY ANGIOGRAPHY

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Introduction: The prevalence of coronary heart disease and mortality related with it vary by risk factors. In this study, it's aimed that evaluation of some risk factors in patients was decided to be coronary angiography. **Methods:** Voluntary 203 patients were included to the study. General information and some risk factors of the patients were obtained by questionnaire. Fasting blood glucose (FG), total cholesterol (TC), systolic and diastolic blood pressure (SBP-DBP) were measured in all of the patients while LDL-cholesterol and HDL-cholesterol were measured in 101 of them. BMI and obesity statuses were determined. As considering the risk factors published Turkish Society of Cardiology, risk factors were determined. **Results:** Percentage of male and female are 61.1% and 38.9% relatively. 88.7% of men are ≥ 45 yrs, 89.9% of women are ≥ 55 yrs. 55.2% of patients have family history of heart disease. 36.5% of patients had previously smoked or still smoking. The percent of SBP with ≥ 140 mmHg is 24.1%, while the DBP with ≥ 90 mmHg is 14.8%. Patients having TC ≥ 200 mg/dL are 54.7%, LDL-cholesterol ≥ 130 mg/dL are 43.7%. HDL-cholesterol level of patients is 31.7%. It was founded that FG levels of 28% of patients is > 120 mg/dL. Also, 56.7% of patients are inactive and various degrees of obesity were identified in 72.2% of patients. The relation between obesity, smoking, regular physical activity, family history of heart disease and gender is significant ($p < 0.05$) is insignificant, the values of blood lipids of overweight patients is at the liminal, the ratio of those who are in risky and too risky situation is higher. **Conclusions, discussion and/or practical application:** Considering these risk factors, it is seen that the decision of implementation coronary angiography is true in patients participated to the study. In most patients, it has been determined that a combination of at least three risk factors coexist. For a healthy and qualified life, it should be main goal to minimize risks that can be changed.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-472: STUDY MILEPOST: COMPARISON OF PATIENTS FROM POSE METHOD WITH A CONTROL GROUP FOLLOWING DIET AND EXERCISE

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Introduction: The POSE (Primary Endoscopy Surgery Obesity) is a minimally invasive endoscopic intervention for primary treatment of obesity. Previous studies have demonstrated the ability of POSE to reduce gastric capacity, stress physiology and induce weight loss. **Objective:** Comparing safety, fullness and weight loss efficiency of POSE (with diet and exercise) compared to treatment with only diet and exercise. **Materials and methods:** Comparative, randomized, multicenter and unblinded study. A total of 44 subjects were randomized (average age 38 yrs) with an initial body mass index (BMI) of 30 to 40 with a ratio of 3:1 (treatment: control). Treatment group was held POSE with guidance on diet and exercise. The control group received guidance on diet and exercise. The change was discussed in the average percentage of total body weight loss (PPCT) after 6 months of the randomization and changes in the tests with liquid supplements. **Results:** The two groups were comparable (BMI of 36.2 in the treatment group *versus* 37.1 in the control group). A significant reduction was recorded in the average percentage of PPCT in the treatment group, 12.5% (n=31) compared to the control group, 4.7% (n=9) at 6 months ($p < 0.004$). The change in the volume of gastric capacity was significantly different in the treatment group after 6 months from baseline ($p < 0.001$), but not

in the control group ($p=0.064$). There were no observed effects. **Conclusions:** POSE previous results show that this technique is safe and effective for weight loss. It helps to lose more weight than following common nutritional therapies and exercise guidelines.

COMPETING INTERESTS: The study was funded by USGI Medical.

P-473: AN EVALUATION OF THE EFFECT OF GOAT MILK PRODUCTS ON PRESSURE ULCER HEALING IN A LONG-TERM CARE SETTING

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Introduction: The detrimental impact of wounds in elderly residents within the long-term care setting, and the subsequent need for improved wound healing measures, is a long-standing issue to health care providers. Based on the potential healing benefits of goat milk products we decided to further investigate the potential positive effect of goat's milk consumption on wound healing, specifically pressure ulcer healing. There is currently very limited research available regarding the healing properties of goat's milk. The hypothesis of the study was to determine whether goat milk products contribute to wound healing in residents of a long-term care setting when provided daily. **Methods:** The subjects of this research study were permanent residents of the long-term care settings with significant, long-lasting wounds. Significant, long-lasting wounds were defined as any pressure ulcer stage II and above, existing for four or more months. Data for the study was collected over a 6-month period. Consumption of the goats' milk product was recorded daily. Wounds were monitored approximately biweekly, for size, stage, color and change in condition. Participants were excluded if they were unable to complete the study or if less than 50% of the goat milk product was consumed over any month. **Results:** A total of 25 participants have initiated the study. 8 participants were excluded. 14 participants have completed the study. 3 participants are currently enrolled in the study. Of the 14 participants who have completed the study a total of 20 pressure ulcers were tracked. Of the 20 pressure ulcers, ranging from stage II to unstageable, 75% (15 wounds) healed during the study. The remaining 5 wounds all showed improvement throughout the course of the study. **Conclusions, discussion and/or practical application:** The results of the study indicate the potential positive effect of goat's milk consumption on pressure ulcer healing. A need for more studies to investigate these benefits exists.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-474: QUALITY OF FOOD IN A SAMPLE OF BARIATRIC SURGERY PATIENTS IN NUESTRA SEÑORA DEL PRADO HOSPITAL

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Introduction: Morbid obesity is a public health problem that cause less quality of life. Bariatric surgery is the last part of the treatment because of its complications. Evaluation of food tolerance should be part of the overall evaluation of the results. **Material and Methods:** Cross sectional study of patients operated by sleeve gastrectomy (SG) and gastric bypass (GPB) in our service. A total of 34 patients (8 males and 26 females) with a mean age 43.53yrs and mean time after surgery 22months were studied. To analyze the quality of food we used the Suter's test at least year after the intervention. **Objectives:** evaluate the quality of food after obesity surgery; determine whether there are differences in food tolerance according surgical procedures and post intervention time. **Results:** We studied 28 SG and 6 GPB. In 58.8% of patients achieved % excess weight loss, of 50-74%. With regard to food quality, 50% of patients considered "good," 29.4% "excellent", 17.6% "acceptable" and 2.9% considered it "very poor", with no significant difference between men and women or surgical technique. 58.8% of patients performed 4 to 5 meals a day and BPG group eat more times per day, with significant difference. 55.9% of patients considered

they could eat almost everything, but women had more difficulties than men with significant difference. Food intolerance was related to red meat especially in SG, bread, rice and pasta. About vomiting 55.9% said "rarely" and the 29.4% "never". There was no significant difference between the answers at different times after the intervention. **Conclusions:** In general, patients have "good" quality of feeding in both group of surgery without differences in post intervention time and type of surgery applied. Patients have some food intolerance to flours and red meat.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-475: ARE SCHOOL INTERVENTIONS EFFECTIVE TO PROMOTE FRUIT AND VEGETABLES CONSUMPTION? RESEARCH IN 5 ARGENTINE JURISDICTIONS

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Introduction: In Argentina fruit and vegetables consumption (F and V) continues very low while food advertising for children is not regulated. Inside this context, initiatives were implemented at school level, as dining halls, and other ways of distribution of F and V: healthy kiosks, and school vegetable gardens. Parts of the results of a multicentric research, made in 2014 are presented here. **Methodology:** The evaluation design was made "only after" with a control group. Variables were selected considering mediators 'analysis (I.A.R.C. 2008) in an ecological model. 41 primary schools, with and without intervention, were selected in 5 Argentine jurisdictions. Qualitative techniques and questionnaires were applied to 2099 students from 8 to 12yrs old with teachers, parents and students. The results were compared among schools with different types and intensities of intervention and schools without intervention. The statistical analysis has included, Arnova, Kruskal-Wallis and Mann-Whitney benchmarks. **Objective:** To evaluate the effect of school interventions respect to standards of consumption. **Results:** Significant differences of fruit and vegetables consumption, in children at school, with or without interventions, according to the intensity of them, haven't been found. The vegetable consumption in school dining halls was lower than at home. Students with more F and V consumption at school haven't more consumption at home and vice-versa. Fruit distribution like snack was associated with major intention of consumption and major variety of tasted and preferred fruit, but not with a major total consumption. It wasn't found associations of school interventions over family factors. **Conclusions:** The lack of association of the evaluated interventions about assessments, attitudes and F and V effective consumption, makes to rethink its means of impact in absence of other intervention policy, and check methodologies of implementation.

COMPETING INTERESTS: The authors of this present paper have not any conflict of interests.

P-476: MALNUTRITION PREVALENCE IN A LARGE CANADIAN ACADEMIC TEACHING HOSPITAL. RESULTS FROM NUTRITIONDAY 2011 [NDAY]

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Introduction: Malnutrition remains a significant issue in hospitals leading to poor outcomes and increasing demand for healthcare resources. The international nDay research identified that decreased food intake is an independent risk factor for mortality in hospitalized patients. **Objective:** To examine the prevalence of malnutrition and contributing factors including meal consumption of inpatients in a large academic centre in Canada. **Methods:** A one-day cross-sectional audit at three sites, Site 1: cancer care; Site 2: acute care and Site 3: acute care-neurology, following international nDay protocol. Validated nDay questionnaires were used to collect anthropometrics, medical history, diagnosis, medications and meal consumption. Ethics approval was obtained, patients were consented. Statistical analysis: Categorical variables expressed as percentages. Continuous variables expressed as mean \pm SEM. One-way analysis of variance and Student T-tests comparing continuous variables. Significance $P < 0.05$. SPSS v.21. **Results:** 264 patients (49% male, 51% female), Site 1:57; Site 2:150 and Site 3:57, were recruited. Mean \pm SEM weight loss (kg) Site 1: 4.53 \pm 677; Site 2: 2.85 \pm 375 and Site 3: 1.81 \pm 509 [*p=.001]. Data on

insufficient intake over the past week indicated 53% Site 1; 35% Site 2 and 39% Site 3 ate ½ to ¼ of their usual intake [$p=ns$]. 51*% ate less on nDay Site 1; 40*% Site 2 and 42% Site 3 [$*p=.005$]. 47% site 1; 33% site 2 and 42% site 3 indicated they were not hungry, experienced nausea/vomiting, were too tired, and did not like smell or taste of the food. Furthermore, 2% site 1; 17% site 2 and 10% site 3 reported they were not allowed to eat. **Conclusions, discussion and/or practical application:** International nDay criteria demonstrated that malnutrition is still prevalent in a large academic institution. Thus, screening protocols along with appropriate intervention strategies are needed to address this issue.

COMPETING INTERESTS: The authors of this present paper have not any conflict of interests.

P-477: CLINICAL DIET COUNSELLING FOR METABOLIC SYNDROME IN CANADIAN PRIMARY CARE

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Introduction: About 20% of Canadian adults meet the criteria for metabolic syndrome (MetS), increasing their risk of diabetes, cardiovascular disease, and some cancers. Within the context of a one-year feasibility and effectiveness study of lifestyle management (dietitian and kinesiologist) for reversion of MetS in primary care, the purposes of this sub-study were to describe: 1) Dietitian self-reported use of selected behavioural strategies and food behaviour change recommendations, 2) patient self-reported food behaviours at baseline and after 3 months of weekly counselling, and 3) degree to which both groups agreed on changes. **Methods:** 14 dietitians in 3 primary care organizations reported their top 4 behavioural strategies, based on the CALO-RE taxonomy of Michie and colleagues (2011), as well as the food behaviour goals they set with clients from a dietary care map we developed (Royall, 2014). Dietitians completed two 24-hour recalls with patients at baseline and 12 weeks, as well as the Canadian Healthy Eating Index (C-HEI) and the PREDIMED Mediterranean Diet Score (MDS). **Results:** Of 16 behavioural strategies, 6 were used >2 times more commonly than the others: goal setting, review of goals, feedback on performance, self-monitoring, motivational interviewing and action planning. Promotion of balanced meals was by far the most common food behaviour goal, followed by promotion of fruits and vegetables. Preliminary results indicate baseline average (\pm SD) C-HEI score was 58 ± 14 ($n=276$) and MDS was 4.8 ± 1.6 ($n=195$). Both C-HEI increased to 69 ± 12 ($n=242$) and MDS to 6.1 ± 2.0 ($n=219$) over 12 weeks. Component scores indicated some food behaviour changes were prevalent (e.g., switching cooking oil to olive oil), while others were very uncommon (e.g., increasing fish and legumes). **Conclusions, discussion and/or practical application:** In the context of individualized diet counselling for MetS, skill building strategies were prominent, as was a focus on balanced meals, and this was reflected in improvement in both diet pattern scores.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-478: ASSOCIATION BETWEEN INSULIN SECRETION MEASURED BY 75-G ORAL GLUCOSE TOLERANCE TEST AND NUTRITION INTAKE IN JAPANESE FEMALE COLLEGE STUDENTS

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Introduction: Although impaired glucose tolerance (IGT) in young Japanese women is becoming a problem, there are few studies to research association between the 75-g oral glucose tolerance test and nutrition intake. **Methods:** Subjects were Japanese female college students aged 19-21 (BMI: $20.5\pm 2.2\text{kg/m}^2$). The 75-g oral glucose tolerance test was conducted. Blood samples were collected at fasting for baseline and at timed intervals of 30 minutes, 60 minutes and 120 minutes after the subject drank the glucose solution. Blood glucose level and insulin level from each blood sample were measured. A self-administered diet history questionnaire was used for investigation of nutrition intake. SPSS was used for statistical analysis. **Results:** Approximately 10% subjects denoted insulin resistance. Approximately 10% subjects denoted lack of initial insulin secretion. Approximately 25% subjects denoted insulin hypersecretion. Significant positive correlations between insulin resistance and intake of protein ($p=0.005$), polyunsaturated fatty acids ($p=0.026$), dietary fiber ($p=0.019$) were observed. As for insulin hypersecretion, significant correlations with intake of carbohydrate ($p=0.007$) and vitamin B1 ($p=0.017$) were

observed. From a viewpoint of insulin secretion pattern, approximately 50% was normal, approximately 40% was delayed and approximately 10% was mixed. Significant correlations were also found between insulin secretion patterns and intake of polyunsaturated fatty acids ($p=0.030$) and cholesterol ($p=0.030$). **Conclusion:** Significant correlations between insulin resistance, insulin hypersecretion, insulin secretion patterns and nutrition intakes were observed in Japanese female college students. These results suggest that improvement of nutrition intake for young Japanese female might be effective to remedy IGT and prevent diabetes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-479: 'DON'T SHOW IT.' EMOTIONAL LABOUR WITH DIETETIC PRACTICE

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Introduction: Dietitians are involved in decisions about artificial nutrition and hydration (ANH), but the experiences of dietitians' involvement in these decisions are unknown. This research aimed to describe and understand the experience of dietitians' involvement in decision-making about ANH. **Methods:** Sixteen dietitians were interviewed for a qualitative phenomenological study which explored their experiences of decision-making relating to ANH. The transcribed interviews were analysed using an interpretive phenomenological framework (van Manen 1990). Ethical approval was obtained from Coventry and Warwickshire Research Ethics Committee. **Results:** The sub-theme of 'don't show it' is presented here. Participants hid emotions of outrage, anger, frustration and sadness in situations such as: when patients had not been treated as they felt they should; when they did not agree with a treatment plan; when doctors questioned their treatment plans; and when they felt upset or sad about a clinical situation. Some dietitians believed it unprofessional to show emotions. Some dietitians hid their faith as they were concerned about professional repercussions. One dietitian said: 'Even though I was really angry, I had to just try and keep my cool.' Another said: 'Sometimes it does make you feel sad...and you can't say how you're really feeling, I should be able to say how I'm feeling but it's not always professional'. **Conclusions, discussion and/or practical application:** These accounts suggest dietitians undertook emotional labour: the faking or suppression of emotions to regulate their feelings and expressions for organisational goals (Grandey, 2000). The emotional labour was undertaken to protect their patients, their colleagues and themselves. Undertaking emotional labour suggests emotional intelligence, which is key for team working and relationships. Emotional labour may have beneficial effects on patient care, e.g. by enabling empathy to be shown. However, emotional labour can also lead to emotional dissonance, and is associated with burnout, emotional exhaustion, decreased job satisfaction and depersonalisation (Goodwin 2011).

COMPETING INTERESTS: Work conducted as part of PhD studies.

P-480: SWEET POTATO IMPROVES DEFECATION AND GUT MICROBIOTA OF FEMALE UNIVERSITY STUDENTS

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Introduction: Effect of sweet potato, Benitenshi, on defecation and gut microbiota was examined in 22 female university students. **Methods:** Dietary fiber was 2.9g (1.2g water soluble +1.7g insoluble) per 100g of Benitenshi peeled after heat treatment. The study consisted of 4 experimental periods and lasted 4 weeks. First week was control period, 2nd week was 300g intake of Benitenshi period, 3rd week was 0g intake, and 4th week was 100g intake. Fecal weight was presumed on the basis of wood cube. Feeling of bowel condition and abdominal distention were obtained by 4 score questionnaire. Fresh fecal sample was collected to measure microflora on the last day of each experimental period. **Results:** Fecal weight was 1.6 times higher in 300g intake of Benitenshi (109.3g/day) and 1.5 times higher in 100g intake (109.3g/day) than control (66.4g/day). Dairy defecation number also significantly increased in 300g and 100g intake than control. Bowel condition and ease of defecation improved by 300g intake, and abdominal distention did not change. Gut microbiota was determined by 16S rRNA gene library, As a result, Bentenshi intake significantly increased a certain operational taxonomic

units (OTU), A58, which contained *Faecalibacterium* sp. This species is known as excretion butyrate fatty acid. **Conclusions, discussion and/or practical application:** These findings suggest that Benitenshi intake might improve bowel condition and gut microbiota without abdominal distention.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-482: POSSIBLE ASSOCIATION BETWEEN METABOLIC SYNDROME AND LOW LEVELS OF VITAMIN D IN AN YOUNGER ADULT POPULATION

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Introduction: In different studies, low levels of 25-OH cholecalciferol (25-OH vitamin D, 25OHD) have been associated with excess of body fat mass and/or alterations in the metabolic profile. This pilot study, which was done in Valencia, was designed to evaluate the relationship between 25-OH cholecalciferol (25-OH vitamin D, 25OHD) plasma levels and body-mass index (BMI) and other biochemical parameters in a younger adult population (20-50 y-old). **Methods:** 178 patients followed in our clinic for several reasons were included (age 40.0±7.1 y-old, women 63.5%, BMI:26.7±5.8kg/m²). Anthropometrical and biochemical parameters, blood pressure, and levels of 25OHD were measured. Normal plasma levels of 25OHD in our population >30ng/mL. **Results:** 53.9% were overweight/obese. Low 25OHD levels (<30µg/mL) were more prevalent in overweight/obese people than in normal weight people (75.0% vs. 59.8%, respectively). In this selected population with low 25OHD levels, impaired fasting glucose or Type 2 diabetes mellitus (T2DM), low HDL cholesterol (<40mg/dL in men and <50 in women) and high blood pressure were more frequent in the overweight/obese group than in normal weight people. Alternatively, Type 1 diabetes and low levels of 25OHD were higher in normal weight people than in the overweight/obese population. **Conclusions, discussion and/or practical application:** We report a possible association between low 25OHD levels and high BMI (>25kg/m²), impaired fasting glucose/T2DM, low level of HDL cholesterol or high blood pressure. Our data suggest a possible relationship between low 25OHD levels and some components of the metabolic syndrome, even in a relatively young older population.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests

P-483: VITAMIN D DEFICIENCY IN OLDER ADULTS. A NEW PARAMETER OF THE METABOLIC SYNDROME?

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Introduction: A possible association between vitamin D deficiency and Type 2 diabetes mellitus (T2DM), metabolic syndrome and obesity have been suggested from different studies. This pilot study, which was done in Valencia, was designed to evaluate the relationship between 25-OH cholecalciferol (25-OH vitamin D, 25OHD) plasma levels and body-mass index (BMI) and other biochemical parameters in an older adult population (>50 y-old). **Methods:** 278 patients followed in our clinic for several reasons were included (age 64.5±4.6yrs-old, women 56.1%, BMI:28.5±4.6kg/m², high BP 50.7%, dyslipidemia 51.4%, hypothyroidism 19.4%). Anthropometrical and biochemical parameters, blood pressure (BP) and plasma levels of 25OHD were measured. Normal plasma levels of 25OHD in our population >30ng/mL. **Results:** 72.1% of the patients had low levels of vitamin D (57.1% women, 42.9% men). Of those patients, 42.9% had normoglycemia, 42.4% T2DM, 6.1% Type 1 diabetes mellitus and 8.6% impaired fasting glucose (100-125mg/dL). 53.5% had high blood pressure and 45.6% low levels of HDL-cholesterol (<40mg/dL in men and <50mg/dL in women). Finally, 81.8% were overweight and obese (overweight 47%, grade 1 obesity (30-35kg/m²) 24.8% and 10.1% grade 2 obesity (35-40kg/m²). **Conclusions, discussion and/or practical application:** From our survey, a high percentage of older adult people (>50yrs-old) have low levels of 25OHD, being

more frequently women than men. Low levels of 25OHD were present in people with some components of the metabolic syndrome suggesting a possible association between low levels of 25OHD and insulin resistance.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-484: THE ROLE OF A NEWLY ADDED DIETITIAN-NUTRITIONIST IN THE OBESITY AND BARIATRIC SURGERY UNITY AT THE UNIVERSITY HOSPITAL BASURTO

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Introduction: The dietitian-nutritionist has a main role in education and monitoring of obese patient that undergo bariatric surgery. The contribution of a dietitian into the multidisciplinary team of Obesity Unit can ensure the effectiveness of the treatment and the success of bariatric surgery. **Objective:** To describe the work made by the dietitian-nutritionist in the University Hospital Basurto, since her integration into the Obesity Unit in May 2015. **Methodology:** Dietitian-nutritionist drew-up new diets for bariatric surgery's dietetic treatment after carrying out an exhaustive bibliography review and several meetings with the multidisciplinary team (surgery, endocrinology and nutrition services). After actively taking part in multidisciplinary sessions and having known the candidates for bariatric surgery, she scheduled group meetings about nutrition on a monthly basis. Finally, she monitored the patient at the out-patients clinic of obesity giving diet education, measuring weight and estimating the caloric intake using 24 hour diet recalls. **Results:** Five diets regarding specific periods of bariatric surgery treatment (1 before surgery and 4 after surgery periods) were designed. From the very beginning, 34 patients profited from group meetings. Regarding motorization, at presurgery period 21 consultations were attended and 114 after surgery. **Discussion:** The integration of a dietitian-nutritionist into the multidisciplinary team is a key factor for monitoring the patient and his treatment, designing the dietetic treatment and shaping it for the each precise period and patient. As well as building up healthy food habits that would avoid regaining weight.

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P-485: NUTRITIONAL AND SLEEPING HABITS IN IRRITABLE BOWEL SYNDROME AND FUNCTIONAL DYSPEPSIA

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Introduction: Irritable bowel syndrome (IBS) and functional dyspepsia (FD) are among the most common functional gastrointestinal disorders. IBS can be classified into subgroups like diarrhea (D-IBC), constipation (C-IBC), alternating (A-IBC) and unclassified (UC-IBC). FD consists of pain and burning sensation in epigastrium and feeling of early satiety and fullness. FD can be classified into subgroups as epigastric pain (EP-FD), postprandial stress (PS-FD), and mixed (MX-FD). In the current study we aimed to investigate nutritional and sleeping habits in IBS and FD and their subgroups. **Methods:** At total 385 FD subjects (EP-FD=195, PS-FD=144, and MX-FD=45) and 609 IBS subjects (D-IBS=126, C-IBS=336, A-IBS=99, and UC-IBS=48) participated in the study. All subjects completed a questionnaire which included questions about nutritional and sleeping habits. Anthropometric measures like weight and height were self-reported. Mean age was 40.1yrs. **Results:** Body mass index (BMI) did not differ among different FD subgroups; however A-IBS group had significantly higher BMI ($28.7 \pm 6.76 \text{ kg/m}^2$) than other IB subgroups. Final meal time was significantly later in D-IBS group than the other groups ($p < 0.05$), although it did not show any difference among FD groups. Fluid intake with meals was significantly higher in PS-FD ($410 \pm 216.9 \text{ mL}$) and MX-FD ($412 \pm 157.8 \text{ mL}$) groups than EP-FD ($288 \pm 167.8 \text{ mL}$) group ($p < 0.05$). Fluid intake with meals did not differ among IBS groups. Daily black tea consumption was significantly highest in MX-FD group among the FD subgroups and was highest in A-IBS group

among IBS subgroups ($p < 0.05$). Sleep duration was not significantly different in any of the FD and IBS groups. **Conclusion:** Fluid intake and sleeping habits might be effective on manifesting different kind of symptoms in functional gastrointestinal disorders like irritable bowel syndrome and functional dyspepsia.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-486: ASSOCIATION OF DIETARY NUTRIENT INTAKE WITH INFLAMMATION AND CARTILAGE DEGENERATION IN EARLY KNEE OSTEOARTHRITIS

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Introduction: Knee osteoarthritis (OA) is a degenerative joint disease associated with synovial inflammation and cartilage degeneration, global prevalence of which has been observed to rise. The present study aimed at finding out (if any) association between dietary nutrient intake of early knee OA patients with inflammation and cartilage degeneration. **Methods:** Adult early knee OA patients – grades I and II (Kellgren-Lawrence grading) ($n=42$) were selected from K.J. Somaiya Medical College, Hospital and Research Centre, Mumbai, using purposive sampling technique. They were subjected to biochemical assessment to measure cartilage degeneration (serum cartilage oligomeric matrix protein -sCOMP by ELISA) and inflammation (CRP, ESR). Dietary assessment was carried out using 3 day diet recall for calculating macronutrients and selected bone micronutrients intake. Data was analysed using SPSS 16.0. **Results:** CRP ($p < 0.01$) and sCOMP ($p < 0.05$) levels were significantly higher in grade II (9009.41 ± 1598.19 pg/mL) than in grade I knee OA patients (8112.34 ± 1125.76 pg/mL). A strong positive correlation was observed between sCOMP levels and CRP ($r = 0.353$, $p < 0.05$) and the grade of knee OA ($r = 0.282$, $p < 0.05$). Grade I patients had significantly higher dietary intake of SFA ($p < 0.05$), MUFA ($p < 0.05$), dietary fibre ($p < 0.05$) and calcium ($p < 0.05$) than grade II patients. sCOMP levels were positively correlated with dietary carbohydrates, dietary fibre, SFA, MUFA, PUFA, linoleic acid, calcium, magnesium and phosphorus; and negatively correlated with dietary energy, protein, total fat, ALA, vitamin D, calcium, phosphorus. **Conclusions, discussion and/or practical application:** Results indicated an increase in inflammation and cartilage degeneration with disease progression in knee OA, which were associated with low intake of protective nutrients. Hence, controlling the inflammation through consumption of anti-inflammatory nutrients such as vitamin D, ALA and phytochemicals could be considered as a suitable strategy to control the cartilage degeneration and delay disease progression.

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P-487: LOW LEVELS OF VITAMIN D AND BODY WEIGHT IN A CHILDREN-YOUTH POPULATION

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Introduction: In different studies, low levels of 25-OH cholecalciferol (25-OH vitamin D, 25OHD) have been associated with excess of body fat mass. This pilot study, which was done in Valencia, was designed to evaluate the relationship between 25-OH cholecalciferol (25-OH vitamin D, 25OHD) plasma levels and body-mass index (BMI) in a children-youth population (5-19 y-old). **Methods:** 49 patients followed in our clinic for several reasons were included (age 10.43 ± 9.9 y-old, girls 65.2%, BMI: 17.78 ± 4.2 kg/m²). Anthropometrical and levels of 25OHD were measured. Normal plasma levels of 25OHD in our population >30 ng/mL. **Results:** 30.4% were overweight/obese, 34.8% were normal weight and 2.8% were low weight. 32.6% of the population had 25OHD levels (<30 µg/mL) and were more prevalent in normal weight people than in overweight people (66.7% vs. 33.3%, respectively). **Conclusions, discussion and/or practical application:** We don't report an association between low 25OHD levels and high BMI (>25 kg/m²). On the other hand, the percentage of children in overweight is important to be considered in community health.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-488: EVALUATION OF EATING BEHAVIOR AND QUALITY OF LIFE SCALE AMONG 19-64 YEARS OLD OVERWEIGHT AND OBESE INDIVIDUALS

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Introduction: This study was planned to evaluate eating behaviors and quality of life among overweight and obese individuals, between ages of 19-64. **Methods:** 552 adults, 286 in overweight group (80 male, 206 female) and 266 in obese group (66 male, 200 female) were included in the study. The overall health conditions and eating habits of the individuals were determined with a data collection form. To evaluate the eating behavior, Dutch Eating Behaviour Questionnaire (DEBQ) and to determine the quality of life, Obese Individuals Specific Quality of Life Scale were used. **Results:** The mean age was 41.9±12.21yrs for women and 41.6±13.38yrs for men. 67% of participants had consumed three main meals in a day and 62% of those had consumed at least one snack in a day. The numbers of main meals and snacks were similar among groups, and the most skipped meal was lunch ($p>0.05$). Average daily water consumption was 1505.1±835.84mL, and there was no difference between the groups ($p>0.05$). Restrained eating ($p=0.01$) and emotional eating ($p=0.04$) scores were higher in obese women than overweight women. External eating habits were similar in both groups ($p=0.78$). In men, Dutch eating behavior total score or subscales were not associated with being overweight or obese ($p>0.05$). Obesity was significantly associated with lower quality of life both in men ($p=0.01$) and women ($p=0.00$). The relationship between the quality of life and eating behavior was statistically significant ($p<0.05$). **Conclusions, discussion and/or practical application:** It is determined that obesity negatively affects the quality of life and is associated with eating behavior disorders particularly in women. These results demonstrate that a multidisciplinary treatment approach is necessary to improve eating behaviors and quality of life in obese individuals.

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P-489: THE LIFESTYLE AND DIETARY ASPECTS OF CONSTIPATION AMONG OLDER PEOPLE

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Introduction: Constipation is a very common problem, mainly among elderly generation, because the incidence of the influential extrinsic factors are higher among them. The aim of this study was to assess dietary fiber and fluid intake, physical activity and eating frequency of elderly people who has constipation and I wanted to check if there are connection between previous factors and stool consistency. Further, I wanted to find out how they would like to solve this problem and how they are aware of dietary therapy of constipation. **Methods:** This study was conducted in 4 nursing homes and 2 elderly clubs. I selected participants according to a filter questionnaire which contained two criteria. First was 60 year or older age, and other was the presence of minimum one symptom from Rome III criteria. 81 elderly people completed the first questionnaire and 52 person corresponded to criteria, who were examined further with an other questionnaire what assessed lifestyle and eating habits combined with FFQ. Moreover, the participants fulfilled an other questionnaire what measured the awareness in point of dietary therapy of constipation. **Results:** According to my result, the dietary fiber intake of test group was in general 9,2 gramm daily, fluid consumption was 1-1,5 liter per day, they ate four times daily and their physical activity was 120 minutes weekly, but I did not find connection between these factors and stool consistency. Besides, just 25% used dietary supplements, but 72% took medicaments to reduce symptoms. Furthermore, awareness of dietary therapy was not satisfying. **Conclusions, discussion and/or practical application:** Also, the extrinsic factors were common among the elderly, out of eating frequency. They used rather medicaments to solve the problem and their awareness was inappropriate.

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P-490: MECHANISTIC STUDY FOR INTERACTION OF SOY ISOFLAVONES *IN VITRO* AND *IN VIVO* ANIMAL MODEL

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Soy isoflavones, such as genistein, daidzein, and equol, a metabolite of daidzein, have been proposed to reduce the risk of breast cancer incidence in Asian women. We have recently reported that soy isoflavone components have a greater preventive activity against breast cancer rather than genistein alone using Ethylmethanesulfonate (EMS)-induced animal model. Therefore, we investigated the interaction between genistein and other isoflavones in MCF-7 cells *in vitro* as well as preventive role of these components alone or in combination *in vivo*. Synergistic interaction of genistein was observed in combination with three respective isoflavones, with the most efficacious interaction observed in combination with equal. Combination treatment markedly induced apoptosis, with reduced expression of anti-apoptotic Bcl-xL and enhanced expression of pro-apoptotic Bax. Akt and downstream mTOR were significantly inhibited, indicating that synergic mechanism of genistein in combination with equol would be mediated by enhanced apoptosis induction through modulation of apoptosis-related signaling molecules. Furthermore, we investigated the role of equol for prevention of breast cancer in animal model. Female WKA rats (n=30) were equally divided into 2 groups, subsequently given EMS orally for 12 weeks and fed CE2 diets with or without 50mg equol/g diet throughout the experiments. All EMS-treated rats fed either diet developed hormone-dependent mammary carcinoma. Compared with the equol-free diet, the diet supplemented with equol could not significantly delay the development of mammary carcinoma, showing any preventive activity on the development of breast cancer. These data indicate that high dose administration of equol alone does not exert clear preventive effects on hormone-dependent mammary carcinogenesis, and may require other soy isoflavone components such as genistein since a great synergy was observed in combination with equol. The *in vivo* combination studies using genistein and equol are underway. Our studies thus provide mechanistic rationale for soy isoflavones for the prevention of human breast cancer.

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P-491: ROLE OF LYCOPENE IN THE PREVENTION OR AMELIORATION OF DIABETES RELATED COMPLICATIONS

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Introduction: Oxidative stress in diabetic individuals is highly increased accompanied by diminished antioxidant defence mechanism. Dietary antioxidants are considered as potential therapeutic agent to act as adjuncts to pharmacotherapy in people with diabetes. The aim of this study was to review the literature and speculate on therapeutic potential of lycopene in prevention and amelioration of diabetes related complications and comment on the possible mechanisms. **Methods:** For the purpose of the outline review, PubMed, Cambridge database, Medline, peer reviewed journals on diabetes, metabolism, nutrition and dietetics, review articles, books, editorial correspondence, position statement of organisations using combination of keywords like 'diabetes and lycopene', 'diabetes and oxidative stress', 'lycopene and diabetes neuropathy', 'mechanism of action of lycopene', 'lycopene and glycaemic control' and 'lycopene and diabetes nephropathy'. These searches were mainly restricted from year 2000 to 2015; however, certain relevant studies up to 1998 were also included. **Results:** A review of literature suggests the benefits of lycopene supplementation in reducing the risk of diabetes related complications. In particular it shows beneficial effects on plasma glucose levels (p<0.05), weight improvement (p<0.05), diabetic neuropathic pain, cardiovascular disease and sexual dysfunction in diabetes. Literature on diabetic nephropathy and retinopathy is scarce due to the lack of human clinical trials. The mechanism of action of lycopene is poorly understood at present. Lycopene may play a role in preventing diabetes related complications by reducing rate of lipid peroxidation (p<0.001), inhibiting TNF- α (p<0.001) and nitric oxide (p<0.01) release and restoring the activity of catalase and glutathione peroxidase. **Conclusions, discussion and/or practical application:** As lycopene shows a beneficial effect on all the major complications of diabetes, it may prove to be a good adjunct to insulin therapy or oral hypoglycaemic therapy in overall management of long term diabetes related complications. Long term clinical trials are required to establish the effects of lycopene supplementation in people with diabetes.

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P-493: EVALUATION OF CONSUMPTION YOGURT WITH PROBIOTICS (*LACTOBACILLUS ACIDOPHILUS E BIFIDOBACTERIUM ANIMALIS*) IN THE SYMPTOMS OF CONSTIPATION: RANDOMIZED CLINICAL TRIAL

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Introduction: Constipation is a clinical condition based on the persistent difficulty to evacuate with effort, dry stools or increased consistency, usually less than three bowel movements per week. The objective was to evaluate the effect of consumption dairy probiotics beverage (*Lactobacillus acidophilus e Bifidobacterium animalis*) in improving symptoms of constipation. **Methods:** Parallel randomized double-blind clinical trials, realized in a Basic Health Unit (BHU) in the city Bom Retiro do Sul, Brazil. The research protocol was registered and approved in Brazil Platform and Clinical Trials (NCT 02446080). Sixty constipated adult women were recruited and were random selection to the control group (150mL/day of tradicional yogurt; n=30) or the intervention group (150mL/day of yogurt probiotics *Lactobacillus acidophilus* and *Bifidobacterium animalis*, n=30) for eight weeks. Constipation symptoms were evaluated according to the criteria of Rome III and stool consistency by the Bristol Stool Scale before and after the intervention. Chi-square Test and anova were used in the data analysis and the significance level was 5%. **Results:** Fifty seven women concluded this study. At the end of the study was significant improvement in the consistency of stool in both groups (p<0.001), with no significant difference between them (p=0.838). Significant improvement in all the criteria of Rome was observed in both groups at the end of the study (p<0.001) with no difference between them (p>0.05 for all analyzes). Both groups showed a significant increase in the number of bowel movements after 8 weeks of follow-up, no significant difference between them [intervention (5.00±2.24) versus controls (5.82±1.79), p=0.132]. **Conclusions, discussion and/or practical application:** Consumption the yogurt containing probiotic *Lactobacillus acidophilus* and *Bifidobacterium animalis* improved symptoms of functional constipation in adult women in a similar way to placebo.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests.

P-496: THE EVALUATION OF GENERAL NUTRITIONAL HABITS IN NON-OBESE SUBJECTS WITH POLYCYSTIC OVARY SYNDROME

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Introduction: To determine general nutritional habits in non-obese subjects with polycystic ovary syndrome (PCOS) and healthy controls. **Methods:** This descriptive trial is conducted on new diagnosed polycystic ovary syndrome (PCOS) outpatients and healthy controls at Hacettepe University, Department of Endocrinology and Metabolism in Ankara. 18 PCOS patients and 18 healthy control women matched for age and body mass index (BMI). **Results:** The mean±SD age and BMI were 21.7±3.4yrs, 22.2±3.3kg/m² respectively. Out of total, 91.6% of the study group were graduated from Universities and 94.4% of them were single (n=34). Only 77.8% were sometimes using alcohol and 77.7% of the participants were not using nutritional supplements. PCOS were observed mostly in the mothers of the study group (88.9%, n=16) and mostly in the aunts (88.9%, n=16) of the control group (p>0.05). Totally, 55.6% of the patient's families and 38.9% of the control's families had hypertension or CVD. T2DM were determined in the 44.4% (n=8) of the study and 66.7% (n=14) in the of the control group. Overweight ratio showed similarity in both groups. The choice "I am never dieting" were answered by 14 persons, "1-4 time a month" by 7 subjects, "ten and more times a month" were just answered by one subject and "I am always on diet" were answered by two subjects of the study (p>0.05). Three main meals consumed regularly were lunch in subjects and controls (72.2% and 55.6%, respectively). Regularly 2 meal a day were consumed mostly (p>0.05). The most skipped meal was lunch in both groups (p>0.05). Mean eating time were mean±SD 20.83±6.5; 23.82±6.5min in study and control groups, respectively (p>0.05). **Conclusions, discussion and/or practical application:** The patient and control groups had similar nutritional habits. We need further research with larger groups related on nutritional habits in PCOS.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interests.

P-500: THE RELATION OF BIOELECTRICAL IMPEDANCE VECTOR AND PHASE ANGLE WITH MUSCLE FUNCTION IN ELDERLY

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Introduction: With the Bioelectrical Impedance (BIA) data it is possible to get the Bioelectrical Impedance Vector Analysis (BIVA), used to assess hydration, cell mass and phase angle (PhA) which is related to quantity and quality of cells that make up body tissues, including muscle mass. Aging can cause reduction in cellular level of mass, muscle function and physical performance. The objective was to investigate the relationship between analysis by PhA and BIVA with physical and functional performance.

Methods: Cross-sectional study with elderly. Were collected anthropometric data (weight and height) and calculated the body mass index (BMI). The BIA was performed (RJL device Systems® - Quantum BIA 101Q), with which were obtained the values of resistance (R) and reactance (Xc), to calculate the PhA and BIVA. PhA according to the equation: $PhA = Xc/R(\text{ohms}) \times 180^\circ/\pi$ and for BIVA adjustments in $R(\text{ohms})/\text{height}(\text{meters})$ and $Xc(\text{ohms})/\text{height}(\text{meters})$ were made. The handgrip strength (FPM) was measured in the dominant hand with hydraulic dynamometer. Six meters speed Test (MS), Timed Up and Go (TUG) and Sit Test and Lift 5 times (TSL5x) were used to assess muscle strength, power, physical and functional performance. Statistical analysis was performed using correlation tests (Pearson or Spearman), $p < 0.05$. **Results:** Were evaluated 81 elderly aged $70.5(\pm 4.3)$; $BMI: 27.7(\pm 4.1) \text{ kg/m}^2$. Correlation was negative and significant between BIVA (R/h) and FPM ($r = -0.360$, $p = 0.001$), BIVA (Xc/h) and TSL5x ($r = -0.275$, $p = 0.05$) pHA and TUG ($r = -0.236$, $p = 0.05$). MS was not related to the evaluated parameters. **Conclusion:** PhA and BIVA can be tools for identifying risk of functional impairment in elderly assessment.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests.

P-501: BODY COMPOSITION AND CARDIO-RESPIRATORY FITNESS IN OVERWEIGHT AND OBESE ADOLESCENTS: EVASYON STUDY

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Introduction: Physical fitness has been considered a powerful marker of health, in childhood and in adulthood, independently of physical activity. A low fitness status during childhood and adolescence is associated with the risk of diseases later in life. To assess the relationship between cardio respiratory fitness and body mass index changes in obese adolescents after 13 months in a multidisciplinary intervention. **Methods:** Multi-intervention approach (diet, physical activity and psychological support in a family-group-based treatment) was implemented within a one-year intervention in 13-to-16-year-old overweight or obese

Spanish adolescents. A total of 87 adolescents were included in this study. We assessed body composition changes with body mass index Z-score and cardio respiratory fitness was assessed by 20-m shuttle run test. All measurements were made at baseline, and after 2 and 13 months. Pearson partial correlation coefficients were applied to assess the associations between body composition and fitness changes during the intensive and extensive phases, and at the end of the program, controlling for potential confounders (age and energy intake at baseline). **Results:** After controlling for age and energy intake, no association was observed after 2 months of treatment between body composition and fitness changes. However, in the extensive phase, the body mass index Z-score during the EVASYON programme was significantly correlated with cardio respiratory changes ($r=-0.34$, $p=0.019$). Moreover, the associations was maintained at the end of the program ($r=-0.48$, $p<0.001$). **Conclusions, discussion and/or practical application:** Cardiorespiratory fitness has shown as a good predictor of body composition changes in adolescents with obesity. However, more studies are needed to find the best physical fitness predictor to body composition changes.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests.

P-502: IMPROVEMENT IN DIETETIC REFERRAL RATE AFTER HEALTHCARE PROFESSIONAL EDUCATION AND A CHANGE IN THE DATA COLLECTION OF CHINESE – MALNUTRITION UNIVERSAL SCREENING TOOL (C-MUST)

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Introduction: This observational follow-up study was done to monitor the trend of dietetic referral rate and review the documentation of MUST screening from year 2013 to 2014. Malnutrition prevalence in the acute hospital setting was estimated between 20% and 50%. Frequent failure to recognize and treat adult malnutrition in hospital is unacceptable. The routine use of a simple screening tool is recommended. **Methods:** Since August 2012, all in-patients who stayed in hospital for at least 48hrs were screened for Malnutrition Risks using C-MUST. To investigate the response rate of attending doctors on malnutrition action plans, computer auto-generation of data was used in 2013 but a lot of missing data was found in the analysis. Only 5.1% dietetic referral rate was recorded. **Results:** Doctors were asked to sign the forms and indicate treatment plans for high risk patients. The compliance rate of signed forms was 72.4%. Also, nurses were reminded to re-enter the selection on the computer. 170 out of 857 high-risk patients were selected using simple random sampling without replacement by a computer. 170 assessment forms were retrieved from Medical Record Department for investigation. It was estimated that 28.8% of cases (247 patients in 2014) had received Dietetic Interventions during the hospital stay. A significant 4.1 times increase in dietetic referral rate was noted from 2013 to 2014 despite a similar in-patient malnutrition rate of 3.5%. In addition, 25.3% of high-risk patients had input and output chart monitoring noted in the malnutrition action plans. **Conclusions:** A significant increase of accurate dietetic referral rate is noted after healthcare professional education on C-MUST and data collection using assessment forms instead of computer data. More education sessions and nutrition updates will be given to doctors and nursing staff to identify malnourished patients. The use of C-MUST will be introduced in Oncology centers and Renal Dialysis Ward.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-503: IMPACT OF THE GUT MICROBIOTA ON THE DEVELOPMENT OF OBESITY

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Introduction: Recent studies reveal that gut microbiota is a relevant factor in the development of obesity. This hypothesis comes from the observation that obese patients have different microbiota compared to normal weight individuals. This microbiota alteration could have implications in food energy extraction and in the intestinal synthesis of hormones involved

in energy homeostasis. Currently, the importance of intestinal microbiota in the etiology of obesity provides a justification for its use as a therapeutic strategy for obesity treatment and prevention. **Methods:** Published data for this review were identified by search and selection in PUBMED database and reference lists from relevant articles and reviews about human microbiota and obesity. The keywords gut microbiota, obesity, colonic fermentation, probiotics, short-chain fatty acid, and combinations of them were used. **Results:** Over 100 relevant articles were reviewed. Regarding the effects of the gut microbiota in energy storage, obese subjects had higher proportion of Firmicutes, whereas normal weight subjects show higher concentrations of Bacteroidetes. Firmicutes show more effective extraction of energy than Bacteroidetes, thus increasing fat storage. In addition, Firmicutes absorb less short chain fatty acids than Bacteroidetes do, producing lower levels of PYY (an intestinal hormone) decreasing satiety, and consequently, increasing food intake. **Conclusions, discussion and/or practical application:** Several microorganisms (Bacteroidetes and Firmicutes among others) seem to be involved in fat storage, being modulated by dietary energy intake and probiotics. Short-chain fatty acids are beneficial for intestinal health and may produce a greater sense of satiety through PYY releasing. The modulation the intestinal microbiota with suitable diet, probiotics, prebiotics or fecal microbiota transplantation could be a solution to decrease fat storage, improve intestinal health and reduce satiety.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-527: AN EXPLORATION OF NUTRITION INFORMATION FOR PEOPLE WITH TYPE 2 DIABETES

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Introduction: Provision of information about nutrition is a key aspect of diabetes management and is available from healthcare professionals (HCPs), as well as via other sources such as on food labels, the media and internet. The aim of this research is to explore nutrition information accessed and used by people with type 2 diabetes and their partners/carers. **Methods:** The research utilized a qualitative approach involving the use of unstructured solicited diaries followed by qualitative interviews with people who have type 2 diabetes. Diaries recording nutrition information accessed were kept for one month and were followed up by qualitative interviews exploring the diary entries and experiences of nutrition information in general. Thematic analysis supported by qualitative data analysis software was used. Ethics approval was obtained from the University of Hertfordshire. **Results:** Nineteen people with type 2 diabetes (6 men and 13 women) and one partner (one woman) with an age range of 53 to 77 years and length of time since diagnosis ranging from 0.5-23yrs were recruited from diabetes support groups in the East of England resulting in nineteen diaries and interviews. Food labels as sources of information were recorded and discussed most frequently. HCPs were only referred to in terms of their absence from the nutrition education process. Themes included 'food labels are confusing' and 'there is a lot of information out there'. Phrases such as a 'wilderness of information' and being 'left to get on with it' were used by participants to contextualise their experiences. **Conclusions, discussion and/or practical application:** Education of people with type 2 diabetes should include a greater focus on the interpretation of food labels and their application to diabetes. Efforts should be made to ensure that all people with type 2 diabetes have access to HCPs who are able to provide them with nutrition information.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-528: NUTRITIONAL MANAGEMENT OF DIABETES – HISTORY AND CURRENT GUIDELINES

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Introduction: Nutritional recommendations for diabetes have substantially changed over the years and remain an area of debate. Examining the history of diabetic diet provides a framework for understanding the rationale for current guidelines. This research is part of an ongoing project about the early pioneers in the treatment of diabetes. **Methods:** We searched PubMed, Google Scholar, IsisCB and the University of Toronto Libraries Fisher Library Digital Collections for original research

articles, systematic reviews, meta-analysis and organisations' guidelines published up to December 2015. **Results:** A total of 1436 records were identified from the initial search. We finally selected 43 articles for examination of full texts. **Conclusions:** Throughout history, dietary recommendations for diabetes, starting in Ancient Egypt, have swung between prescription or prohibition of specific foods, macronutrient distribution or even starvation diets. The clinical application of insulin meant an upward trend in the amount of carbohydrate and calories. To a large extent, even after the discovery of insulin, carbohydrate restriction was the preferred therapeutic approach. In recent years, guidelines from diabetes associations have become more flexible and now recommend instead focusing on the quality of macronutrient intake and individualizing macronutrient distribution, based on the patient's lifestyle, metabolic goals, eating preferences, and compliance to diet and lifestyle changes. We also examine the role of probiotics and functional foods. The aim of diabetes nutrition therapy is to promote healthy eating to achieve glucose, lipid and cardiovascular risk goals.

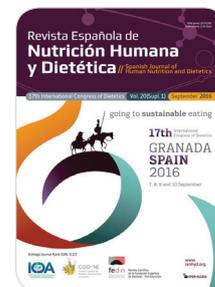
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P-096: EFFECTS OF DIFFERENT INFANT FEEDING METHODS ON POSTPARTUM CHANGES IN THE MATERNAL BODY COMPOSITION DURING THE POSTPARTUM 6 MONTHS

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Introduction: The number of Newborn is ranking top 2 of Taiwan in Heping- Fuyou Branch of Taipei City Hospital. Study was designed to know how the breastfeeding and energy intake affected women change body composition during the postpartum 6 months in Taiwan Capital. **Methods:** Subjects were recruited from the Postpartum Nursing Care Center or obstetrics ward of Heping- Fuyou Branch of Taipei City Hospital. Body weight loss was recorded, and a bioelectrical impedance analysis (Imbody3.0, Biospace Co., Korea) was used to measure body composition changes at 1, 3, and 6 months postpartum. Subjects asked for 24 hours diet record for 3 days (included 1 weekend and 2 weekdays) before visited at 1, 3, and 6 months postpartum. **Results:** There were 36 subjects who completed the study, with 16 in breastfeeding group, 9 in the combination group and 11 in formula-feeding group. The results showed that different groups were similar in weight gain during pregnancy, the postpartum weight retention of 6 months in all groups were no difference. Breastfeeding group in weight, total fat, body fat percentage, waist circumference and waist/hip ratio are significantly reduced at 6 months postpartum compared with at 1 months postpartum ratio. Combination group was only significantly reduced in weight and formula-feeding group was no significantly reduced in any items after postpartum 6 months. Energy intake were 32.0±5.3kcal/kg in breastfeeding group, 30.5±4.7kcal/kg in combination group and 26.0±6.3kcal/kg in formula-feeding group at 6 months postpartum. There was no significant different between groups. **Conclusion:** This showed breastfeeding postpartum women had more effect on more health improvements and positive impact than **formula-feeding** group.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-097: FOOD PREPARATION/PRETREATMENT FOR REDUCING RADIOACTIVE CESIUM-137 CONCENTRATION IN FOOD PRODUCED IN KAWAUCHI VILLAGE, FUKUSHIMA, JAPAN

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Introduction: The Great East Japan Earthquake occurred in March 2011 in Japan. Consequently, nuclear reactors in the Fukushima Daiichi Nuclear Power Plant were critically damaged and radioactive substances contaminated many surrounding regions. To allay concerns over food safety, we examined the effects of food preparation and pretreatment on the concentration of radioactive cesium-137 (137Cs) present in different foods. **Methods:** During October 2011 and November 2014, we sampled foods produced in or harvested from the Kawauchi village in Fukushima, Japan, where the amount of scattered radioactive substances was relatively low. The concentrations of radioactive cesium-137 in the foods from Kawauchi Village was measured using a gamma-ray spectrometer (germanium semiconductor detector). **Results:** The mean 137Cs concentrations (Bg/kg) contained in different foods before pretreatment were as follows: mushroom, 258.26; edible wild plant, 150.56; fruit, 9.89; fruit vegetable, 0.73; root vegetable, 2.36; leaf vegetable, 2.70; brown rice, 0.98; and entire daily meals before preparation, 3.23. The percentage reduction in the 137Cs concentration contained in foods for the respective pretreatments was as follows: "wash," 12.6%; "wash and peel," 19.0%; "wash, peel, and boil," 71.6%; and "remove scum," 67.2%. The percentage reduction in the 137Cs concentration of apple increased from 11.2% after wash to 17.4% after wash and peel. For potato, the percentage reduction increased from 22.4% after wash to 27.3% after wash and peel to 59.2% after wash, peel, and boil. In terms of daily meals, the total percentage reduction was 66.9% after preparation compared to the ingredients before preparation. **Conclusions, discussion and/or practical application:** In conclusion, 137Cs concentration in foods reduced through preparation/pretreatment, and the percentage reduction was particularly high after boiling.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-098: ASSOCIATION BETWEEN ACCESS TO LOCAL PUBLIC OPEN AREAS AND PHYSICAL ACTIVITY IN A POPULATION AT HIGH CARDIOVASCULAR RISK. THE PREDIMED-BALEARES TRIAL

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Introduction: Our interest in the use of a geographical information system (GIS) to evaluate obesogenic environments and facilities for physical activity practice has led us to start this study measuring the density of local public open areas for each of our Predimed-Baleares trial participants. **Objectives:** The aim of this study is to evaluate the association between access to local public open areas and local public sports facilities and the physical activity of PREDIMED-BALEARES trial participants. **Methods:** There were 652 participants in the PREDIMED-trial in the Balearic Islands, of which only those living within the city limits of Palma de Mallorca were selected (final sample 427 participants after exclusions). Of these selected participants, their residence addresses were geocoded using ArcGIS 10.2 and a 500m network walkability street buffer for each participant was modeled to define accesibility. Using data on local public open areas and local public sports facilities provided by the city of Palma de Mallorca, intersection links between these variables and the network analysis model were computed. Information on physical activity was collected as total metabolic equivalents-minutes per day (METs-min/day) for each participant. **Results:** Evaluations were made on 427 participants (57,5% women, aged 67.7±5.9yrs). The average area of each network buffer was 447061.9± 82042.4 sq. meters, with a percentage area of influence of the network buffer of 5.4%±3.7 in relation to local public open areas and local public sports facilities. The average physical activity was 249.8±232.3METs-min/day. No significant

association between access to public open areas and physical activity practice was observed in this population. **Conclusions:** Our study has demonstrated that GIS can be applied to the PREDIMED trial to evaluate obesogenic environments; although results indicate there was no association observed between access to open areas and public sports facilities and physical activity practice, however, initial results indicate no association was observed between access to open areas and public sports facilities and physical activity practice.

COMPETING INTERESTS: The authors of the presented communication declare there is no conflict of interest.

P-099: CONSUMPTION OF DAIRY AND FRUITS ARE INVERSELY ASSOCIATED WITH ABDOMINAL OBESITY AMONG ADOLESCENTS

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Introduction: Abdominal obesity is strongly associated with lifelong progresses of cardio metabolic risk. For the measurement of abdominal obesity, waist circumference is a sensitive screening tool even for adolescents. Hence, the aim of this study was to examine the relationship between consumption of different food groups and waist circumferences in adolescents from Turkey. **Methods:** This study conducted to the adolescents (n=2066), aged between 10-16yrs studying at secondary schools in Ankara, the capital city of Turkey. After applying a socio-demographic and personal information questionnaire, 24-hr dietary recall was used to assess dietary intake and waist circumferences were measured to determine abdominal obesity. The mean consumption of different food groups and cut off point of waist circumference in abdominal obesity risk for Turkish adolescents (>50th percentile) was compared. To answer whether any gender-specific difference, the dietary data were compared with gender-specific percentiles. **Results:** Adolescents who met >50th percentile for age and gender showed significantly lower consumption of dairy and fruits than <50th percentile group (p<0.05). In the girls who met >50th percentile for age and gender, showed significantly lower consumption of dairy and total fruit compared to <50th percentile group (p<0.05). In the boys there was no significant difference in consumption of food groups according to the percentile cut-off groups. For the other food groups (vegetables, cereals, grains and meats) there were no significant differences within the adolescents as indicated. **Conclusions, discussion and/or practical application:** These results suggest that consumption of dairy and fruits are inversely associated with abdominal obesity among adolescents. Hence, it is important to develop effective strategy such as snacks including fruits and dairy products to improve healthy nutrition in adolescents to reduce the cardio metabolic risk factors, i.e. abdominal obesity.

COMPETING INTERESTS: The authors of the presented communication declare there is no conflict of interest.

P-100: DETERMINATION OF SELECTED HEAVY METALS IN DEMARSAL FISH

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Introduction: Determining heavy metal concentrations in fish is a global public health concern. Regarding the pollution in Black Sea, heavy metal concentrations in red mullet, whiting and turbot were studied to determine risks for public health. **Methods:** Turbot (*Psetta maxima*, n=42), whittings (*Merlangius merlangus*, n=12) and red mullets (*Mullus barbatus*, n=12) were caught by trawl from the Black Sea. The ICP-MS was calibrated (High-Purity Standards), and copper, zinc, cadmium, mercury and lead concentrations were analyzed (EPA, 1994). Certified reference material (SRM 2976) was analyzed for validation. The analyses were triplicated and results were analyzed by ANOVA. **Results:** The mean concentrations (mg/kg) of trace metals in red mullet, whittings and turbot samples were found as 3.30, 2.44 and 4.29 for Cu, 26.65, 23.54 and 17.57 for Zn, 0.03, 0.02 and 0.01 for Cd, 0.02, 0.01 and 0.01 for Hg, 0.29, 0.36 and 0.17 for Pb, respectively. **Conclusions, discussion and/or practical application:** The limits for Cu and Zn are 20 and 50mg/kg, respectively (Cefas, 1997). While the mean concentrations were low, some individuals of turbot contained higher Cu and Zn than limits. All samples contained Hg below the limit of 0.5mg/kg (EU 2006). Likewise, Tuzen *et al.* (2009) reported low Hg concentrations in same species from Black Sea. Cadmium was also below the limit of

0.05mg/kg (EU 2006). While the limit for Pb is 0.3mg/kg (EU, 2006), some individuals of all species contained Pb above 1mg/kg. Likewise, Pb concentrations (mg/kg) in red mullet, whiting and turbot from Black Sea were 0.84, 0.93 (Uluozlu *et al.*, 2007), and 0.28 (Tuzen *et al.*, 2009), respectively. It was concluded that the fish from Black Sea should be checked periodically, especially considering the Pb concentrations. Public should be informed both with the benefits and risks of fish to provide a safe consumption.

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P-101: MICRONUTRIENT INTAKE IN LIFE AND LIVING IN ADVANCED AGE: A COHORT STUDY IN NEW ZEALAND (LILACS NZ)

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Introduction: Micronutrient inadequacies are associated with adverse functional outcomes and may impact the independence of older adults. The aim was to evaluate energy, micronutrient intake and respective food sources of Māori (indigenous people of NZ) and non-Māori octogenarians participating in LiLACS NZ, a longitudinal cohort study in New Zealand. **Methods:** Nutritional assessments were completed by 578 Māori and non-Māori using a repeated multiple pass recall (2x24hr-recalls) and estimated using FOODfiles (2010) from the NZ Food Composition Database. Micronutrient intakes were compared with NZ Nutrient Reference Values (NRVs). **Results:** For Māori (n=216) median age 83yrs, median energy intake was 6.4 (IQR:5.2-8.2)MJ/day and for non-Māori (n=362) median age 86yrs, median energy intake was 7.0 (IQR:5.8-8.7)MJ/day. More than half of the Māori and non-Māori participants had intakes below the estimated average requirement (EAR) from food alone for calcium, magnesium, selenium, vitamin B6 (Māori women only), folate (women only) and zinc (men only). The Adequate Intake (AI) for vitamin E was not met by more than half of Māori women and both Māori and non-Māori men. Milk and cheese were key contributors to calcium intake while bread was a key source of magnesium and selenium. Women had more nutrient dense intakes of folate, vitamin C, calcium, magnesium, potassium, vitamin A (non-Māori) and β-carotene (Māori) compared to men. Compared to those who did not take nutrition supplements, Māori who took supplements had higher levels of food alone intake of vitamin A, folate and magnesium (p<0.035) and for non-Māori, higher levels of magnesium, potassium and zinc (p<0.03), but lower levels of vitamin B12 (p=0.001). **Conclusions, discussion and/or practical application:** A lack of age specific NRVs influence the interpretation of micronutrient intake. Strategies may be needed to increase the nutrient density of diets. A higher consumption of calcium, magnesium and selenium rich foods may be especially important.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-102: SOME PESTICIDES FOUND IN HORSE MACKEREL (*TRACHURUS SP.*) AND THEIR POTENTIAL HEALTH RISK

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Introduction: Pesticides such as OCPs and PCBs have been identified as persistent, semi-volatile, highly toxic, transported long-distance and hydrophobic compounds. These chemicals enter marine organisms and accumulate in the human body mainly by way of diet. Fish is a great food for human health. Horse mackerel has economic value and delicious meat that people mostly prefer, which can be found in every season in the all sea of Turkey. Thus, determination of OCPs and PCBs in fish is important to the extent of aquatic pollution as well as potential risk to public health. **Methods:** Horse mackerel samples were obtained from four coastal stations in the Marmara Sea during every month in a year (2010-2011). Fish samples were homogenized and freeze-dried. Extraction and Clean-up and HRGC/HRMS analysis were made according to Eurofins House

Method (SOP 2005). **Results:** The annual average OCPs levels in fish samples ranged between 0,09-12,16ng/g (wet weight), while the annual average PCBs levels ranged between 0,55-4,98ng/g (wet weight). The most common pesticides compounds in fish samples were determined as total-DDT, total-HCH ve PCB 138, PCB 153 concentrations. There was no relation between lipid content of horse mackerel samples and concentrations of the contaminants. **Conclusions, discussion and/or practical application:** In the study, total-DDT and PCB 153, PCB 138 were predominant congeners, similar to those found by Aksu *et al.* 2011; Bayyari *et al.* 2001; Coelhan *et al.* 2006; Erdogrul *et al.* 2005. The results of the current study show that OCPs and PCBs levels in horse mackerel samples were below below the limit values regarding food and nutrition security. Hence, it was concluded that horse mackerel from the Marmara Sea have no risk for public health.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-104: ADHERENCE TO MEDITERRANEAN DIET (MD) AND HEIGHT OF BAIX MONTSENY (BARCELONA) CHILDREN

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Introduction: Evidence shows that a greater adherence to MD is associated with a decrease in BMI in both adults and children. However, reviewed studies do not relate MD with weight and height. Therefore, we aim to explore the adherence to the MD and its relation with anthropometric parameters in children in the Montseny area (rural setting near Barcelona). **Methods:** Weight and height were determined using ISAK's techniques, and BMI was calculated. The degree of adherence to MD was determined with the KIDMED questionnaire. Differences between group means were assessed using Student's T test. **Results:** We studied 269 9 year-old children, 146 (54.2%) boys. The average weight, height and BMI were 31.9kg (± 6.8), 133.9cm (± 5.8), and 17.7kg/m² (± 2.9), respectively, with no significant differences by gender. Adherence to MD was good in 44.5%, average in 52.4% and poor in 3.1% of kids. Adherence to MD was associated with an increase in height, 135.0cm (± 5.5) vs. 133.0cm (± 5.7) for good compared to average-poor adherence ($p=0.008$). There were no significant differences in weight and BMI. The height was also increased by the consumption of a piece of fruit per day ($p=0.035$), a second piece of fruit per day ($p=0.03$), daily vegetables ($p=0.04$), vegetables more than once per day ($p=0.06$) and cereals as part of breakfast ($p=0.03$). **Conclusions, discussion and/or practical application:** A better adherence to MD increases the probability of consuming the recommended amounts of nutrients, thus improving the nutritional status of individuals. When considering height as a reflection of adequate nutrition, a good adherence to the MD improves nutritional status and increases the height in 9 year-old children living in a Mediterranean countryside.

COMPETING INTERESTS: The authors declare that they have no conflicts of interest.

P-105: ASSOCIATION BETWEEN SLEEP DURATION AND CHILDHOOD OBESITY IN PRESCHOOL CHILDREN

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Introduction: Epidemiological studies have shown that sleep duration is associated with obesity that is on the rise in the Turkey. We aim to investigate the association between sleep duration and obesity in Turkish preschool children. **Methods:** A total of 356 preschool children living in Ankara with family were included in the study. Total child height and weight were measured and BMI Z-score (BMIz) calculated. Sleep duration were self-reported by parents in a questionnaire. Regression analysis evaluated main effects of sleep timing on concurrent BMIz and future rate of change, and their moderating effects on the sleep duration-BMIz association. **Results:** Sleep duration of children were linked to BMIz ($P<0.001$). Mean sleep duration of children with BMIz between -2SD and -1SD was 10.6 \pm 1.12hrs while children with BMIz higher than +2SD is 9.4 \pm 1.29hrs. Assessed longitudinally short sleep duration ($P<0.01$) were associated with increases in BMIz ($P<0.05$). There was a negative

($r=-0,237$, $p<0.0001$) association between sleep duration and BMI. **Conclusions, discussion and/or practical application:** Children with shorter night-time sleep durations and later bedtimes were more likely to be obese and to gain weight over time. Pediatricians should encourage families to place children to bed at earlier times to promote longer sleep duration as a potential means of controlling weight gain.

COMPETING INTERESTS: The authors declare that they have no conflicts of interest.

P-107: SCALING – UP IRON RICE FORTIFICATION TO ADDRESS ANEMIA THRU TECHNO-TRANSFER: PHILIPPINE EXPERIENCE

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Introduction: Anemia lowers productivity among children and adults. The Philippine Food Fortification Law in year 2000 was crafted because of the high prevalence of anemia. The FNRI conducted series of studies on rice fortification: (1) technology generation and product development of iron premix rice (IPR); (2) efficacy trial; (3) pilot-scale field trials; and (4) large-scale commercialization of iron fortified rice (IFR). The IPR is mixed with ordinary rice to produce IFR. Because IFR is efficacious in reducing anemia and feasible to be sold in public markets, FNRI has scaled-up the implementation in Mindanao. Objective: To enable private mills to acquire and adopt the technology in the production of IPR and IFR, making IFR available, affordable and accessible for all Filipinos. **Methods:** Two project components were implemented: (1) the technology transfer and (2) activities for sustainability. Several business forums were conducted among rice millers. All millers who signified interest were assessed and technology transfer and training were provided. For sustainability, advocacy campaigns were conducted among Local Government Executives and nutrition and health education modules were developed for use by Teachers to educate both the schoolchildren and parents during Parent-Teachers meetings. Pre-post-tests were administered per module. **Results:** Thirteen millers were interested to adopt the IFR technology, 3 are already producing IFR, and 2 have the facilities for the production of both IPR and IFR. To sustain the program, a local ordinance was passed on the use of IFR in supplementary feeding activities, sold public markets and the sale of cooked IFR in restaurants. Parent's education resulted to higher scores at post-test than the pre-test. **Conclusions, discussion and/or practical application:** Fortifying rice with iron fills the gap between recommendation and intake and is efficacious in reducing anemia. Scaling-up its sale and consumption is to make the supply available, accessible, and affordable thru techno-transfer.

COMPETING INTERESTS: The authors declare that they have no conflicts of interest.

P-108: A STUDY ON ANTIOXIDANT INTAKE OF HEALTHY INDIAN FEMALES (YOUNG ADULTS)

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Introduction: Modern unhealthy food habits, sedentary life, stress and pollution are all taking a toll on the health by accelerating the production of free radicals. Hence, antioxidants become necessary to counteract these free radicals. The balance between oxidants and antioxidants decides the health and vigour of a person. There are few studies in this regard in India. Hence this study was taken up. **Purpose:** 1) To study the antioxidant intake of Indian females; 2) To study the contribution of different food groups to the total antioxidant intake. **Hypothesis:** There is no difference in the contribution of antioxidants from different food groups. **Method:** After obtaining ethical clearance, 100 female young adults studying in Home Science College, Bangalore, were selected by purposive sampling. A modified antioxidant food frequency questionnaire was used for data collection. Responses on food intake were converted into daily food intake per person. Antioxidant intake was calculated based on 'The

antioxidant Food Table'. **Results:** The average daily antioxidant intake of the subjects was found to be 4027.73 μ mol of FeSO₄ equivalents. Fruits and vegetables contributed 45% of the total intake. However, starchy vegetables such as roots and tubers alone contributed 17% of this 45%. The antioxidant intake of the subjects could not be compared with standards as the Recommended Dietary Allowances for antioxidants are yet to be developed. However the contribution of different food group to the total antioxidant intake was compared with the Mediterranean diet, where 55% of the antioxidant were provided by fruits alone. **Conclusion:** This is a preliminary study on antioxidant intake and some more studies on antioxidant intake can lead to development of dietary guidelines for antioxidant intake.

COMPETING INTERESTS: The authors declare that they have no conflicts of interest.

P-110: BREAKFAST CONSUMPTION PATTERNS AMONG 4-10 YEAR OLD HUNGARIAN CHILDREN

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Introduction: Regular consumption of breakfast is a dietary habit with many potential benefits, especially among children. From a nutritional perspective, breakfast consumption has been associated with improved nutrient intakes, overall diet quality and lower body mass index. Despite these benefits, many children skip breakfast, especially as they grow older. In addition, little is known about the breakfast consumption habits among Hungarian children. This study evaluated breakfast consumption habits, nutrient intakes, and foods consumed at breakfast among Hungarian nursery- and elementary school aged children. **Methods:** Three-day dietary records were collected from 4-6 (n=351) and 7-10 (n=448) year old children or their proxys from Budapest and Kecskemét. NutriComp Hungarian Food Composition Tables (1995) were used to calculate nutrients from all foods and recipes. Breakfast consumption habits were collected using a questionnaire and included information about breakfast frequency and other breakfast behaviors. **Results:** Nearly all children ages 4-6y consumed breakfast, either at home or at school. By age 7-10y, 31% reported missing breakfast. The main reason for skipping breakfast was the lack of time or hunger although all considered breakfast as an important meal. Added sugar intake was higher at breakfast compared to total daily intake, largely due to sweetened breakfast drinks. Eighty-one percent of children drank milk for breakfast at least once in 3days and 55% consumed cocoa drinks. Foods commonly consumed at breakfast included white breads, sweetened spreads, and cold cuts, without vegetables or fruits. Whole grain was consumed primarily from breakfast cereals and breads for breakfast, but intakes were well below recommendations. **Conclusions, discussion and/or practical application:** Breakfast skipping is already highly prevalent in Hungarian children 7-10y. The nutritional composition of the breakfast meal could be improved by promoting more whole grains and reducing added sugars. Strategies to encourage breakfast consumption, especially for elementary school aged children, are needed.

COMPETING INTERESTS: Bernadett Kiss-Tóth and Alison L. Eldridge are employees of Nestlé, the sponsor of this research.

P-111: HIGH CONSUMPTION OF LOW-NUTRIENT, ENERGY-DENSE FOODS AND BEVERAGES IS PUTTING GCC COUNTRIES AT A DOUBLE BURDEN OF NUTRITION

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Introduction: There is an alarming increase in the prevalence of obesity in the six Gulf Cooperation Council (GCC) countries and especially among adult females. The GCC member states include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). Among the six countries, Kuwait, Bahrain, Saudi Arabia and UAE are at the top ten list of obese countries, worldwide. **Methods:** There is a lack of nutrition and health data from many countries of the GCC, but even so, there's sufficient information to get a picture of the situation there. **Results:** There is undeniable evidence that obesity rates are on the rise. A decade ago Kuwait had 10% men and 6% women who were obese, and today the percentages almost quadrupled to 36% men and 48% women. Furthermore, the percentages in Bahrain have almost doubled. Back in 2000, 11% Bahraini men and 24%

Bahraini women were obese, while in 2010, the percentages have increased by 10% and 14% for men and women, respectively. Micronutrient deficiencies are another major nutrition issues faced by GCC countries, with iron deficiency anemia, calcium and vitamin D deficiency being among the micronutrients lacking in their modern diet. In the UAE 78% of the population suffers from vitamin D deficiency. Moreover, between 24-56% of women and children of the Arab Gulf are affected by iron deficiency anemia. Local diet and food items will be discussed to suggest practical solutions to improve the above mentioned issues in the GCC countries. **Conclusions:** A high intake of energy dense nutrient low food in combination with low physical exercise have resulted in a double burden of nutrition in GCC countries with high obesity rates and relative high levels of certain nutrient deficiencies. GCC countries have set a nine years regional nutrition strategy to overcome these nutritional challenges.

COMPETING INTERESTS: The authors declare that they have no conflicts of interest.

P-112: MUSHROOM CONSUMPTION AND INCIDENT DEMENTIA IN ELDERLY JAPANESE: THE OHSAKI COHORT 2006 STUDY

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Introduction: Decline of brain function during normal aging is partly due to the long-term effects of oxidative stress and inflammation. Both *in vivo* and *in vitro* studies in recent years have indicated that edible mushrooms may have anti-inflammatory and antioxidant properties. However, no cohort study has yet demonstrated a relationship between mushroom consumption and incident dementia. The present prospective cohort study investigated the association between mushroom consumption and incident dementia in elderly Japanese subjects. **Methods:** We analyzed follow-up data for 13,230 older adults (≥65yrs) participating in a community-based, prospective cohort study over a 5.7-year period. Information on daily mushroom consumption and other lifestyle factors were collected via a questionnaire in 2006. Data on incident dementia were retrieved from the public Long-term Care Insurance database. Hazard ratios (HRs) and 95% confidence intervals (95% CI) for incident dementia were estimated using Cox proportional hazards regression models. **Results:** The 5.7-year incidence of dementia was 8.7%. The multi-adjusted HR (95% CI) of incident dementia was 0.95 (0.82, 1.10) among respondents who consumed mushrooms 1-2times/week and 0.81 (0.69, 0.95) among respondents who did so ≥3times/week in comparison with those who did so <0.001. **Conclusions:** The results of this cohort study suggest that frequent mushroom consumption is significantly associated with a lower risk of incident dementia, even after adjustment for possible confounding factors.

CONFLICT OF INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-113: PESTICIDES APPLICATION AND ITS ESTIMATED DAILY INTAKES IN ALGERIA

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Introduction: In Algeria, more than 30,000 tons of pesticides are used annually. Because of their health risks they should be handled with a lot of precautions, but farmers do not take these precautions into consideration. We tried to assess compliance with good pesticide practices of some Algerian farmers to estimate the consumers' risks. **Methods:** We conducted a survey with farmers near the capital of Algeria, on compliance with good agricultural practices (GAP) during the manipulations of pesticides, and we tried to reproduce their behavior by the treatment of fruits and vegetables (tomato, strawberry and zucchini) with two pesticides (chlorpyrifos, Methiocarb) to determine their residue and assess their risk to the consumer by calculating the Estimated daily Intakes (EDI) which is compared to the acceptable daily Intakes (ADI). **Results:** We found that most farmers do not meet the GAP when handling these toxic products. Pesticide residue levels were between 171 and 1190µg/kg, most of them exceed the maximum residue limits (MRLs), and the calculated EDI are lower than the fixed ADI. **Conclusions, discussion**

and/or practical application: The results found for two pesticides only in some fruits and vegetables show the risk of misuse of these substances when in fact hundreds of pesticides are used on many fruits and vegetables in Algeria. Cancer kills about 30,000 people each year, 30% of diagnosed cancers are gastrointestinal and occur at a younger age Unlike Western countries. Stunting rates among children has increased in recent years. So we must act quickly, by instilling them a hygiene and security education against these risks to preserve our health.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-115: THE ROLE OF DIETARY FIBRE IN PREVENTION AND IMPROVEMENT OF PREGNANCY RELATED BOWEL PROBLEMS

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Introduction: Constipation and haemorrhoids affect at least 40% of pregnancies. In addition to personal discomfort, straining to defecate can damage the pudendal nerve and impair the supportive function of the pelvic floor musculature, and may be as important as obstetric trauma in causing pelvic floor damage. A review of published evidence was carried out to assess understanding of the role of fibre in pregnancy bowel disorder, fibre intakes and shortfall and dietetic practice guidelines.

Methods: An electronic search of the Pubmed and Ovid databases, clinical guidelines and reports examining the role of fibre in pregnancy and pregnancy related bowel disorders, and dietetic practice and guidelines was undertaken. Limits included: English language and publication between 1950-2015. Titles, abstracts/summaries of papers were reviewed, and relevant full papers obtained. **Results:** Recommended fibre intake during pregnancy is remarkably consistent at around 25-30g per day. Where mentioned (rarely), clinical guidelines agree that increased fibre, particularly wheat bran and fluid intakes are advisable to promote bowel health. Fibre consumption reported by pregnant and non-pregnant women falls 8-10g short of recommended intake (UK, Europe, USA, Australia and New Zealand). **Conclusions, discussion and/or practical application:** Pregnancy related bowel disorder is incredibly common with potentially lifelong consequences for the pelvic floor. Despite the simplicity of prevention, this is universally neglected in pregnancy related dietary advice. Wheat bran is an effective fibre to correct bowel disorder due to its high water absorption and stool bulking capacity, and recognised in EFSA approved European health claims. Dietetic Practice guidelines across the globe, fails to provide sufficient advice on fibre intake in relation to pregnancy. Dietetic practice needs to adapt at all levels including: National Practice Guidance; education of professionals such as midwives; public health education; and in individual consultations to raise the awareness of the need to increase fibre, and particularly wheat bran intakes, during pregnancy and beyond.

COMPETING INTERESTS: Original background literature review supported by an educational grant from the Kellogg Company.

P-116: A CALF CIRCUMFERENCE CUT-POINT TO PREDICT LOW MUSCLE MASS AND DIAGNOSE SARCOPENIA IN BLACK SOUTH AFRICAN WOMEN IN PUBLIC HEALTH SETTINGS

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Introduction: Sarcopenia is a nutrition related geriatric syndrome caused by multiple factors and diagnosed by dual-energy X-ray absorptiometry (DXA). DXA is poorly accessible in developing countries and expose the subject to radiation. The calf circumference may provide an accurate estimation, using a more affordable method, of muscle mass in the elderly. The purpose of this study was to investigate the relationship between calf circumference and appendicular skeletal muscle mass index (ASMI). We hypothesise that the calf circumference can be used to diagnose sarcopenia in black South African women. **Methods:** This cross-sectional study was conducted in 247 randomly selected women older than 45yrs, living in Tlokwe City, South-Africa. The maximum calf circumference was measured as indicator of muscle mass. Data analysis included correlations, receiver operator characteristics (ROC) curves, as well as maximum Youden index to identify a calf circumference cut-point for sarcopenia. Three different sarcopenia related outcomes were considered, namely low gait speed (<4.94kg/m²). **Results:** A strong significant positive

correlation was found between calf circumference and ASMI ($r=0.84$, $p<0.001$). According to ROC curve analysis the calf circumference to predict low handgrip strength was 34.3cm (sensitivity 66.7%; specificity 64.4%) and the calf circumference to predict low gait speed was 37.8cm (sensitivity 93.8% and specificity 41.2%). Using sarcopenic state according to the South African cut-point for sarcopenia as standard, a calf circumference cut-point of 29.9cm was found. The area under the curve (AUC) for all three outcomes was >0.60 . **Conclusions, discussion and/or practical application:** A calf circumference of 29.9cm can be used to predict low muscle mass and diagnose sarcopenia in older black South African women in public health settings where DXA is not accessible.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-117: A SYSTEMATIC REVIEW OF MEAT AND FISH FROM DIETARY INTAKE ANALYSES

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Introduction: The existing evidence on meat and fish (MF) focuses largely on the association between intake and health outcomes, rather than the assessment, reporting and presentation of intake, which is a crucial step to accurately reveal this relationship. The aim of this review was to examine the assessment, reporting and presentation of MF intake at a food level in studies involved MF. **Methods:** Published studies from January 1990 through April 2015 and reported MF intake at a food level were sourced. The study designs included randomised controlled trials (RCTs), prospective cohort studies and meta-analyses. One hundred and nine studies were included using Scopus and Web of Science databases. The MF intake assessment, grouping and the presentation of the amount consumed were examined, as were patterns of results among MF intake across the studies. **Results:** The majority of identified studies were observational studies or meta-analyses of observational studies ($n=97$). Fish intake was widely investigated in RCTs ($n=9$). Ninety-two percent of the observational studies used food frequency questionnaires with limited MF foods listed to assess intake ($n=56$). Little consideration of MF-contained in mix dishes was evident. Furthermore, unprocessed and processed meat tended to be grouped and reported separately. Apart from RCTs, the presentation of the quantity of MF intake was generated by converting and summing the intake. **Conclusions:** The current available MF intake data, particularly for meat, may be limited power to investigate the intake and health outcomes specific to the food type.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-118: ADHERENCE TO THE MEDITERRANEAN DIET AND HEALTH IN ADOLESCENTS (DEPENDING ON THE EDUCATIONAL CYCLE)

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Introduction: Eating habits acquired during the stage of adolescence are key to the consolidation of a good food education at the adult age. Numerous epidemiological studies focused his interest in the study of the Mediterranean diet (DM) in children and adolescents, as a pattern of healthy diet with health benefits. **Objectives:** To know the degree of adherence to the DM in adolescents and its relationship with the perception of the State of health, physical activity and academic course or academic cycle. **Methods:** Cross-sectional study in a sample of 416 adolescents. He was a random sampling among students of compulsory secondary education (ESO) and Bachelor of 5 institutes of secondary education (IES) of public facilities in the province of Alicante. Adherence to the Mediterranean diet was assessed through the Mediterranean Diet Quality Index (KIDMED). To meet the Association of adherence to the DM with the perception of health status, physical activity, and the educational cycle was a logistic regression adjusted for sex. **Results:** About 20% of the population presented a low adhesion to the DM. Teens that are that showed a higher level of physical activity and showed a greater adherence to the DM in relation to high school students ($p=0.012$) and the more sedentary ($p<0.05$). Regarding the perception of the State of health, found no significant differences in

relation to adherence to the DM, but whether between sexes, manifesting the girls have a better perception of health from the boys ($p=0.02$). **Conclusions:** These results highlight the need to implement programmes of nutritional intervention in these groups of age, with the aim of preventing the progressive abandonment of the DM and the healthy lifestyles.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-120: AN ASSESSMENT OF THE NUTRITIONAL STATE OF A GROUP OF ELDERLY PEOPLE WHO MAKE USE OF THE MUNICIPAL DINING-ROOMS OF THE TOWN OF VITORIA-GASTEIZ, AND A STUDY OF THEIR DIETARY HABITS

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Introduction: The social and cultural centres of the municipality of Vitoria-Gasteiz offer a luncheon service to older people where the food is prepared in one of the municipal geriatric residences. The medical and dietetic staff do not know about the food intake of the users of the dining-rooms apart from that provided in the centres. The aim of this study is to analyse the dietary habits of the service-users and to carry out an assessment of their nutritional state. **Methods:** Two dieticians explained the study in the centres and arranged appointments with those who volunteered to take part. The interviews lasted for an hour and took place in the centres. The nutritional state assessment was carried out using the MNA-SF scale and the frequency of food intake by means of a questionnaire adapted to older people. The record of intake was added to the provision of food by the service and the total was compared with nutritional recommendations. **Results:** 72 users, with an average age of 77.09 (± 8.24) took part. The majority (81.9%) had a normal nutritional state, 16.7% were at risk of malnutrition and the remainder (1.4%), had malnutrition. The majority did not attain the recommended intake of legumes, potatoes, pasta, rice, lean meat and oily fish. Almost half the users ate vegetables between one and four times a week. Most (87.7%) users reached the recommended consumption of eggs, 41% ate enough white fish and 64.13% did so for fruit. **Conclusions:** The users should improve their food intake at home to complement that offered by the service and not consider the meal consumed in the centre their only intake of the day. The day centres for older people should offer an evening meal so that the elderly people of the town are provided with a complete and varied diet.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-121: DIETARY PATTERNS OF NORMAL AND OVERWEIGHT PREGNANT WOMEN: ITS IMPACT ON PREGNANCY OUTCOMES

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Introduction: Western and Prudent patterns describe habitual food intake patterns. The Prudent dietary pattern, characterised by fresh, nutrient-dense, low-energy foods, is associated with healthy BMIs and optimal nutritional status which may benefit specific populations such as pregnant women. This narrative literature review compares the dietary patterns of pregnant women with normal and overweight pre-pregnancy BMIs and its impact on pregnancy outcomes. **Methods:** Search strings using the following keywords (Prudent/Western diet/pattern, Asia, pre-pregnancy weight/BMI, pre-eclampsia, gestational diabetes/(GDM), pre-term delivery) were entered into "Google Scholar", "PubMed", "Science Direct". The inclusion criteria were: keywords in the title; English language; dietary methodology, singleton births and published within the last 10yrs. **Results:** Of the 28 articles retrieved, 10 prospective cohort studies ($n=1461$, 66000 Caucasian women/study) specifically addressing associations between dietary patterns, pre-pregnancy weight and pregnancy outcomes were selected for review. Dietary information was collected using Food-frequency questionnaires between 17-32weeks gestation. Studies on Asian subjects were excluded because pregnancy outcomes were associated with specific nutrients, not dietary patterns. The majority of articles found that women with normal pre-pregnancy BMI ($<25\text{kg}/\text{m}^2$) adhered to the Prudent pattern, whilst overweight women followed the Western pattern (low in protein, fibre, vitamins, minerals and high in sodium, saturated fats and added sugar). Compliance with the Prudent pattern reduced risk of pre-eclampsia and pre-term delivery, while adherence to the Western

pattern increased risk of pre-eclampsia, induced pre-term delivery and GDM. One article concluded that sugar-sweetened drinks (>1serve/day) increased the risk of pre-term delivery (n=60,761), whilst another article found that red/processed meat intake (highest vs. lowest quintiles of intake) increased GDM risk (n=13,110). **Conclusions:** Women with healthy pre-pregnancy BMIs tend to follow the Prudent pattern, which was associated with reduced risk of pre-eclampsia, and pre-term delivery. Comparable studies in Asia are needed to understand impact of Asian dietary patterns on pregnancy outcomes.

COMPETING INTERESTS: All authors are full time employees of Danone Nutricia research; A. Wafid was from Nanyang Polytechnic, completing an internship program at Danone.

P-123: INTERIM REPORT: DEVELOPMENT OF THE SYSTEM FOR TRAINING REGISTERED SHOKUIKU-SI (TALENTED PERSONS FOR FOOD AND NUTRITION EDUCATION/PROMOTION) AND ITS PRACTICE BY COLLABORATION WITH LOCAL INDUSTRIES

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Introduction: After enforcement of the Law of Shokuiku (Food and Nutrition Education/Promotion) in 2005, Shokuiku have been promoted in many fields throughout Japan. However, neither the Cabinet Office nor the Ministry of Health, Labor and Welfare announcements provided desirable results until 2014, in recognizing Shokuiku as 74%, which was the same as in 2010, in eating habits of no breakfast among youth in their 20s, or in low intake of vegetables in 10years. Even, Saitama City had the similar results. Therefore, it became urgently needed to train talented persons to promote Shokuiku actively. **Objectives and target population:** Development of the system for training registered Shokuiku-si (talented persons for food and nutrition education/promotion) and its practice by collaboration with local industries. **Previous theories and investigations:** In 2014, Questionnaires about the need to train and practice of Shokuiku-si were conducted in 200 training institutes for dietitian/cook and in 270 food-related/general companies, and interviews in 9 companies throughout Japan, where almost half (100) of institutes responded positively and some industries showed their needs of certain persons to promote health for their employees. Interviews showed positive and negative responses. Then, curriculums were formulated and divided into educational and practice learning units. Registration lists for Shokuiku-si were prepared. **Intervention(s):** Trial lessons collaborated with local industries were performed in December 2014, 2 days for 8 lessons (90min/lesson) with 20 persons/lesson participation. **Evaluation:** Questionnaires after trial lessons were collected. **Results:** Questionnaires after lessons revealed that almost all participants were satisfied in time, place and contents of each lesson and showed their desire to be registered as Shokuiku-si in the future. **Conclusions of authors and discussion:** To promote Shokuiku activity, we are developing the system for training registered Shokuiku-si and its practice by collaboration with local industries. The system has stepwise been favorably progressed. Curriculums should be further considered and texts prepared accordingly in 2015.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests, and this project has been entrusted by the Japanese Ministry of Education, Culture, Sports, Science and Technology since 2014.

P-124: MINDING THE GAP: FOOD DESERTS IN WINNIPEG, CANADA

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Introduction: "Food deserts" are residential geographic areas with limited access to retail food establishments and low-income residents. They have emerged over the past 15yrs as spaces of concern for communities and public health authorities, including dietitians, due to their potential negative impact on diet quality and quantity. Research on food deserts present methodological challenges including retail store identification, income classification and proximity metrics. This study utilized GIS technology, population income data and information on the location of food retailers to assess

the prevalence and location of food deserts in a mid-sized Canadian city (Winnipeg, population=718,300) having a high proportion of low-income residents. **Methods:** Food retail establishments for the entire city were sourced from Yellow Pages, public health inspection databases, and "ground truthed" by public health dietitians. Two scenarios of food deserts were calculated based on location of the lowest-income quintile population (living in neighbourhoods with average income of <\$49,506 in 2011). The two scenarios were: a) living ≥ 500 metres from a supermarket (large chain store >10,000ft²) and b) living ≥ 500 metres from a supermarket or a smaller full-service grocery store (<10,000ft² with adequate food selection at reasonable cost). **Results:** The number of residents affected by living in a food desert ranged from 61,017 (not living near a supermarket or smaller full-service grocery store) to 84,718 (not living near a supermarket). These food deserts were located primarily in the core area of the city. Interactive web based maps of study outputs were developed to facilitate knowledge translation with community partners and policy-makers. **Conclusions, discussion and/or practical application:** The novel methods used in this study confirm local perceptions that food deserts plague the core area of Winnipeg, affecting more than 10% of its citizens. Addressing these food deserts will require advocacy and appropriate incentives for food retailers to establish businesses in underserved locales.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests.

P-125: NUTRITIONAL STATUS ACCORDING TO THE BODY MASS INDEX OF CHILDREN AND ADOLESCENTS FROM BOGOTÁ, COLOMBIA: THE FUPRECOL STUDY

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Background: Excessive body weight has become a major public health issue worldwide since the presence of this disturbance has alarmingly increased in the last decades¹. The global prevalence rates of overweight and obesity among children and adolescents have grown from 4,2% in 1990, to 6,7% in 2010, and this trend is expected to continue in the next years, being estimated in a 9,1% for the year 2020. This study aimed to analyze the nutritional status among Colombian children and to determine the relationship between the nutritional status according to the body mass index (BMI). **Methods:** A cross-sectional study was conducted in 6,383 children and adolescents with age of 9 to 17.9 years old from Bogota, Colombia. Participants completed the "Krece Plus" questionnaire validated by the "enKid study" as an indicator of the nutritional level with the following categories: high (test ≥ 9), medium (test 6-8) and low (test ≤ 5). Other measures were: weight, height, WC and BMI as markers of the nutritional status. **Results:** Overall, 57.9% of the participants were girls (mean age 12.7 \pm 2.3yrs-old). The nutritional status was low without large differences by sex and decreasing by age. In all categories of BMI, over 50% of boys and girls follow lower-quality diet, shown progressively worse with advancing age. In both sexes, trends were observed between low nutritional level with the development of overweight. **Conclusions:** The low nutritional level is related to changes in the nutritional status BMI in scholars from Bogota. These findings may encourage further interventions for the improvement of nutritional habits among scholars from Colombia.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-127: STUDY TO ASSESS IRON BIOAVAILABILITY IN PREGNANT WOMEN'S DIET (PRELIMINARY STUDY)

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Introduction: Diet during pregnancy is often influenced by dietary practices which may affect nutrients bio-availability including iron. This study aims to assess the adequacy of iron intake with reference to the bio-availability of iron in the diet, as an

approach to control iron deficiency anaemia (IDA) during pregnancy. **Methods:** A convenience sampling of 25 dietary records of non-anaemic Omani pregnant women were eligible for the data analysis. To address the bio-available iron the World Food Dietary Assessment Software (WFOOD2) was considered for the dietary analysis. Further data analysis was generated via SPSS version 22. **Results:** The study found that only 10 per cent of the dietary iron consumed by the study sample is bio-available for absorption. With reference to the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) classification of the iron bio-availability, this level indicates that the diet type of the study sample is a vegetable-based diet with a minimal intake of animal protein. The reported level of bio-available iron in this study was found to be in agreement with the recommendations of FAO/WHO, although the amount of iron was less than that recommended by FAO/WHO for the same level of the bio-available iron. **Conclusions, discussion and/or practical application:** The preliminary outcomes of this small scale study provide baseline information of the insufficient intakes of iron with reference to the level of bio-available iron during pregnancy. However this study data is based on secondary data analysis, where original data were collected for another purpose. Therefore a further comprehensive research is needed in a larger sample to generalize the outcomes. However, any approaches towards changing dietary habits in favour of increasing iron bio-availability are recommended.

COMPETING INTERESTS: Authors of this document are confirm there is no conflict of interests.

P-129: INFLUENCE OF PARENTS' ATTITUDES ON CHILD EATING BEHAVIOR

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Introduction: Besides genetics, nutrition and social environment; family is one of the most important effects on children growth and development. Children's nutritional status are affected on many family-related factors like socio-economical status, ages, occupations and their attitudes towards children. **Aim:** The aim of this study was to determine the association between the parents' behaviors and children's body mass indices (BMIs) on children's eating behaviors and dietary intakes. **Materials and Methods:** Total number of 495 2nd, 3rd and 4th grade students and their parents from 26 different towns of İstanbul were included to the study. Parents' and children's weights and heights measured and their BMIs were calculated and categorized. Two questionnaires (socio-demographic survey and Child Feeding Questionnaire-CFQ) were given to the participants and they were ask to complete Food Frequency Questionnaire (FFQ) and 3-Day Food Records for children. Nutrient Data Base (BeBiS) program as used to evaluate the energy and nutrient intakes of children. **Results:** Two-hundred-fifty eight (50,7%) children were female and 251 (49,3%) were male. While a positive correlation was found between children's and parents' BMIs, a negative correlation between pressure on eating and children's BMIs was found. While there was a positive correlation between parents' BMI values and perceived family body weights and child body weight; a negative correlation was found between perceived responsibility and parents' BMI values. **Conclusion:** Parents' behaviors and attitudes were found relevant to the status of children's dietary intake, parents' and children's BMIs, also it is assumed that the increase of parents' BMIs increases the children's BMIs as well.

COMPETING INTERESTS: Authors of this document are confirm there is no conflict of interests.

P-130: USING CREATIVE METHODS TO ENGAGE 'MARGINALIZED' GROUPS IN FOOD/NUTRITION ACTIVITIES: A PLYMOUTH PILOT STUDY

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Introduction: Plymouth has high levels of deprivation with local evidence showing certain communities suffering disproportionately from poor nutrition and multiple vulnerabilities, which leads to compromised nutritional health. Finding ways to engage with marginalized communities is essential to consider strategies to optimise health, well-being and life

skills. The 'Food as a Lifestyle Motivator' (FLM) project employed creative qualitative methods to investigate the role of food to enhance well-being and life skills in a homeless centre in Plymouth. **Methods:** Participatory Action Research' (PAR), beneficial for engaging participants was used, consisting of surveys with support staff; 'photo elicitation' with service users and general observations of the food environment. This paper presents 'photo elicitation' methods. A purposive sample of n=12 service users were given cameras to record 10 days of food activities, after which most participated in focus groups using their images to discuss their food experiences. **Results:** Focus group discussions (n=9) illustrated the varied role food plays in the participants' lives with five key themes emerging from multi-disciplinary thematic analysis: i) Meaning of food; ii) Power and empowerment; iii) Space and place; iv) Occupation; v) Emotion. These themes will be presented with associated images to illustrate powerful narratives, explaining the meaning and importance of food and the process of engagement. **Conclusions, discussion and/or practical application:** Homeless service users were given a 'voice' to express their food insights - a key strength of this participatory method. Given its under-representation in the food literature, recommendations are made to further explore the use of photo elicitation (and other creative) methods, across a range of 'marginalized groups', to evaluate how they can maximise engagement in food/nutrition activities to enhance life skills (e.g. employability) and tackle social justice. This evidence informs local public health dietetic practice and food/nutrition policy. It also promotes community engagement and social sustainability discourses, to ensure 'optimal fit' with local health and well-being strategies.

COMPETING INTERESTS: Authors of this document are confirm there is no conflict of interests.

P-131: DIETARY INTAKE AND METABOLIC SYNDROME IN MEXICAN YOUNG ADULTS

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Introduction: Metabolic Syndrome (MS) prevalence continues increasing in Mexican young adults increasing public spending. Some dietary factors as calories and nutrients could have a role in individual MS components. Therefore, this study evaluate the relationship between dietary intake with MS components. **Methods:** Healthy young adults 18 to 60 years old (n=156) (64% men) were recruited in North-Central Mexico for a cross-sectional study. MS was diagnosed if 3 components had higher cutoff values according to the harmonized criteria [waist circumference (men \geq 90cm, women \geq 80cm), blood pressure (BP), HDL-Cholesterol triglycerides and glucose]. Also weight and height were evaluated. Macronutrients intake were estimated with a 3 food record. T-student test was used to compare mean values of macronutrients intake in the groups with and without MS, and Spearman correlation used for the relationship between nutrients and MS components. **Results:** The prevalence for MS was 34.6% and the prevalence for altered components were 57.7%, 42.3%, 39.7%, 30.1% and 10.9% for waist circumference, triglycerides, HDL-Cholesterol, glucose and blood pressure respectively. Calories intake was 2403 \pm 657 per day, carbohydrates (HC), protein and lipids intake were 329.3 \pm 110.5, 90.8 \pm 25.6 and 81.7 \pm 29.2gr/day in the total group. A statistical difference was found amongst calories (p=0.0303) and protein percentage (p=0.0261) intake in the groups with (n=54) and without MS (n=102) using T-student test, and a negative correlation was found between the %HC intake and HDL in the group with MS (r=-.3227, p=0.017). **Conclusions, discussion and/or practical application:** This study shows a difference between calorie and protein percentage intake in MS people and the negative correlation between % HC intake and some individual MS components. Decreasing caloric intake lowers cardiovascular risk, awareness among the economically active population about changing eating habits should result in decreased risk of chronic diseases such as MS and its complications expense aiding Public Health System improvement.

COMPETING INTERESTS: Authors of this document are confirm there is no conflict of interests.



P-132: A HEALTHY LIFESTYLE INTERVENTION PROGRAM HELPS RURAL MEN WITH PREDIABETES REDUCING KEY ANTHROPOMETRIC MARKERS KNOWN TO INCREASE TYPE 2 DIABETES RISK

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Introduction: Rural adults have unique environmental challenges and social factors, which impact their lifestyle and contribute to an increased risk of obesity and type 2 diabetes mellitus (T2DM). However, there is limited prevention programming available. The purpose of the lifestyle intervention program at the STAR Family Health Team clinic in Stratford-Tavistock (Ontario, Canada) is to address this gap in services to help individuals prevent/delay the onset of T2DM. **Objectives and target population:** To determine if rural adults with prediabetes referred by physicians to a 6-month healthy lifestyle intervention program can positively change key lifestyle behaviours that could translate into improved anthropometric parameters. Our hypothesis was that the intervention program can help participants reduce their body mass index (BMI) and waist circumference (WC). **Methods:** Participants with prediabetes received 6 monthly healthy lifestyle education sessions. Height, weight, and WC were taken and BMI calculated at baseline and after 6 months of intervention (post-program). Mean differences were analysed using paired t-tests. **Results:** Thirty-four participants (20 men, 14 women) aged 60.9±7.1 (mean±SD) attended 7.0±0.92 of 8 sessions. No difference was observed in average attendance between men and women (7.1±0.97 versus 6.86±0.86 sessions, p=0.45). Participants lost on average 1.76±3.64kg from baseline to post-program. When controlling for sex, it appeared that on average men significantly reduced weight (97.9±13.7 to 95.1±12.9kg, p=0.006), BMI (32.1±4.3 to 31.1±4.0kg/m², p=0.006), and WC (112.3±10.4 to 107.1±10.2cm, p<0.001). Surprisingly, women's average weight (89.3±20.2 to 89.3±21.4kg, p=0.66), BMI (35.0±7.9 to 34.9±8.2kg/m², p=0.60) and WC (105.4±16.7 to 104.2±16.2cm) remained unchanged from baseline to post-program. **Conclusions of authors and discussion:** These results suggest that rural adult men participating in this healthy lifestyle intervention program had more success than women in reducing anthropometric parameters known to increase T2DM risk. More research is needed, as these results raise questions that require more in depth analysis. Funding: Public Health Agency of Canada.

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P-133: A POPULATION-BASED STUDY OF PERINATAL MORTALITY AND SOCIODEMOGRAPHIC FACTORS NUTRITIONAL SUPPLEMENTATION UTILIZATION IN COLOMBIAN WOMEN: ANALYSIS OF NATIONWIDE DATA 2010

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Background: An adequate compliance of the nutritional requirements is essential for fetal development and successful control of pregnancy outcomes. This study aimed to determine the association between sociodemographic factors and the nutritional supplementation, associated with perinatal mortality in pregnant women from Colombia. **Methods:** This was a cross-sectional analysis from the 2010 Colombian Demographic and Health Survey and the National Nutritional Survey that included 14,754 pregnant women between 13 and 44yrs-old. Sociodemographic factors included: new born sex, geographic region, socioeconomic status (SISBEN), and the supplementation of iron, calcium and folic acid, were collected by structured questionnaire. Associations were established through multivariable and binary regression models. **Results:** Sociodemographic factors such as living in **high-density** cities, pacific and western regions and low socioeconomic status (SISBEN I) showed a highest perinatal mortality with rates of 1.7%, 1.5%, 1.4% and 1.4%, respectively. After adjustment by new born sex, geographic region and SISBEN score, an adequate monitoring of supplementation of iron (OR=2.09), calcium (OR=1.73) and folic acid (OR=2.73) were associated as facilitators of perinatal mortality. **Conclusions:** Perinatal mortality is determined by the

sociodemographic factors and nutritional supplementation included in this study. Government and decision makers can take these results to garbage actions aiming to improve pregnancy monitoring.

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P-134: AGE-PERIOD-COHORT ANALYSIS OF OVERWEIGHT AND OBESITY IN AUSTRALIAN ADULTS

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Introduction: Age-period-cohort (APC) analysis allows the independent contribution of aging, generational differences and period effects to be determined. Period effects imply obesity prevention interventions should target environmental factors that correct energy imbalance for the entire population. Cohort effects imply that interventions should target people in their formative years before they adopt the lifestyles or are exposed to risk factors that increase risk of obesity through life. The aim of this research was to provide an up-to-date APC analysis of the independent contributions of each factor to the obesity epidemic in Australia. **Methods:** Five cross-sectional surveys, representative of the Australian population, were used. Age (20 to 75yrs and over), periods (1989/90, 1995, 2000/1, 2005, 2008 and 2011/12 data) and birth cohorts (from pre 1915 to 1990) were categorized into five year intervals and modelled with Poisson logistic regression with the outcome as total overweight ($BMI \geq 25.00 \text{ kg/m}^2$) and obese ($BMI \geq 30.00 \text{ kg/m}^2$) or males, females and total population. Analysis was conducted in SAS with PROC GENMOD. **Results:** The proportion of adults with a $BMI \geq 25.00 \text{ kg/m}^2$ increased with age from 22.2% at age 20 to 55.1% at 65, and declined to 46.9% at 75; and increased with period from 40.8% in 1989/90 to 63.4% in 2011/12. More recent birth cohorts have higher prevalence of obesity to previous cohorts; for example 4.0% and 4.6% of males and females respectively born in 1960-64 had a $BMI \geq 30.00 \text{ kg/m}^2$ at age 20-24 compared to 15.8% and 20.1% for birth cohort 1990-94 at the same age. Age, period and cohort effects all independently contributed to total overweight ($P < 0.001$, 0.007, < 0.001) and obesity ($P < 0.001$, < 0.027 , < 0.001) in the total population. **Conclusions, discussion and/or practical application:** Obesity preventive efforts should focus on cohorts in their formative years to prevent lifestyles that will increase their risk of obesity through life.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-135: FITNESS, PHYSICAL ACTIVITY AND DIET QUALITY RELATED TO VITAMIN D AND CALCIUM INTAKES IN EUROPEAN ADOLESCENTS: THE HELENA STUDY

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Introduction: Low calcium and vitamin D (VitD) intakes have been associated with health risks in both childhood and adulthood. This study aims to investigate associations between dietary sources of calcium and VitD intakes and its associated lifestyle factors among European adolescents. **Methods:** Two non-consecutive self-administered 24-h recalls were used to estimate usual dietary intakes of 1804 European adolescents (12.5-17.5yrs; 1253 females) from the HELENA study. Contribution of 44 food groups to calcium and VitD intakes were computed. Linear mixed models were used to examine associations of calcium and VitD intakes with physical activity, fitness and diet quality index (DQI). Study centre was included as the random intercept. Age, gender, Tanner stage and energy intake were entered as covariates. **Results:** Boys had higher VitD and calcium intakes than girls ($p < 0.05$). Milk and cheese were the main sources of calcium intake (23 and 19%, respectively). Fish products were the main VitD source (30%), followed by cakes, pies and biscuits (16%). VitD intake was positively associated with scores derived

from the diet quality index ($\alpha=0.01$; SE 0.33; CI 0.01, 0.02). Also, calcium intake was positively associated with standing broad jump ($\alpha=0.75$; SE 0.31; CI 0.14, 1.36), cardiorespiratory fitness ($\alpha=6.61$; SE 1.51; CI 3.65, 9.58) and scores derived from the DQI ($\alpha=10.06$; SE 0.72; CI 8.66, 11.47) and negatively associated with 4x10 shuttle run test ($\alpha=-21.64$; SE 7.72; CI -36.78, -6.51). **Conclusions, discussion and/or practical application:** Milk and cheese were the main food sources of calcium intake and fish, cakes, pies and biscuits the most important sources of VitD intake. Calcium and VitD intakes were positively associated with diet quality index. Fitter adolescents consume more dietary sources of calcium.

COMPETING INTERESTS: Authors declare that they do not have any conflict of interest.

P-136: FOOD AND BEVERAGE CONSUMPTION AND SEDENTARY BEHAVIOURS IN EUROPEAN PRESCHOOLERS: THE TOYBOX-STUDY

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Introduction: Preschool age is an important period for adopting healthy lifestyle behaviours. Evidence suggests that the type of sedentary behaviour (i.e., screen-based sedentary behaviours) than the overall sedentary time may be more important in predicting childhood obesity. The main objective was: to examine the association between food and beverage consumption and sedentary time spent in different sedentary behaviours in preschoolers participating in the ToyBox-study. **Methods:** A sample of 6431 (51.8% males) preschoolers aged 3.5-5.5yrs from six European countries (Belgium, Bulgaria, Germany, Greece, Poland and Spain) was included. Data on consumption of food and beverages and sedentary behaviours including watching TV/DVD/video, playing computer/games consoles and quiet play (separately for weekdays and weekends) was collected via a standardized self-administered questionnaire. One-way analysis of covariance (ANCOVA) and multilevel regression analysis, adjusted for sex, socio-economic status, body mass index and country were conducted. **Results:** The results of the multilevel regression analysis showed that watching TV/DVD/video for >1hour/day during weekdays (both in males and females) was positively associated consumption of fizzy drinks ($\beta 0.136$ for males and $\beta 0.156$ for females), fresh/packed juices ($\beta 0.069$, $\beta 0.089$), sweetened milk ($\beta 0.119$, $\beta 0.078$), cakes and biscuits ($\beta 0.116$, $\beta 0.145$), chocolate ($\beta 0.052$, $\beta 0.090$), sugar-based desserts and pastries ($\beta 0.234$, $\beta 0.250$) salty snacks ($\beta 0.067$, $\beta 0.056$) and meat ($\beta 0.067$, $\beta 0.090$). Negative associations were observed for fruits ($\beta -0.057$, $\beta -0.099$), vegetables ($\beta -0.056$, $\beta -0.082$) and fish ($\beta -0.013$, $\beta -0.013$) consumption. During weekend days, results were in the same direction. **Conclusions, discussion and/or practical application:** In preschoolers, sedentary behaviours were associated with consumption of energy-dense foods and sugar-sweetened beverages. The present findings have important implications for further studies assessing energy balance related behaviours in young European population groups to prevent overweight, obesity and nutrition-related chronic diseases from early childhood.

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P-137: MOVE AWAY FROM PRE-DIABETES (MAP), DELIVERING EXCELLENCE IN PREVENTION TO REDUCE RATES OF DIABETES IN THE UK; A SERVICE EVALUATION

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Introduction: As diabetes rates in the UK surge, more needs to be done to reduce diabetes prevalence. Clinical randomised controlled studies including the United States Diabetes Prevention Programme (DPP) have shown provision of intensive advice around lifestyle, diet and exercise to be effective in reducing weight and improving glycaemic parameters. However there has been very little published UK evidence to demonstrate the effectiveness of programmes delivered at a smaller scale in a localised setting. This service evaluation aims to demonstrate the effectiveness of a locally run, dietetic led diabetes prevention programme in reducing and delaying the onset of type 2 diabetes. **Methods:** Between October 2012 and March 2015 individuals (n=801) aged 40-74yrs who were identified with non-diabetic hyperglycaemia (pre-diabetes) (HbA1c of 42-47mmol/mol or Oral Glucose Tolerance Test 7.8-11.1mmol/L) through the NHS health check programme were referred onto the MAP by their local Primary Care Physician. Dietitians focussed on empowering patients by encouraging self-management and providing each patient with tailored goals for weight loss, improving diet and increasing exercise. Participants had their anthropometry, exercise level and dietary intake measured throughout the programme and these results alongside biochemistry, were compared pre and post intervention. **Results:** 54% (n=434/801) of patients who started the programme completed the 6 month intervention. Of those retested (n=387) 79% of patients achieved a reduction in their blood glucose levels and 56% of patients moved out of pre-diabetes. **Conclusions:** The results prove the effectiveness of the programme in a real world setting and demonstrate **short-term** improvements in both anthropometric and biological measures. Longer term studies are required. The results are comparable to the DPP trial which demonstrated a 58% reduction in diabetes incidence. Results from MAP will be influential in the development of future models for the prevention of diabetes amongst high-risk individuals.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests

P-138: PREFERENCES AND PERCEPTIONS OF HEALTHY EATING RELATED WITH THE BREAKFAST DIETARY PATTERNS IN EUROPEAN ADOLESCENTS: THE HELENA STUDY

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Introduction: The study of characterizing dietary patterns (DPs) is an emergent approach, assessing several dietary factors at the same time. The aim of this study was to identify DPs in European adolescents, and to analyze the association of identified breakfast DP with preferences and perceptions of healthy eating. **Methods:** A multinational cross-sectional study was carried out in 2027 adolescents aged 12.5-17.5yrs in 2006. A self-reported questionnaire with information on food choices and preferences

(FCP), and two 24h-recalls were used. Principal component analysis was used to obtain DPs, and linear analyses of covariance to compare the preferences and perceptions according to DPs. **Results:** Three DPs were obtained for boys and four DPs for girls (27,25 and 34,67% of variance explained for boys and girls, respectively). In boys, the 'breakfast DP' is characterized by consumption of bread and rolls, sugar products (sugar, honey, jam, syrup and other sugar products), butter and animal fats, margarine and lipids of mixed origins, coffee or tea and cheese. In girls, this pattern is characterized by consumption of bread and rolls, sugar products, butter and animal fats, fruits and coffee or tea. Boys and girls who considered their diet as unhealthy and also did not enjoy eating fruits and vegetables, had low adherence to the breakfast DP ($p < 0.05$). However, boys and girls who thought that snacking was convenient for a healthy diet, and most of their snack consumption was healthy had high adherence to this DP ($p < 0.05$). Furthermore, in both sexes, those who usually ate healthy foods at home had high adherence to the breakfast DP ($p < 0.05$). **Conclusion:** Associations were observed between breakfast DP and preferences and perceptions of healthy eating. Future studies should further explore these findings.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-139: PRO-HEALTHY AND NON-HEALTHY DIETARY PATTERNS: THE ASSOCIATION WITH SELF-DECLARED DIETARY RESTRICTIONS IN POLISH GIRLS. GEBAHEALTH PROJECT

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Introduction: Dietary restrictions are often introduced into girls' diet. The association between dietary restrictions and dietary patterns (DPs) is weakly known. The aim of the research was to study the association between dietary restrictions and pro-healthy and non-healthy DPs in Polish girls. **Methods:** It was a cross-sectional study obtained in representative sample 1107 of Polish female aged 13-21yrs. Initially, 2104 females were randomly selected from the PESEL database. The response rate was 52.6%. Dietary information was collected using three short validated FFQs regarding fiber intake, fat intake and overall food intake variety. Dietary patterns (DPs) were identified by a priori approach. Using dichotomous questions (answers: Yes/No) information regarding dietary restrictions in consumption of 9 food groups was collected. The odds ratios (ORs) adjusted for age, BMI, socioeconomic status and physical activity were calculated. **Results:** Three a priori DPs were pre-defined: 'Non-healthy' (16.6%), 'Neither-pro-healthy-nor-non-healthy' (79.1%) and 'Pro-healthy' (4.3%). Any restrictions in food consumption was found in 30.5% of female. Sugar and/or sweets consumption was restricted by 23.7% of girls, high-fat foods by 22.4%, fats by 21.3%, cereals and/or potato by 12.0%, meats by 11.3%, fish by 6.2%, dairy products by 5.5%, raw vegetables by 2.5%, raw fruit by 1.4%. In female restricted any food consumption the adjusted OR for 'Pro-healthy' DP was 1.95 (95%CI 1.00, 3.81; insignificant) in comparison to 'Non-healthy' DP (OR=1.00). The significant adjusted ORs for 'Pro-healthy' DP in comparison to 'Non-healthy' DP (OR=1.00) were for dairy products 11.91 (95%CI 2.17, 65.32), for meats 3.40 (95%CI 1.31, 8.82), for high-fat foods 2.20 (95%CI 1.08, 4.45), for fats 2.07 (95%CI 1.01, 4.24). **Conclusions:** Polish female with pro-healthy dietary pattern showed a strong tendency to limit consumption of both non-healthy and healthy foods. Thus diet of girls with pro-healthy dietary pattern may contain less nutrients than girls with non-healthy pattern.

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P-140: PSYCHOPATHOLOGICAL INDICATORS IN TEENAGERS WITH OVERWEIGHT AND OBESITY: A BINATIONAL STUDY (SPAIN-ARGENTINA)

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Introduction: There is still a controversy whether psychopathological disorders can negatively affect over weight and obesity while si them that nutritional excesses and associated social deficits and may precipitate psychopathological symptoms and future problems. The aim was to identify psychopathological indicators adolescent students with overweight and obesity, residents in Tucuman (Argentina) and Madrid (Spain). **Methods:** Comparative, transversal, incidental sampling. They participated 272 adolescents 11 to 16 years in schools in Tucuman-Argentina (n=166) and Madrid-Spain (n=106). Instruments: A) Eysenck Personality Questionnaire for children and adolescents (EPQ-J). Assesses three dimensions: neuroticism (emotionality), extraversion and psychoticism (emotional hardness). B) anthropometric Register: measured height, weight, and BMI was calculated to determine standardized by he WHO percentiles forage and gender distribution of overweight (>P85) and obesity (>P97) of the sample. Once calculated, they were classified into 2 study groups: trial (excess weight) and control group (normal weight). **Results:** 41.8% of Spanish adolescents are overweight or obese while 44% of their Argentine counterparts showed similar diagnosis. Concerning psychopathology, multivariate analysis showed no statistical difference (Wilks' Lambda = 0.979, F (3, 247) = 1.76, p=.155), however univariate analysis indicated that Spanish adolescents clinical group refer greater extraversion. The clinical group in both countries showed more anxiety and concern by irrelevant events, accompanied by negative emotions (t=-3.22, p=.001). Regarding the cross-cultural, we see that the Argentine adolescents more likely related to aggressive behavior and emotional instability while their Spanish peers perceived themselves more interpersonal sensitivity. **Conclusions, discussion and/or practical application:** The data show that cannot establish its own psychopathological profile of adolescent overweight or obese, although a trend of this group was observed to please others in social situations. The adolescent group stands out with psychopathological risk, particularly antisocial tendencies and anxiety disorders.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-141: QUALITY OF LIFE AND BIOMARKERS: THE ASSOCIATION BETWEEN SUBJECTIVE HEALTH PERCEPTION AND METABOLIC PROFILES IN POLISH ADOLESCENTS. THE POLYSES PROJECT

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Introduction: Quality of life depends on human health but may be influenced by many factors. The relation between subjective and objective health characteristics is not well understood. The aim of the research was to study association between subjective perception of own health and metabolic profiles in Polish adolescents. **Methods:** The study involved 299 adolescents aged 13-18 from less-urbanized regions of Poland. Quality of life was assessed by Short Form 36 questionnaire (SF-36), the Polish version. The blood concentration of total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG), albumin, transferrin, hemoglobin (Hb), hematocrit (Ht), as well as the systolic (SBP) and diastolic (DBP) blood pressure were determined. Cluster Analysis was used to identify metabolic profiles (MPs). **Results:** Three MPs were found: 'Low Hb-High TC' (38% of the sample), 'High BP-Abnormal Lipids' (21%), 'Low Lipids' (41%). In 'Low Hb-High TC' profile 9% of adolescents was low in Hb, 13% of them was high in TC. In 'High BP-Abnormal Lipids' profile 59% of adolescents was high in SBP, 52% of them was high in DBP, 19% of them was high in TG, 20% of them was low in HDL-C. In 'Low Lipids' profile 15% of adolescents was low in HDL-C, 2% of them was high in TG, none of them was high in TC or LDL-C. The adolescents of 'High BP-Abnormal Lipids' profile compared to 'Low Lipids' and 'Low Hb-High TC' assessed worse their quality of life in relation to overall physical health (12.6 vs. 11.1 and 10.6 points, respectively), general

health perception (6.1 vs. 5.7 and 5.6 points) and vitality (6.8 vs. 6.0 and 6.2 points). **Conclusions:** Worse metabolic profile was associated with poorer quality of life in relation to physical health of Polish adolescents. Subjective perception of physical health may be used as predictor of metabolic disorders in adolescents.

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P-142: SODIUM AND POTASSIUM INTAKES OF PRIMARY SCHOOL CHILDREN IN KYOTO, JAPAN

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Introduction: Salt restriction is widely recommended for the prevention and management of hypertension. As Japanese salt intake is known to be high traditionally, it is very important to reduce it during childhood. **Methods:** In the present study, we investigated sodium and potassium intake of primary school children in Kyoto, Japan. A total of 331 subjects aged 9-11 yrs participated in health checkups conducted by their school in April 2015. The dietary habits of 318 subjects (106 aged 9, 99 aged 10, 113 aged 11) were confirmed by questionnaires their parents filled out. Urinary concentrations of sodium, potassium and creatinine were measured using first-morning urine samples. **Results:** Estimated urinary salt excretion (g/day) of 9, 10, and 11-year olds were 5.0±1.5, 5.8±1.4, and 6.4±1.5, respectively. Their urinary sodium/potassium ratios (mEq) were 4.6±2.3, 4.7±2.0, and 4.8±2.4, respectively. Subjects aged 9, 10, and 11 years old who exceeded the Dietary Goal of salt intake recommended by Dietary Reference Intakes for Japanese 2015 numbered 32(30.2%), 23(23.2%), and 41(36.3%), respectively. Those who exceeded the recommended urinary sodium/potassium ratio numbered 60(56.6%), 60(60.6%), and 68(60.2%), respectively. Multiple regression analysis revealed that intake of fish paste products increased the estimated urinary salt excretion independently after adjustment for age, sex, and Rohrer's index ($p < 0.001$). **Conclusions, discussion and/or practical application:** These results suggest that excess sodium and insufficient potassium intake occur in primary school children, and that it is important to promote education to develop an appropriate salt intake early in childhood.

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P-143: THE EFFECTIVE ROLE OF HOME CARE DIETITIANS FOR MALNOURISHED HOME PATIENTS WITH DYSPHAGIA

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Introduction: As of 2015, Japan is entering a super aged society, therefore home medical care has drawn a great deal of public attention lately. There is a high probability that patients with dysphagia, who find oral feeding difficult and require parenteral or enteral nutritional support, could go on to suffer from malnutrition, possibly leading to frailty, aspiration pneumonia and so forth. As a practical matter, many patients give up eating after having dysphagia. This study aims to examine the effectiveness of home care dietitians for malnourished home patients with dysphagia and look at dietitians' roles in the home care team. **Methods:** Home care dietitians have a key role to play in the home care team for total nutritional management of oral and tube feeding. Specifically, dietitians give advice regarding suitable food consistency for increasing patients' nutritional status and meal enjoyment safely. This investigation compares MNA[®]-SF's scores from an initial nutritional evaluation of malnourished home patients with dysphagia and scores from 3 months after the intervention. (n=18. Male:7, Female:11). **Results:** The results show; total caloric intake increased from 955±404kcal to 1290±413kcal ($P < 0.001$), protein intake increased from 39±18g to 48±18g ($P < 0.001$), and MNA[®]-SF's score improved by 3 points, from 5 to 8 ($P = 0.004$). Additionally, after the dietitian had intervened, most of patients avoided hospitalization resulting from aspiration pneumonia. This shows that the dietitian's interventions lead to; eating well and improved nutritional statuses. **Conclusions:** In conclusion, malnourished home patients

with dysphagia have several complicated meal and nutritional problems that only home care dietitians are able to fully address, moreover the interventions significantly reduce those problems. Furthermore, home care dietitians must be considered an integral part of the home care team, and should work closely with various regional professionals to provide support which home patients need and desire.

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P-144: USING NUTRITIONAL ASSESSMENT TO PREDICT GENDER-SPECIFIC RISKS OF SARCOPENIA AMONG THE ELDERLY RECEIVING HEALTH CHECK-UP IN TAIPEI

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Introduction: The study evaluated the association between sarcopenia and nutritional assessment scores obtained by the short-form Mini-Nutritional Assessment (MNA-SF) in order to provide evidence for future nutritional intervention. **Methods:** A cross-sectional survey was conducted in March, 2014 among 863 elderly people aged 65 and above who received health check-ups in a regional hospital in Taipei. All the participants received body composition analysis with a bioelectrical impedance (BIA) instrument and MNA-SF. **Results:** The risk of sarcopenia increased by 11% for every additional 0.1 year, after adjusting for gender, ability to live independently and serum albumin level. In both genders, the mean BMI in the sarcopenic group was significantly lower than the non-sarcopenic group. In particular, sarcopenic women had smaller waist and hips, suggesting a higher likelihood of sarcopenia among elderly women with lower body weight. On the other hand, sarcopenic men had higher body fat percentage. **Conclusions, discussion and/or practical application:** The research shows that the elderly people above 70 and with BMI below 20-22 might face a quick transition from a non-sarcopenic to sarcopenic state. Adoption of short-form Mini-Nutritional Assessment is suggested to identify people at high risk for sarcopenia and highlight the need to make dietary and lifestyle changes as a means to improve elderly's quality of life.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-145: EXPLORING EMOTIONS, KNOWLEDGE AND NUTRITIONAL SUPPORT IN DIFFERENT ETHNIC GROUPS LIVING IN NEW ZEALAND WITH PRE-DIABETES AND TYPE 2 DIABETES

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Introduction: The purpose of this research is to explore patients' experience and emotions involved in living with type 2 diabetes and pre-diabetes, and to collect ethnic-specific feedback on current support and expectations of nutritional advice. **Methods:** Twenty-nine participants of European, Maori, Pacific Island, East Asian and Indian ethnicity attended ethnic-specific focus groups. The discussions were audio recorded and transcribed. Data were coded and summarised into themes using inductive and deductive qualitative analysis. The Maori Ngāi Tahu Research Consultation Committee was consulted and the study was approved by the University of Otago Human Ethics Committee (14/179). **Results:** Complex emotions emerged in all focus group discussions. Fear of diabetes complications was found across all ethnicities. All groups, except the Indian group, described feelings of doubt, deprivation and dislike related to the unreliability of diabetes information, dietary restriction, and top-down clinician-patient relationship. In contrast, Indian participants highly respected and trusted their clinicians' knowledge and judgment. Maori, Pacific Island and Indian participants expressed dissatisfaction at their dependence on clinicians' prescriptive instructions and eagerness to participate in diabetes management. All ethnic groups stated their desire for improved diabetes nutritional knowledge to supplement and support the advice they were receiving. Internet was popular for dietary information in all ethnic groups except Pacific Island. Most participants (83%) were willing to use an online nutritional education tool although concerns were expressed about the safety and credibility of current diabetes nutritional information online. Participants felt satisfied when a healthy diet or better blood glucose control was achieved. **Conclusions,**

discussion and/or practical application: Emotions associated with diabetic experience varied among ethnicities. There was a strong need for diabetes self-management training, especially in patients with Maori, Pacific Island and Indian ethnicities. Credible online nutrition education would extend diabetes support in the community, especially if sensitive to the practical and emotional needs of different ethnic groups.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-146: ORTHOREXIA NERVOSA PREVALENCE AMONG UNIVERSITY STUDENTS AND THE AFFECTING FACTORS

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Introduction: Aim of this study was to determine the prevalence of orthorexia nervosa (ON) among university students studying in fields of health (medicine, nursery, midwifery and pharmacy), nutrition (nutrition and dietetics and food engineering) and physical education. **Methods:** In this cross-sectional study, 3rd-grade university students studying medicine (n=302), nursery (n=103), midwifery (n=78), pharmacy (n=150) nutrition and dietetics (n=51), food engineering (n=140) and physical education (n=136) were included. The ones who were not willing to participate and who were absent were excluded. ON was the dependent variable and determined via Ortho-15 in which a total point ≤ 40 meant orthorexic behaviour. Age, sex, the field of study, residential place, the presence of obesity in childhood, obsessive-compulsive behaviours and anorexia nervosa (AN) were the independent variables. The presence of obsessive-compulsive behaviours was evaluated via Maudsley Obsessive-Compulsive Inventory (MOCI) (threshold 12pnts) and the presence of AN was determined via Eating Attitudes Test (EAT-40; threshold 30pnts). Data was collected by a questionnaire via face to face interview. Independent samples T-test and the Chi-square test were conducted via SPSS 15.0. $p < 0.05$ was deemed significant. **Results:** Among participants (n=526), 74.1% were female. The study field of participants were listed as: Pharmacy (n=99), medicine (n=98), nursery (n=47), midwifery (n=78), nutrition and dietetics (n=43), food engineering (n=116), physical education (n=45). Among participants, 345 (65.6%) showed obsessive-compulsive behaviour, where 49 (9.3%) were found to be anorectic and 424 (80.6%) were orthorexic. Sex, age, study field, residential place, obesity in childhood, obsessive-compulsive behaviours and presence of AN didn't affect the presence of ON significantly. The ones who try to buy organic foods ($p < 0.001$) and who are wondering about the food they eat ($p = 0.009$) were found to be significantly more orthorexic. **Conclusions, discussion and/or practical application:** ON prevalence was higher than expected; 80% were found to be orthorexic. Even though seeking for healthy food and trying to comply with a healthy diet are the desired behaviours, shifting of these behaviours to obsession must be avoided.

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P-147: OBESOGENIC ENVIRONMENT: BARRIERS TO KEEP A HEALTHY WEIGHT

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Introduction: Overweight is a chronic multifactorial disease that results of the interaction between genotype and environment and is the second leading cause of premature and preventable death. In Spain, according to ENRICA study conducted between 2008 and 2010, 62% of the population is overweight, 39% overweight and 23% obesity. **Objectives and target population:** Determine the prevalence of overweight and/or obesity in subjects aged 18-64 in the Department of Health in Elche. Design a survey about obesogenic environment. Determine the relationship between the prevalence of overweight and/or obesity with the variables that constitute the micro-environment obesogenic. Determine the relationship between the prevalence of overweight and/or obesity and adherence to the Mediterranean Diet. **Previous theories and investigations:** For the last years it has shown the important role of the environmental and lifestyle factors in the prevalence of obesity and overweight,

constituting the “obesogenic environment”. However, despite the high number of investigations and interventions to deal with this problem over the last decade, it has not yet reached a consensus on what specific elements constitute the obesogenic environment. **Intervention(s) and Evaluation:** In order to calibrate the instrument, pilot sample will be carried out with 150 people in the Health Centre Cap Altavix (Elche). Afterwards, the information of 357 adults between 18 and 64yrs, through a survey/*Ad hoc* questionnaire diagnosis and adherence to the Mediterranean diet was collected. Also, it counts the number of fast food outlets and sports facilities located in the same geographical area where the health department of Elche is located. The data will be analyzed using the SPSS 22® statistical program, in order to determine the association between overweight and/or obesity with type variables: health, demographic and socio-economic, the micro-environment related to food and the environment obesogenic, and variables in the micro-environment related to physical activity/leisure or rest and obesogenic environment.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-148: PREVALENCE OF MALNUTRITION – THE DOUBLE JEOPARDY AND IMPACT OF NUTRITION TRANSITION IN SCHOOL GOING CHILDREN OF AGE 10-14YRS – NEED FOR CREATING AWARENESS AMONGST PRETEENS

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Introduction: Globalization has played a large role in changing the access and availability of foods in formerly undeveloped nations. Nutrition transition is the modification in dietary pattern and energy expenditure affected by economic, demographic and epidemiological changes leading to malnutrition –over/undernutrition the dual burden. The study was conducted with the objectives: 1) To assess the nutritional status of school children 10-14yrs preteens of 2 different socio-economic strata schools. 2) Evaluate food consumption and snacking patterns. **Methods:** Cross sectional study – 1550 children 10-14yrs age from two socioeconomic strata schools LIG and HIG randomly selected from central India. 24hr dietary recall done by structured questionnaire method. Data on snacking pattern, anthropometric measurements- height, weight using standard tools. Data collected was subjected to statistical analysis. Dietary guidelines and healthy food choices via counseling and power-point presentations to each child of both schools was done. **Results:** Of 1550 children surveyed 59.35% were from LIG and 40.65% HIG strata, of which boys 53.55%, girls 46.45%. Mean BMI percentile >95 in LIG was 3.4%, whereas HIG 10.67%. Incidence BMI percentile <50 in LIG 85.45%, HIG 63.43% in both the study group. The mean BMI was 19.25 in HIG and LIG 16.23 difference was statistically significant $p < 0.05$. The mean calorie, protein intake in LIG was 1643cals, 51.7g in boys, 1541cals, 47.7g amongst girls found to be deficit in calories and HIG it was 2002cals, 51.7g in boys, 1624cals, 48.3g amongst girls. HIG 52% children consumed fruit daily, LIG only 25% ate weekly. Eating out, high fat consumption, junk food was more common amongst higher income strata leading to higher BMI. **Conclusions:** Mean BMI and percentile difference was statistically significant between the LIG and HIG groups ($p < 0.05$). Creating awareness in preteens for healthy dietary choices and importance of physical activity in both strata may help in attaining good nutritional status.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-149: ADAPTATION OF CANADA’S FOOD GUIDE FOR BLACK IMMIGRANTS FROM SUB-SAHARAN AFRICA AND THE CARIBBEAN

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Introduction: Canada’s Food Guide (CFG) is a pillar for nutrition education and health promotion in Canada. However, this tool has not yet been adapted for immigrants, and we found that mothers from Sub-Saharan Africa and the Caribbean living in Ottawa were less likely to have ever heard of the CFG or have looked through it than Canadian-born mothers. Insufficient awareness of dietary guidelines, as well as lack of culturally adapted nutrition education tools, may contribute to unhealthy

diets among immigrants. To address this problem, we have developed an African and Caribbean Immigrant Healthy Eating Guide (ACB Guide). **Objectives and target population:** To contribute to enhancing equity in nutrition education and health promotion by developing a simplified and culturally adapted version of the CFG for the African, Caribbean, and Black (ACB) population living in Canada. Previous theories and investigations: We reviewed existing literature on eating patterns of ACB populations worldwide, as well as nutrition recommendations targeting them. **Intervention(s):** While keeping CFG's structure, we changed illustrated foods and adapted health messages to the ACB population. The ACB Guide was distributed to ACB research participants and community partners. **Evaluation & Results:** We are planning a pilot project to formally evaluate the ACB Guide. So far, informal feedback from partners and community members who received the draft was very positive and indicated strong interest. It was perceived as a tool that could improve communication with ACB clients or be utilized as a nutrition/food translation dictionary to facilitate the use of non-culturally adapted nutrition education tools in clinical settings. **Conclusions of authors and discussion:** This pilot project will help improve the African and Caribbean Immigrant Healthy Eating Guide to ensure its suitability and usefulness. After evaluation, revision and validation with community members and stakeholders, we plan to disseminate it to help enhance the nutritional health of ACBs in Canada and decrease nutrition-related health disparities currently affecting them.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-150: ASSOCIATIONS WITH DIETARY PATTERN, DIETARY HABITS IN MALE UNIVERSITY STUDENT AND THEIR MOTHERS FEEDING ATTITUDES

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Introduction: Obesity and breakfast skipping are considered as the factors as the lifestyle diseases. This study aimed to examine the association with dietary pattern, dietary habits in male university students and their parents' feeding attitudes. **Methods:** Questionnaire surveys have been conducted in a university in Japan in 2011. Students answered questionnaires concerning their lifestyle, frequency of breakfast and dietary habits, with food frequency questionnaire (FFQ). Their mothers also answered questions about feeding attitudes (CFPQ; Comprehensive Feeding Practices Questionnaire) when their children were growing up. We analyzed 447 pairs of male students and their mothers and examined associations with dietary pattern in students and their lifestyle, breakfast skipping (1 day/week), nutritional intake, dietary habits and feeding attitudes of their mothers by factor analysis, cluster analysis, Chi-square test and multiple comparison. **Results:** 3 clusters were classified by cluster analysis for factor scores in dietary intake. In cluster 1 (n=135), the subjects were more obese, ate breakfast, ate rice as a staple food mainly and lived with their family or at accommodation. In cluster 2 (n=122), they lived with their parents and have healthy diet pattern. In cluster 3 (n=190), more subjects were underweight, did not eat breakfast, lived alone, went to bed late and ate bread as staple food mainly. The Body Mass Index (BMI) of the subjects in cluster 1 was higher and the modeling score of CFPQ in cluster 2 was higher than that of Cluster 3 respectively. **Conclusions:** The dietary pattern of university students were characterized as 3 clusters. The dietary habits varied among 3 clusters and was affected by the parents' feeding attitudes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-151: DIETARY PATTERNS AND INCIDENT DEMENTIA IN ELDERLY JAPANESE: THE OHSAKI COHORT 2006 STUDY

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Introduction: Although it has been speculated that the Japanese dietary pattern has a preventive affect against incident dementia, no reported study has yet investigated this issue. The present prospective cohort study investigated the association

between dietary patterns and incident dementia in elderly Japanese subjects. **Methods:** We analyzed follow-up data covering a 5.7-year period for 13,914 older adults (>65yrs) participating in a community-based, prospective cohort study. Three dietary patterns (Japanese pattern, animal food pattern, and high-dairy pattern) were derived using principal component analysis of the consumption of 39 food and beverage items assessed using a food frequency questionnaire. Data on incident dementia were retrieved from the public Long-term Care Insurance database. The Cox model was used for estimating the multivariate-adjusted hazard ratios (HRs) of incident dementia. **Results:** The proportion of men was 44.8%, mean (SD) age was 73.8 (5.9) years. The 5.7-year incidence of dementia was 8.8%. The score for the Japanese dietary pattern was associated with a lower risk of incident dementia: The multiple-adjusted HRs (95% confidence interval) of incident dementia were 1.00 (reference) for Q1 (the first quartile), 0.91 (0.78, 1.06) for Q2, 0.81 (0.68, 0.95) for Q3, and 0.84 (0.70, 0.99) for Q4 (p for trend =0.017). This inverse association did not differ statistically between the sexes (p=0.928 for interaction with sex). The animal food pattern and the high-dairy pattern showed no significant association with incident dementia (P for trend =0.243 for the animal food pattern, P for trend =0.439 for the high-dairy pattern). **Conclusions:** In this population of elderly Japanese individuals, the Japanese dietary pattern was associated with a decreased risk of incident dementia.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-152: ENERGY AND MACRONUTRIENT INTAKES OF CHILDREN AGED 3-6 YEARS ATTENDING KINDERGARTENS IN THE ANKARA, TURKEY

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Introduction: Early childhood is a period during which many factors influence the development of lifelong eating habits. This study aimed to assess the dietary intake of energy and macronutrients of pre-school children and to determine factors related to eating habits. **Methods:** A total of 303 children aged 3-6yrs attending kindergartens in Ankara were included in the study. Anthropometric measurements were taken and body mass index (BMI) calculated. Mothers/caregivers were interviewed regarding their children's 24-hour-dietary intake. Dietary data were analyzed for energy and macronutrients, and their food sources were investigated. **Results:** The mean BMI was 14.7±2.02kg/m². Based on the WHO 2007 growth reference, the prevalence of overweight and obesity were 10.9% and 2.3%, respectively. Mean intakes of energy, protein, carbohydrate and fat were 1487.3±284.55cal, 52.2±23.19g, 143.9±66.05g, 53.9±19.12g respectively. Among 303 preschool children, more than 76,6% had protein intakes higher than the recommended level. It is found that 92.2% of children's energy intake was adequate according to recommended daily intake. Amounts of carbohydrate and fat consumed varied from below to above the Dietary Reference Intake (DRI) recommendation for Turkey. **Conclusions, discussion and/or practical application:** In the present study, despite high overweight prevalence in pre-school aged children, daily energy intakes were not higher than recommended amounts. This situation may be due to inadequate physical activity or excessive intake of simple carbohydrates. Considering high overweight prevalence, it may be beneficial to include parents in obesity prevention efforts targeting children attending child-care centers.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-154: ASSOCIATION BETWEEN BMI AND BLOOD PRESSURE OF ADOLESCENTS FROM MUMBAI CITY

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Introduction: With increasing prevalence of obesity among young India, it is essential to assess their nutritional status, and the correlation between obesity and other co-morbidities. To assess the nutritional status and observe the association between Body mass index (BMI) and blood pressure (BP) of adolescents from Mumbai City. **Methods:** Data was collected in 220 (105 boys) higher secondary students aged 18yrs over a period of seven months. Anthropometry (height, weight), BP and heart rate were measured. BMI was calculated. Body composition was assessed using bioelectrical impedance (TANITA BC-605). Dietary energy

and protein intake was assessed using a 3 day diet recall. Percentage recommended dietary allowance was calculated. **Results:** The mean height (168.3±6.9cm), weight (56.6±13.4kg), systolic BP (124±12mmHg), diastolic BP (73±9mmHg), and muscle mass (45.1±8.5%) was significantly higher in boys as compared to girls [height (155.4±6.5cm), weight (47.6±11.6kg), systolic BP (110±12mmHg), diastolic BP (69±11mmHg), and muscle mass (33.1±4.8%)] ($p<0.05$). On the other hand, boys had significantly lower heart rate (81±18beats/min) and body fat percentage (13.9±7.1%) as compared to girls [heart rate (85±16beats/min) and body fat percentage (26.9±14.5%)] ($p<0.05$). Percentage RDA energy intake was significantly higher in girls (65.5±22.9%) as compared to boys (56.7±16.1%) ($p<0.05$) whereas RDA protein intake was similar in both boys (62.2±24.6%) and girls (65.0±37.0%) ($p>0.05$). There was a significant correlation of BMI with blood pressure [systolic ($r=0.386$; diastolic ($r=0.247$)], body fat ($r=0.394$) and muscle mass ($r=0.534$) ($p<0.05$). Dietary energy intake was positively correlated with diastolic BP ($r=0.144$) ($p<0.05$). **Conclusions, discussion and/or practical application:** Nutritional status of young boys was better than girls. Dietary intake was better in girls than boys, although much lesser than RDA, measures need to be taken to improve dietary habits, BMI and BP of 18yrs-old youth.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interest.

P-155: DIETARY FIBERS AND BOWEL FUNCTION: ALL INTERVENTION STUDIES SYSTEMATICALLY REVIEWED

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Introduction: Constipation is a frequent discomfort in western society, often due to a low dietary fiber (DF) intake. Increase in stool weight contributes to relieve in such discomfort. Some DF are effective in increasing stool, others are not. **Objective:** Conduct a semi-quantitative systematic review on the effects of DF on bowel function parameters in healthy individuals. **Methods:** Systematic search strategies on dietary fiber and stool function parameters were applied in PUBMED and EMBASE. Observations on dietary fibers were grouped according to food origin and fermentability. If the number of observations was greater than 4, effects of individual DF were estimated. Results of weighted regression analyses on stool weight and transit time are presented. Analysis of transit time (TT) took into account initial transit time of either ≤ 48 hrs or >48 hrs. **Results:** From a total set of 664 publications, 147 publications were included. Non-fermentable cereal DF are most effective in increasing stool weight (3,4±0,1g/g). DF from fruits are least effective in increasing SW (0,3±0,4g/g). DF from vegetables increase stool weight with 2,0±0,2g/g. Most observations are based on the intervention with wheat DF resulting in an increase in stool weight of 3,7±0,1g/g. Optimal TT is approximately 2 days. Weighted regression analysis demonstrates that DF normalizes TT. For those with an initial TT ≤ 48 hrs TT increases whereas TT decreases when initial TT was >48 hrs. Most interventions were conducted with wheat DF showing that in individuals with an initial TT ≤ 48 hrs, TT increased with approximately 45min/g and for those with an initial TT >48 hrs TT decreased with approximately 45min/g. **Conclusions, discussion and/or practical application:** We conclude that non-fermentable DF are most effective in increasing stool weight. Increasing DF intake can help to normalize transit time. Wheat DF has been studied most frequently for both parameters.

COMPETING INTERESTS: The systematic review is sponsored by Kellogg Company.

P-157: FOODS WITH BIOACTIVE SUBSTANCES: KNOWLEDGE AND ATTITUDES

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Introduction: The food industry has developed functional food products as an option for the prevention and treatment of prevalent noncommunicable diseases. To study workers' knowledge and attitudes regarding functional foods with added omega fatty acids, phytosterols, prebiotic substances and/or fibers. **Methods:** Observational, descriptive and cross-sectional study. An interview in 90 judicial workers of Salta Capital, applying form with structured and semi-structured questions. Variables: knowledge, reason for consumption, attitudes, read labeling and advertising. Frequency distribution, mean,

standard deviation and percentage were analyzed; results expressed in tables, bar graphs and sectors. **Results:** 72% female, with a mean age of 41.1±11.6yrs, 94% not heard of functional food product, the total know of products with fiber, omega fatty acids, phytosterols and/or prebiotics added, 31% and 44% had a moderate and low knowledge about on the benefits of the substances added. The main reason for consumption were treating diseases (34%), pleasure and healthy habits (32%). 38% always read the labeling performed and 18% sometimes, 46% do not trust advertising or labeling of functional products. The source of such information were television and internet. 51% would recommend eating these products. 47% noted a positive attitude towards these products with high interested in receive more information. **Conclusions, discussion and/or practical application:** There would be an appropriate behavior towards functional food products. Almost total population identifies the food products added, recognizing at least a profit of substances. Television was the main source of information. Half of the population expressed a positive attitude towards functional food products.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interest.

P-158: GROWTH AND NUTRITIONAL STATUS IN CHILDREN AGED 3 TO 6 YEARS IN TURKEY

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Introduction: In preschool children, who are in a fast growth and development period, insufficient and unbalanced nutrition, can lead to health problems such as growth retardation, weakness or obesity. This research is carried out to evaluate the nutritional status of pre-school children aged between 3 to 6, whose growth and development is critical. **Methods:** 355 children, aged between 3 to 6, who are living with their family in Ankara and studying at a kindergartens were included in this study. Children's height and body weight weremeasured; height for age, weight for age, and weight for height Z-score distributions were calculated based on the "WHO MGRS 2007 Reference Value". **Results:** It was found that height for age Z-scores of all of children were normal. According to weight for age Z-score 30.0% 3-year-old, 11.9% of 5-year-old and 17.5% 6-year-old children were obese. According to weight for age Z-scores 14.1 % of all children were overweight. According to weight for height Z-scores, 32.6% of children 5yrs of age were wasted, 26.4% of children 5yrs of age were under-weight. **Conclusions, discussion and/or practical application:** In this study, we did not observe stunted in any of the participants, which is an indicator for chronic malnutrition but prevalence of mild overweight and overweight in 3, 4 and 6yrs old children were high. In 3-6yrs aged children, prevention of obesity, which is an important public health problem,will protect these children from type 2 diabetes, coronary heart disease, hypertension and adulthood obesity. Therefore, nutritional education of families and children by dietitians is very important.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-159: RETAIL MUSHROOMS GOOD SOURCE OF VITAMIN D IN AUSTRALIAN FOOD SUPPLY

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Introduction: Agricultural studies show that common button mushrooms exposed to ultraviolet (UV) light generate and retain high levels of vitamin D2. Some farmers intentionally expose mushrooms to UV light post-harvest and market them as "Vitamin D Mushrooms", as they meet the adult Adequate Intake (AI) in a 100g serve (3 medium mushrooms). What is not known is the vitamin D content of regular retail mushrooms. Independent market surveys reveal that four in five Australians (83%) eat mushrooms. If regular retail mushrooms can provide more than 10% AI vitamin D, consumers will benefit in cost and convenience. **Methods:** We randomly selected metropolitan supermarkets (Woolworths, Coles, Foodland) in five state capital cities to ensure the analysis covered a variety of mushroom suppliers, and randomly purchased 28 x 200-400g retail mushroom samples for measurement, including whole and sliced mushrooms. **Results:** Mushrooms were analysed for vitamin D2 by an independent government laboratory. The results revealed that retail mushrooms have high levels of vitamin D (Average 2.3mcg or 23% AI per 100g serve; range 1-5mcg/100g), higher than previously reported. UV-exposed mushrooms

provided at least 20mcg D2/100g (200% AI of vitamin D). **Conclusions, discussion and/or practical application:** Regular retail mushrooms provide 23% of the AI of vitamin D in a 100g serve. Mushrooms exposed to UV light post-harvest provide 100% of the AI of vitamin D in 100g serve. Both regular and UV-exposed mushrooms are good sources of vitamin D in Australia.

COMPETING INTERESTS: Research conducted by Nutrition Impact Pty Ltd, Perth, Western Australia via a Research & Development grant from Horticulture Innovations Australia (a government agency).

P-160: CAFFEINATED FOOD AND BEVERAGE CONSUMPTION PATTERN AND ITS PHYSIOLOGICAL EFFECTS IN ADOLESCENTS

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Introduction: Health effects of caffeine depend on the consumption pattern and the chronicity of use. Caffeine is available in a variety of dietary sources such as coffee, tea, soft drink and chocolate. This study aimed to determine consumption patterns of caffeinated food and beverage in adolescents. Self-reported physiological effects of caffeinated food and beverage consumption were also assessed. **Methods:** The study was conducted on 840 high school students (377 male, 463 female), aged 11-19yrs (14.6±1.96yrs) in Ankara. Caffeinated foods and beverages consumption were recorded using a caffeinated food frequency questionnaire with a photography food and beverage portion size atlas, adapted by researchers. The perceived adverse effects of caffeine consumption were assessed using a validated questionnaire. Body weight and height were measured; body mass index (BMI) Z-scores were assessed using WHO Anthro plus 2007 programme. **Results:** The soft drinks, energy drinks, ice tea and chocolate pudding consumption were consumed more commonly by males (p<0.05). Bitter chocolate consumption among adolescents with normal body weight was greater than underweight and obese adolescents, while milk chocolate consumption was higher in underweight adolescents than normal or obese ones (p<0.05). After the consumption of caffeinated foods, insomnia (44.5%), frequent urination (17.2%), excitement (13.9%), anxiety (13.8%) and headache (11.3%) were reported, respectively. **Conclusions, discussion and/or practical application:** In this study, among the potential adverse health effects of caffeinated food and beverage consumption, anxiety, insomnia, excitement, frequent urination were reported. The consumption of caffeinated food and beverage is needed to be assessed in detail in adolescents and the excessive consumption should be avoided.

COMPETING INTERESTS: The authors declare that there is no conflict of interests.

P-161: DIETARY TRANS FATTY ACIDS INTAKE AND ITS RELATION TO DIETARY HABITS OF COLLEGE STUDENTS

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Introduction: Dietary trans fatty acids increase the risk of cardiovascular disease, coronary heart disease, ischemic stroke and type 2 diabetes. The purpose of this study was to determine the mean intake of trans fatty acids and its relation to dietary habits. **Methods:** We examined food frequency questionnaire of processed foods containing high contents of trans fatty acids, such as liquid fats, chocolate and sweets for 120 of female college students. The content of trans fatty acid was estimated by the fact sheet that is published in Food Safety Commission of Japan and the Ministry of Agriculture. **Results:** The mean intake of trans fatty acids was 1.052g. There were no associations between BMI and trans fatty acids intake. The correlation was observed between trans fatty acids and high frequency of snack eating. The group of chocolate and biscuit, intake of trans fatty acids were higher than other snack groups. It was also found that the habit of snack fixed in high school age. **Conclusions, discussion and/or practical application:** Trans fatty acids intake are low level than other country. The dietary habits are associated with trans fatty acids intake. The importance of food education and eating skills was also observed in this study. Dietary guidelines must consider the health effects of recommendations for trans fatty acids.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interest.

P-162: EUROPEAN REFERENCE BUDGETS: THE MINIMUM COST OF HEALTHY EATING IN EUROPE

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Introduction: The European discourse on poverty emphasizes its relative aspect and defines poverty with respect to national standards of living. In practice, the poverty line is generally defined as a percentage of the national median income. Reference budgets offer a way to define more empirically what constitutes an adequate minimum in society. Reference budgets are priced baskets of goods and services that reflect what is a socially acceptable standard of living for specific household situations. The European Commission has recently supported a pilot project for the construction of cross-country comparable reference budgets in the 28 European Member States. **Methods:** Food baskets in all member states have been constructed using a well-defined methodology, and are based on national and international food based dietary guidelines, advice by nutritionists, survey data and focus group information. The fact that all food baskets are constructed in a highly comparable way, makes it possible to compare them across countries and with European food-based dietary guidelines. **Results:** This project has yielded results at different levels: (1) a comparison of the food based dietary guidelines, (2) the different cultural habits and preferences with regard to food and health in the 28 EU Member States, (3) the composition of a healthy food basket in the different countries, (4) the cost of eating healthy in the different EU countries. Generally, it can be posited that the context of the food basket is characterized by widely diverging eating patterns in Europe, a general lack of comparable data on food consumption and limited common guidelines regarding what constitutes a healthy diet. Despite of these difficulties, it was possible to develop a food basket for each capital city which reflects the minimum cost for a healthy diet, taking national food patterns and recommendations into account. A nutritional analysis of the final baskets allows to determine that they generally comply with EFSA recommendations on nutrient intake. Even though cross-national differences in the minimum cost of a healthy diet are wide, they vary much less than net disposable median incomes. **Conclusions, discussion and/practical application:** Reference budgets can serve as an educative tool that gathers together nutritional and economic aspects of healthy eating, as well as guidelines to better define food allowances.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interest.

P-163: HIGH FIBRE FOODS COULD IMPROVE RAMADAN EXPERIENCE AND HEALTH: FOCUS ON GULF COUNTRIES IN THE GCC

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Introduction: The Gulf Co-operative Council (GCC) is a political and economic alliance of 6 Middle Eastern countries, representing 49 million people. Predominantly Muslim, the majority (except sick and young children) observe the holy month of Ramadan, an annual abstinence from food and drink from sunrise (Al-Sahour) to sunset (Alfator). There is concern that poor dietary and nutritional status may worsen during this period as Ramadan causes a radical change in lifestyle, eating habit and patterns and is associated with increased likelihood of diet related side effects like constipation and digestive discomfort. **Method:** A systematic review of published (by MEDLINE) and unpublished data evaluated the quality of diet and nutritional status of people in the GCC and the effect of Ramadan fasting on nutritional health. **Results:** Nutritional status has changed over the last 50 years. A paradox of diet related diseases exists manifested by over and under nutrition. 38%-83% of men and women are overweight/obese and 40-60% may be undiagnosed diabetics as a consequence of lifestyle changes and transition from traditional diets to diets high in fat and low in fibre. Vitamin and mineral deficiencies are endemic (50% of women are iron and 28-80% of Saudi Arabian adults are vitamin D deficient). Fibre intakes are thought to be inadequate but no national data exists, although constipation is well documented particularly during Ramadan. **Conclusions:** Encouraging increased fibre intake at Al-Sahour and Alfator could help improve glycemic control and glucose handling, helping to control hunger and sustain fasting. It could also help ease side effects like constipation and digestive discomfort by reducing transit time and optimising stool weight. These findings have relevance in Europe, where 5% of the population (38 million people) is Muslim. The

majority will observe Ramadan. While culturally there are differences in diet and lifestyle habits, it appears that it is particularly important to eat adequate amounts of fibre during Ramadan when an individual's diurnal rhythm is changed completely with unwanted physiological side effects as a result being common.

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P-164: OBESITY IN NATIVE PRESCHOOL AVA GUARANI COMMUNITY. PICHANAL, SALTA. ARGENTINA

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Introduction: Ava Guarani community, like most native peoples it isn't preserves traditions eating and habits. They have affected by culture, nutritional transition and epidemiology process. To determine family obesity and characteristics of obese preschooler's diet. **Methods:** Observational, descriptive, cross-sectional study. Total population (n=116) children from 1-5yrs of age with malnutrition by excess. Data Sources: Primary forms Health Care (PHC) and structured survey at person, care and feeding of children. **Results:** Overweight children 19.5% of the population of 80 mothers interviewed, 64% of them has 21-30yrs of age; 53.2% had family history of obesity first degree relatives (mothers 22.6%, 17.7% fathers and 12.9% both parents) and 46.8% of second degree (paternal grand father 24.2% and paternal grand mother 22.6%). 32.5% of children were exclusively breastfeeding until six months, 25% below six months and 42.5% without breastfeeding ever. The initiation of complementary feeding 19.9% received at six months of age, 67.5% before and 12.6% after six months consumed 100% soup, 76.3%, cow's milk, mash or porridge 48.8% (squash, carrot, potato), 13.8% yogurt, grated 10% grape fruit (apple, banana), 7.5% stews, 6.3% juices, 3.8% meat, 2.5% fruit compote, bread and liver; 1.3% gelatin and Nestum. **Conclusions, discussion and/or practical application:** The Aboriginal community, there was genetic factors that exacerbate the imbalance between the related components and expended energy intake; the risk of obesity during childhood was between 40% if one parent is obese and 80% when both parents were incorrect. The breastfeeding and complementary feeding are another of the risks in childhood, to correlated with obesity, important to consider in the field of public health.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interest.

P-165: PORTUGUESE NUTRITIONAL YOUTH STRATEGY. FOOD IN ACTION PROJECT

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Introduction: Youth is a critical period for better health and social behaviors. The behaviors at this stage are strong predictors of later in life behaviors. "Food in Action" project was a strategic partnership between non-governmental youth organization and governmental organizations. "Food in Action" project operated in the youth health offices located in all 18 Portuguese districts. The youth health offices had a dietitian/nutritionist that provided a structured and integrated nutrition intervention, that included nutrition assessment and counseling, and nutrition workshops. This study aimed to analyze the impact of nutrition counseling in the eating behaviors and nutrition indicators. **Methods:** Anthropometric measurements (weight, height and BMI), number of daily meals and food frequency fruit, **salads/vegetables**, vegetable soup and soft drinks were collected through interviews to young people who experienced nutritional counseling on youth health offices. The stages of change model was applied to support the nutrition counseling. **Results:** Young people n=1020 were followed in nutrition counseling for a period of six months. In this period there was an average weight loss of 2.8Kg. The female 79.0% lost more weight (p=0.034). There was a BMI reduction average of 1.1kg/m² in which 7.5% reduction occurred among obese young people. There was an average increase in the number of daily meals (p=0.000). Daily fruit, salad and vegetable soup frequencies increased (p=0.000). All of the young people began to consume daily fruit, salad and vegetable soup. There was a reduction

of consumption of soft drinks ($p=0.000$). After six months 37.0% of the sample didn't drink daily soft drinks. **Conclusions:** The nutrition counseling contributed to improving the eating habits of young people. Globally "Food in Action" project brought more and better nutritional health youth indicators.

COMPETING INTERESTS: Food in action project had a financial support of General-Directorate of Health. The authors of this document can confirm there is no conflict of interests.

P-166: THE RELATIONSHIP AMONG HEMOGLOBIN LEVEL, BODY MASS INDEX, AND DIET IN HIGH SCHOOL STUDENTS

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Introduction: Latent low hemoglobin levels are common among high school students. This study aimed to explore the influence of nutrition, food groups, and anthropometric characteristics on hemoglobin levels in high school students.

Methods: Twelfth grade students in Tokyo were recruited in this cross-sectional study. The dietary intakes of the participants were assessed by using a semi-quantitative food frequency questionnaire (Kenpaku-sha, Tokyo, Japan), and the amount of nutrients, food groups, and physical activity levels were calculated. Anthropometric characteristics were measured and the body mass index (BMI) calculated. Hemoglobin level was measured non-invasively by Astrim SU (Sysmex Co., Kobe, Japan). Participants (male, $n=149$; female, $n=80$) were divided into three groups by non-invasively measured hemoglobin level: hemoglobin levels were 10.8-14.3g/dL, 14.4-15.6g/dL, 15.7-17.3g/dL for each tertile in the male groups, and 9.2-12.4g/dL, 12.7-14.0g/dL, 14.1-16.5g/dL for each tertile in the female groups. **Results:** Body weight, BMI, body fat percentage, energy adjusted protein, potassium, phosphate, pantothenic acid were significantly higher in the highest tertile group than the lowest tertile group in male students (trend, $p<0.05$). Body mass index was also higher in the highest tertile group than the lowest tertile group in female students (trend, $p<0.05$). Multiple stepwise regression analysis revealed that BMI ($\beta=0.297$, $p<0.001$) and energy adjusted protein ($\beta=0.160$, $p=0.042$) in male students, and BMI ($\beta=0.276$, $p=0.017$) in female students were significantly related to hemoglobin level (adjusted $r^2=0.153$ and 0.112 in male and female students, respectively). **Discussion:** These results suggested that hemoglobin level was positively related to BMI but other factors were not significant in Japanese high school students. However, the standardized partial regression coefficient was not high enough, suggesting that there might be another more strongly associated factor.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-168: CENTELLA ASIATICA SUPPLEMENTATION IN CHILDREN WITH ATTENTION DEFICIT AND HYPERACTIVITY DISORDER (ADHD)

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Introduction: Centella asiatica is one of the best psychotropic herbs known to reduce anxiety levels and improve immediate memory span. Studies have suggested that children supplemented with Centella asiatica had a better overall adjustment, were more attentive and able to concentrate on the assigned tasks. A research was undertaken to evaluate the effect of Centella asiatica supplementation on attentiveness, hemoglobin levels and nutritional intake of children with ADHD. **Methods:** A total number of 30 subjects were selected and were further divided into supplementation and control groups. The supplementation group was supplemented with 300mg/day of Centella asiatica extract in the form of guava toffee, khakra (savory crispy bread) and biscuits over a period of 30 days (10 days each). The control group was given placebo form of similar products. The nutritional intake (3-day dietary recall) and ADHDT test (ADHD severity rating scale) were monitored for the subjects before and after the trial. **Results:** The mean age of the subjects was 11.8yrs and 12.5yrs in the control and supplementation groups

respectively. About 53.3% children were found to be overweight and 30% were underweight. The percent energy deficit in the energy intake as compared to the RDA was 32% which reduced to 22.5% post nutritional counselling. The protein intake was significantly lower than the RDA but fat intake was higher. The mean folate and B12 intake was higher than the RDA as 80% of the subjects were non-vegetarians and presumably consumed foods high in folate and vitamin B12. The percentile rank for hyperactivity, inattention and overall ADHD symptoms significantly decreased after supplementation however, the decrease in percentile rank for impulsivity was not significant. **Conclusions, discussion and/or practical application:** Centella asiatica supplementation helps lower hyperactivity, inattention and overall symptoms of ADHD but has no effect on impulsivity. Further long term studies are warranted in this area.

COMPETING interests: The authors of this document confirm there is no conflict of interests.

P-169: DIETARY PATTERNS AND BLOOD PRESSURE IN A SAMPLE OF ADULT AUSTRALIANS

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Introduction: Determining the contribution of single nutrients to disease risk is difficult.

Investigating effects on blood pressure (BP) of whole diets rather than individual nutrients can provide insights into the relationship between dietary intakes and health. Our aim was to assess the relationship between dietary patterns and BP in a sample of Australian adults. **Methods:** Dietary patterns were derived from 24-h recall data (mean of two 24-h dietary recalls on random, non-consecutive days) using factor analysis with principal component analysis extraction and varimax rotation. Home BP was measured daily for seven days. Mean energy, sodium and potassium intakes were calculated. Estimated sodium intake did not include any allowance for discretionary salt. **Results:** Data from 251 participants (112 males; mean age 55.1(9.1) (SD)yrs) was included. Three dietary patterns were identified ('Traditional Australian Diet', 'Convenience Diet' and 'Modern Diet') explaining 18.2% (7.2, 5.7 and 5.3%, respectively) of the total variation in intake. The 'Convenience Diet' was positively associated with systolic BP ($\beta=1.88$, 95% CI 0.16, 3.60) after adjusting for age, sex, BMI, anti-hypertensive medication, smoking, education, physical activity and energy intake. This pattern was characterised by high consumption of low-fibre bread, unprocessed cereals, meat, poultry and egg dishes, mixed cereal dishes, seeds and nuts and low consumption of milk and yoghurt (low-fat), vegetable juice, vegetables and high-fibre bread. The 'Convenience Diet' was positively associated with energy ($P=0.002$), sodium ($P=0.005$), sodium:potassium ratio ($P<0.001$) and inversely associated with potassium ($P=0.002$). After adjustment for energy, only the inverse potassium association remained ($P<0.001$). The 'Convenience Diet' was inversely associated with age and a greater percentage of males. **Conclusion:** A 'Convenience Diet' was associated with higher BP and thus chronic disease risk, supporting the evidence that diets low in potassium, from vegetables and dairy, and high in energy and thus sodium, are detrimental to cardiovascular health.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests.

P-171: PROCESSED MEAT CONSUMPTION IS ASSOCIATED WITH HIGHER BODY MASS INDEX AND POORER DIET QUALITY THAN RED MEAT AND POULTRY

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Introduction: Recent literature suggests the association between high meat consumption and higher Body Mass Index (BMI) and poorer diet quality. However, the nature and extent of this relationship and the differences between red meat, poultry and processed meat consumption has not been clearly established. This study aimed to investigate the associations between red meat, poultry, and processed meat consumption, with BMI, waist circumference (WC), fruit and vegetable consumption, and other relevant nutrients. **Methods:** This study utilized cross-sectional data from 9,341 adult's 24-hour recalls in the 2011-12 National Nutrition and Physical Activity Survey. Red meat, poultry, and processed meat consumption data was captured in detail from

all meals and recipes. Multivariate regression models to examine the association between red meat/poultry/processed meat consumption and BMI/WC, fruit, non-starchy vegetable, starchy vegetable, and nutrient intakes were conducted, adjusted for age, gender, socio-economic status, and total energy intake. **Results:** Approximately 49% of respondents consumed red meat (mean intake: 57g), 38% consumed poultry (42g), and 39% consumed processed meat (28g). Higher poultry and processed meat consumption was associated with greater BMI, but not red meat. Higher intakes of red meat, poultry, and processed meat were associated with WC. Consumption of non-starchy vegetable was positively associated with red meat and inversely associated with processed meat, while fruit and starchy vegetable consumption was not significantly associated with either. Red meat, poultry, and processed meat consumption was associated with higher intakes of protein, total fat, mono-unsaturated fatty acids and zinc. Red meat and poultry consumption was also associated with higher intakes of poly-unsaturated fatty acids and niacin, and lower sodium intake, whereas processed meat was associated with a higher intakes of sodium and saturated fatty acids, and lower intakes of poly-unsaturated fatty acids. **Conclusions, discussion and/or practical application:** Our findings suggested that red meat consumption might not be a risk factor of obesity. Further prospective research is needed to examine the causal relationship between obesity and consumption of different categories of meat.

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P-173: TURKISH CONSUMERS' FOOD CHOICES TOWARDS HEALTHY DIET

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Introduction: People choice of healthier food will have positive reflections on health. The determination of people's food consumption choices will enable us to understand whether they consume healthy food or not. This study was conducted to examine Turkish consumers' food consumption choices towards healthy diet. **Methods:** In order to determine consumers' attitudes towards healthy diet, the questionnaire consists of 11 questions about food additives, amount of sugar, unhealthy ingredients of foods, health impacts of food, green products, taste of foods and time for food preparation. Questions on socio-demographic characteristics were also included. Consumers indicated their level of agreement on a 5-point scale. The sample comprised 417 women and 403 men, ranged from 18 to 64 years. The questionnaires were analyzed with the statistical program SPSS. A value of $p < 0.05$ was considered to be significant. **Results:** Participants were categorized as healthy (67.3%) and non healthy (32.7%) eaters according to self report. It has been shown that healthy eaters pay more attention to food additives (4.30/3.91 mean points), amount of sugar of their diets (3.70/3.10 mean points), unhealthy ingredients of foods (3.90/3.10 mean points), health impacts of food (4.10/3.35 mean points), green products (3.25/3.49 mean points), taste of foods (3.49/3.98 mean points) and time for food preparation (3.18/3.59 mean points) when compare with unhealthy eaters ($p < 0.05$). Women participants (4.24 mean points) were pay more attention to food additives than men (4.12 mean points) ($p < 0.05$). There were also positive relationship between participants' BMI values and their level of agreement in the case of amount of sugar of their diets, unhealthy ingredients of foods, taste of foods, time for food preparation ($p < 0.05$). **Conclusion:** Since choice of healthier food will have positive reflections on health, identifying an effective strategy to improve consumers' healthy eating habits is an important concern for health promoters.

COMPETING INTERESTS: The authors declare no conflict of interest.

P-174: EATING HABITS AND PHYSICAL ACTIVITY OF BELGIAN UNIVERSITY COLLEGE STUDENTS

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Introduction: Entering college or university might be a critical period for unhealthy changes in lifestyle, leading to weight gain, which could lead to overweight and obesity in later life. The aim of this study was to investigate the eating habits and physical activity of Belgian university college students. **Methods:** In December 2014, eating habits and physical activity of 1386 Belgian university college students were assessed using online questionnaires. Differences between groups of different

gender, study programme and living situation (residency or not) were explored. **Results:** Of all students who completed the questionnaire 51.6% reported to eat breakfast daily, 41.9% reported to drink at least 1 liter of water a day, 24.5% reported to eat at least 2 servings fruit a day, 8.4% reported to eat at least 300 grams of vegetables a day, 33.3% reported to do at least 30 minutes of moderate physical activity every day of the week, and 34.0% reported to do at least 30 minutes of vigorous physical activity at least 3 times a week. Furthermore, when comparing subpopulations statistically significant differences ($p < 0.05$) were observed between male and female students, between dietetic and non-dietetic students, and between resident students and non-resident students. While female students have better eating habits, male students tend to engage more in physical activity. Dietetic students have better eating habits and engage more in vigorous physical activity than non-dietetic students. Residents students eat more fruits than non-resident students, but they also drink more alcohol. **Conclusions:** The majority of the university college students do not meet the Belgian guidelines for healthy eating habits and physical activity. Therefore, interventions to promote healthy eating and physical activity among students are definitely at issue. Future intervention studies should take the differences between different subpopulations into account.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-175: FOOD FREQUENCY QUESTIONNAIRE BASED ON FOOD GROUPS AS A USEFUL TOOL FOR ASSESSING HABITUAL DIETARY INTAKE AMONG COLLEGIATE ATHLETES

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Introduction: Food frequency questionnaires have been developed and validated for various populations, except for specific athlete populations. This study aimed to investigate the validity of food frequency questionnaire based on food groups (FFQg), which have been validated for college students and their families, to estimate dietary intake among collegiate athletes.

Methods: A total of 108 participants (46 males) completed 3-day non-consecutive 24-hour dietary recalls (24hDR) and twice FFQg. The interval between the first and second FFQg (FFQg1 and FFQg2, respectively) was one month. Participants belonged to one of the following clubs: baseball, rhythmic gymnastics, track and field, gymnastics, badminton, and power lifting. Spearman's correlation coefficients (CCs) between FFQg1 and FFQg2 were calculated for unadjusted and energy-adjusted values to evaluate the reproducibility. CCs between FFQg1 and 24hDR were calculated for unadjusted, energy-adjusted, and de-attenuated values to determine the validity. The percent differences between 24hDR and FFQg1 were calculated to evaluate the validity of mean estimation. **Results:** Energy intake was almost the same between 24hDR and FFQg1. For 35 nutrients, the median (range) de-attenuated CC was 0.32 (-0.02 for niacin to 0.65 for energy). For 18 food groups, the median (range) de-attenuated CC was 0.33 (0.05 for nuts and seeds to 0.58 for cereals). Similarly, the median (range) energy-adjusted CC between FFQg1 and FFQg2 was 0.61 (0.40 for alfa-tocopherol to 0.82 for zinc) and 0.52 (0.40 for nuts and seeds and seasonings and spices to 0.87 for confectioneries), respectively. **Conclusions, discussion and/or practical application:** For some nutrients and food groups, FFQg might be useful for assessing habitual dietary intake among collegiate athletes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-176: LONG-TERM CHANGES IN FOOD CONSUMPTION AND NUTRIENT INTAKE IN A MEDITERRANEAN COHORT: THE SUN PROJECT

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Introduction: The assessment of changes in dietary habits provides interesting information on whether the observed trends are in line with accepted nutritional guidelines. Our objective was to evaluate within-subject longitudinal changes in food consumption and nutrient intake in a 10-year follow-up study. **Methods:** The SUN (Seguimiento Universidad de Navarra) project is a prospective Spanish cohort study. Diet was assessed using a 136-item food-frequency questionnaire (FFQ), previously validated in Spain. The participants were 3,036 university graduates (55.8% women) who remained in the cohort 10 years and completed both the baseline and the 10-years FFQs. Paired T-tests and conditional logistic regression models evaluated within-subject longitudinal dietary changes (food consumption and nutrient intake). **Results:** During follow-up, participants showed a relevant and significant increase ($p < 0.001$) in the consumption of fruits (7.4%), vegetables (8.6%), low-fat dairy products (35.2%), lean meat (12.4%), fish (2.9%), whole grains (53.2%), nuts (52.4%) and a significant decrease in legumes (-7.4%), whole-fat dairy products (-44.2%), red meat (-17.6%), sugar-sweetened beverages (-58.7%) and wine (-11.9%). With respect to nutrients, we found an increase in carbohydrates (3.6%) and fiber intake (7.4%) and a decrease in total energy intake (2.7%), total fat (-4.5%), SFA (-9.4%), MUFA (-4.9%), PUFA (-12.7%), w-3 and w-6 fatty acids (-9.1% and -20.5% respectively) and dietary cholesterol (-9.6%). **Conclusions, discussion and/or practical application:** In this Mediterranean cohort study, mainly beneficial changes in the consumption of most food and macronutrients were observed after 10 years of follow-up.

COMPETING INTERESTS: None of the authors had any personal or financial conflict of interest.

P-177: THE MAIN NUTRIENT AND FOOD INTAKE PROBLEMS AMONG 4-10 YEAR OLD HUNGARIAN CHILDREN

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Introduction: National studies in Hungary have shown increasing rates of obesity and its causes among children, but no recent data were available for the nutrient intake and food consumption habits of Hungarian nursery- and elementary school aged children. In order to identify the nutritional behaviors of this age group, a dietary intake study was conducted in collaboration with the Hungarian Dietetic Association. **Methods:** Dietary intake data was collected via 3-day dietary records among 4-6 ($n=351$) and 7-10 ($n=448$) year old children from Budapest and Kecskemét. All food items and recipes were coded using the NutriComp Hungarian Food Composition Tables (1995). Body mass index was calculated from the measured body weight and height, according to Cole's methodology. The average of the 3 day energy and nutrient intakes were compared to the national reference values for each age group and gender. Critically high and low consumption groups as well as the food sources of the public health sensitive nutrients were also profiled. **Results:** The prevalence of overweight and obesity was 21% among children. The main nutritional problems included excessive total fat intake and high saturated fat intake coming largely from cold cuts and dairy products. Added sugar intake exceeded the recommended 10E%, mainly originating from sweeteners added to foods during preparation. Dietary fibre intake was low in 25% of children largely due to low whole grain and vegetable consumption. Similar to Hungarian adults, children had extremely high sodium consumption, mainly coming from salt, added during preparation, white bread and cold cuts. Low calcium and vitamin D intake was also identified. **Conclusions, discussion**

and/or practical application: The results show that nutritional problems, previously identified in adults, already appear in early in childhood, which highlights the importance of nutrition education of children and their primary influencers, the parents.

COMPETING INTERESTS: Bernadett Kiss-Tóth and Alison L Eldridge are employees of Nestlé, the sponsor of this research.

P-178: TRYPTOPHAN CONSUMPTION OF UNIVERSITY STUDENTS RESIDING IN UNIVERSITY DORM AND ITS ASSOCIATION WITH DEPRESSIVE SYMPTOMS

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Introduction: Aim of this study was to determine tryptophan consumption in university students residing in university dorm and its association with depressive symptoms. **Methods:** In this cross-sectional study, students residing in university dorm were included. In 13 blocks, 1500 students live in this dorm, sample size was determined as 317 with depressive symptom prevalence 20%, 5% error within 95%CI and a design effect of 1.5. Blocks were randomly selected. Depressive symptoms were the dependent variable, identified via Beck Depression Scale (threshold 10pnts). Socio-demographic variables, life style and daily tryptophan consumption were the independent variables. Daily tryptophan consumption was determined via 24h food recall. Data was collected via a questionnaire with face to face interviews. 24h food recall was analyzed using software (BEBIS) in order to determine tryptophan consumption and other nutrients. Data was analyzed using independent samples T-test and Chi-square test via SPSS 15.0. $p < 0.05$ was considered significant. **Results:** Among participants ($n=317$), 174 were female. Nearly half ($n=156$, 49.2%) had depressive symptoms. Being women ($p=0.004$), living in a broken family ($p=0.042$), smoking ($p=0.002$), not studying in the desired field ($p=0.001$), not being happy with the study field ($p=0.001$), loss of an educational year ($p=0.017$), facing a stressful event within last month ($p=0.007$), depression in family ($p=0.016$) and attempting psychiatry clinic ($p=0.032$) increased depressive symptoms significantly. When nutrient intake was evaluated, the ones with depressive symptoms had significantly lower means of tryptophan ($p=0.003$) as well as energy ($p=0.016$), thiamine ($p=0.005$), riboflavin ($p=0.007$), folate ($p=0.034$), Vitamin-B12 ($p=0.025$), Ca ($p=0.021$), Mg ($p=0.009$) and Zn ($p=0.001$). **Conclusions, discussion and/or practical application:** Nearly half of the participants showed depressive symptoms. Educational issues such as study field or loss of year affected the depressive symptoms significantly as well as familial background. Moreover not only tryptophan but many other nutrient (Vitamin B, Ca, Mg and Zn) intakes were found to be associated with depressive symptoms.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-179: WEIGHT STATUS OF LATIN-AMERICAN IMMIGRANT MOTHERS AND THEIR SCHOOL-AGED CHILDREN LIVING IN OTTAWA

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Introduction: Immigrants from Latin-America have higher rates of obesity compared to White people. They are also at increased risk of developing chronic diseases such as diabetes and cardiovascular disease. **Objective:** To assess the weight status of Latin-American immigrant mothers and their school-aged children living in Ottawa, Canada. **Hypothesis:** A large proportion of Latin-American mothers and children will have excess weight. **Methods:** A transversal descriptive study was carried out in a convenience sample of 52 Latin-American immigrant mothers with a child aged between 6 to 12 years old. Mothers were recruited by word of mouth (July-September 2015). The weight and height of children and mothers were measured. Their body mass index (BMI) was calculated. Children's BMI-for-age and sex was compared to World Health Organization (WHO) growth references. Overweight was defined as percentile $>85^{\text{th}}$, obesity $>95^{\text{th}}$. For adults, WHO BMI cut-offs were used. The waist circumference of mothers was measured to assess the presence of excess abdominal adiposity (waist circumference $\geq 80\text{cm}$), a risk factor for cardiovascular disease. **Results:** The average age of children was 8.56 ± 1.79 yrs. Half of children were males.

Twenty-five percent of children were overweight and 7.7% were obese. In the mothers' sample, 52% were overweight and 11.5% were obese. Sixty three percent of mothers also had a waist circumference ≥ 80 cm. **Conclusions, discussion and/or practical application:** These results suggest that similar proportions of Latin-American mothers and children have excess weight compared to the general Canadian population. However, they may be at higher risk of developing cardiovascular disease and diabetes since it is believed that they develop these conditions at a lower age and BMI than White people. More research is needed to document the weight status of Latin-American immigrant mothers and their children living in Canada and to identify factors which may increase their risk for obesity and its complications.

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P-180: EXPOSURE TO ORGANOCHLORINE PESTICIDES AS A RISK FACTOR FOR TYPE 2 DIABETES MELLITUS IN A COMMUNITY OF THE SHORE OF LAKE CHAPALA, MEXICO

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Cojumatlán community, Michoacán-Mexico, located on the shore of Lake Chapala has devoted significantly more for over 30 years producing vegetables for sale in the country's second largest city: Guadalajara. Agricultural producers have carried out indiscriminate use of pesticides. Through the analysis of 67 samples chromosomal damage was determined through the micronucleus test or DNA fragmentation by alkaline single-cell electrophoresis or comet assay. He divided the sample into three subgroups: exposed directly (27); indirectly exposed (9) and controls (19). Among the first no significant difference was observed but when comparing with other witnesses which leads to consider Cojumatlán as a genotoxic risk population from exposure to pesticides which are more vulnerable to chronic diseases such as type 2 diabetes mellitus and cancer. Given this background it sought to identify any relationship between the presence of organochlorine pesticides and Diabetes mellitus 2, since several studies have shown that these chemicals are responsible for alterations in energy metabolism. In a pilot study of 30 individuals determinations of organochlorines in blood were performed using the technique of gas chromatography finding high levels of DDE, a metabolite of DDT and lindane in patients with Diabetes Mellitus 2 with respect to the witnesses so that the incorporation of these compound through the food chain may be related to the high prevalence of this disease among the population of the community.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-181: POTENTIAL STRATEGIES TO IMPROVE MICRO-NUTRIENT INTAKE IN ADULT WOMEN WITH SUBOPTIMAL VITAMIN AND MINERAL INTAKES AND STATUS

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Introduction: The NDNS (2008-2012) shows that adult women (19-64yrs) have suboptimal micro-nutrient intake and status. Analysis shows many have suboptimal intakes of potassium, magnesium, copper, selenium, vitamin D and folic acid. Iron mean intake is low with 23% of women having intakes below the LRNI (Lower Reference Nutrient Intake). **Methods:** Analysis of three strategies to increase an individual's micro-nutrient intake. **Results:** The three different strategies have potential benefits but also associated risks: 1) Change the daily diet by replacing current food with that of a higher nutrient density; 2) Increase the amount of foods in the diet with added vitamins and minerals; 3) Use of micro-nutrient supplements in addition to the normal diet. Changing daily food intake seems the most natural route however, research and many consumer communication programs have shown that this is very difficult and is only successful if individuals are willing to make behavior changes. Consuming more foods with added vitamins and minerals is a strategy that can quickly reach a large proportion of the population without having to make large changes to habitual dietary patterns. Frequent consumption of fortified foods

increases micro-nutrient intakes and status but will also result in additional intakes in people who don't necessarily need it or want it. The final strategy considered here is to take supplements. However supplement takers in general already seem to have higher intakes of micro-nutrients from food sources than non-supplement takers; indicating that people taking supplements are not the ones needing these supplements the most. **Conclusions, discussion and/or practical application:** Depending on the individual and the circumstances, each of the three strategies might work. Looking at population level, consuming foods with added vitamins and minerals seems to be the most effective strategy to improve suboptimal micro-nutrient intake and status.

COMPETING INTERESTS: Kellogg's Employee.

P-182: A SPECIALLY DESIGNED DATABASE TO UNDERSTAND MICRONUTRIENT INTAKE IN DIFFERENT EUROPEAN COUNTRIES: MICRONUTRIENTS TO TAKE CARE OF

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Introduction: For daily health adequate vitamin and mineral levels are important. This is best measured by blood levels. However, sampling blood is invasive and difficult at large scale. Measuring dietary intake is often used to estimate the micronutrient status in populations. Both governments and food companies use results of these food consumption surveys, comparing results with nutrient reference values (NRV), for their policies and strategies to optimise micronutrient intake. **Objective:** To get adequate and quick estimates of potential micronutrient inadequacies in different age groups for men and women in different European countries. **Methods:** A database specifically designed to compare nutrient intakes *versus* NRV was developed, accommodating both data from food consumption surveys and existing NRV, like Lower Reference Nutrient Intake (LRNI), Estimated Average Requirement (EAR), Recommended Nutrient Intake (RNI) and Tolerable Upper Level (TUL). The two types of datasets in one database allow quick comparisons of average micronutrient intake with reference values of interest. **Results:** The adequacy of the model was tested in a proof of principle comparison with the original data of the food survey data (NDNS 2018-2012) from the UK. Initial comparisons of the average intake of several micronutrients in several age-groups in France with the RNI, EAR LRNI and TUL demonstrate that for some micronutrients, like zinc and iron, a substantial part of female individuals is not reaching the RNI, EAR or even the LRNI. The model demonstrates a comparable situation for these minerals in the UK. The presentation will compare results for several other European countries. **Conclusions, discussion and/or practical application:** The database allows a rapid estimation of the percentage of a population at risk for micronutrients using food consumption survey data. Results from France and the UK demonstrate that the intake of some micronutrients is less optimal than expected and wanted.

COMPETING INTERESTS: The development of the database and the analysis of the food survey data are financially supported by Kellogg Company.

P-183: ADHERENCE TO THE MEDITERRANEAN FOOD PATTERN AND SOCIOECONOMIC FACTORS OF PORTUGUESE ADOLESCENTS – KIDMED

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Introduction: The practice of Mediterranean Food Pattern (MFP) is related to the prevention of the major non-communicable diseases such as cardiovascular disease, diabetes, obesity, metabolic syndrome and cancer. It is known that food choices during adolescence have an impact on current and future health status. Will be MFP adherence by adolescents related to socioeconomic factors? **Methods:** A two schools convenience sample of 177 portuguese adolescents (17-19yrs) in the last year of high school (school A, Lisbon Metropolitan Area; school B, Portugal centre region) were selected. KIDMED, a validated tool with 16 dichotomous questions was applied. It is punctuated with +1 or -1 according to positive or negative relationship with the MFP; the sum of values allows to assess adherence to the MFP in three levels: good (8-12), average

(4-7) and poor (0-3). **Results:** 73 males and 104 females participated in the study. Students' household was mostly often composed by four people (45.2%) - parents and siblings (50.3%). Both father and mother's (35.7% and 39.9%) had college education, followed by high school education (25.1% and 26.6%). Tertiary professional sector (commercial activities and services) was the most common either in father and mother's case (47.0% and 57.1%). Adherence to MFP was "good" at 52.0%, "average" in 41.2% and "poor" at 6.8% of the population. Adherence to MFP is associated to individuals' sex ($p < 0.05$) but wasn't associated to students' parents' education level or profession ($p > 0.05$). Adherence to MFP wasn't associated to school attendance by students ($p > 0.05$). **Conclusions, discussion and/or practical application:** Despite the small sample size, this results were similar to others Portuguese studies; however, were different from Spain and Greece results. The outcomes of several studies were KIDMED was applied pointed to the need of nutritional education programs for adolescents, since they need a healthy diet for optimal growth.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-184: ANALYSIS OF DIETARY INTAKE BY LIPID ENERGY RATIO STRATIFICATION, FOCUS ON YOUNG JAPANESE ADULT WOMEN

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Introduction: The purpose of this study was to identify the food intake behavior of young adult women which leads to excess of fat energy and to present measures for dietary improvement. **Methods:** Self-administered surveys on Body Mass Index, dietary intake status, and lifestyle was distributed to 147 young adult females aged 19.5 ± 1.2 yrs. The energy intake was calculated from the dietary intake and the respondents were divided into 5 groups according to the lipid energy ratio in the total energy: $\leq 20\%$, 20-30%, 30-40%, 40-50%, and $\geq 50\%$. In each group, the amount of nutrient intake and amount of intake by the food groups were analyzed. **Results:** Among the young adult females, 100 (68.0% of the total) had a high-fat diet; with a higher lipid energy ratio, the total energy intake decreased ($p < 0.001$). The group with a lipid energy ratio of $\geq 50\%$ was found to have the highest total energy intake of $1,261 \pm 427$ kcal and a dietary pattern with extremely low grain intake and higher meat, egg, oil, and fat intake. In addition, the young adult female group with a lipid energy ratio of 40-50% consumed more snacks, although the difference was not significant compared with the other groups. **Discussion:** The analysis of the quantity of food intake revealed that subjects ingested little grain, consumed a lot of meat and eggs, and had also little vegetable intakes. Based on the above findings, we thought that many young adult women may be reducing their food intake to maintain their weight. The analysis by stratification of lipid energy ratio attempted in this study allowed the identification of issues related to dietary intake in young adults. Therefore, the lipid energy ratio may serve as a standard for obtaining adequate information on individuals in each group.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-185: ASSOCIATION BETWEEN DIETARY NUTRIENT INTAKE AND COLORECTAL CANCER IN THE BASQUE COUNTRY: A CASE-CONTROL STUDY

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Introduction: Evidence supports that colorectal cancer (CRC) has a multifactorial etiology including nutritional factors. We studied the associations between dietary nutrient intake and CRC in an adult population of the Basque Country. **Methods:** A cross sectional study was conducted with a random sample of 291 cases and 291 controls, aged 50 to 69 years (67.2% males). Participants were selected from the CRC screening program (Osakidetza) and were stratified by age and gender. Dietary intake was evaluated utilizing a validated frequency questionnaire and nutrient intake with DIAL 2.12. The nutritional adequacy was analyzed with the estimated average requirements (EARs). Data regarding diagnosis and treatment of the cases, and in general socioeconomic and demographic factors were also taken. SPSS 22.0 and STATA 13. **Results:** Energy and macronutrient intakes have not shown differences between cases and controls ($P > 0.05$). In both diet was characterized by a low carbohydrate intake (36.5(5.3) % of total energy intake (TEI)) and dietary fiber (20.0(6.0) g/day) and a high fat consumption (42.3(4.9) % of TEI). Cholesterol intake was higher in cases than controls (273.4(98.1) vs 255.2(93.3) mg/day, $P < 0.05$). Regarding micronutrient intake expressed as energy density, the results for thiamine, riboflavin, pyridoxine, magnesium, calcium, iron and folate were lower in cases than in controls ($P < 0.05$). And the adequacy for these micronutrients (% of EARs) was higher in controls than in cases, except for iron, in which no differences were found. **Conclusions, discussion and/or practical application:** Although energy and macronutrient intake did not differ between cases and controls, cholesterol intake and the consumption of some micronutrients were less appropriate in cases than in controls. It appears interesting apply nutrition education strategies to patients diagnosed with CCR to improve their diet and nutritional status and their health.

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P-186: ASSOCIATION BETWEEN FOOD PREFERENCES AND CONSUMPTION IN EUROPEAN PRESCHOOLERS: TOYBOX-STUDY

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Introduction: Dietary habits are adopted early in life and are the cornerstone to develop a healthy lifestyle in adulthood. Objective: To assess the relationship between food preferences and food consumption in preschoolers from six European countries.

Material and Methods: A sample of 6435 children (4.75 ± 0.4 yrs, 51.9% boys) from Belgium, Bulgaria, Germany, Greece, Poland, and Spain had at least 75% of a food frequency questionnaire and the food preferences questions completed and weight and height measured. Dietary data was obtained from the parents/caregivers who reported their children's food consumption and food preferences. The selected food groups were fruits and vegetables, dairy products and cereals. Food consumption was measured as serving per day and food preferences were reported via Likert-type questions for each one of the selected foods, which were then recoded in two categories: "My child likes" including the answers "Agree" and "Strongly agree", and "My child does not like" including the statements "Strongly disagree"; "Disagree" and "Neither agree nor disagree". One-way analysis of covariance was performed to assess the relationships between preference and consumption of each food, controlling for potential confounders (age and body mass index). **Results:** Significant associations between children's food preferences and the foods actually consumed by the children were observed ($p < 0.001$). In all food groups (fruits and vegetables, dairy products and cereals), the children whose parents reported the statement "My child likes" showed the highest consumption (boys (servings/day): fruits and vegetables 5.10 ± 0.05 ; dairy products 3.58 ± 0.43 and cereals 3.19 ± 0.35 ; girls (servings/day): fruits and vegetables 5.10 ± 0.05 ; dairy products 3.48 ± 0.04 and cereals 2.98 ± 0.37 ; all $p < 0.001$). **Conclusion:** A positive association between preferences and consumption for fruits and vegetables, dairy products and cereals was observed in preschool children across six European countries. Health promotion strategies should aim creating a supportive school and home environment to promote children's consumption of healthy foods.

COMPETING interests: The authors of this document can confirm there is no conflict of interests.

P-188: CARDIOVASCULAR RISK FACTORS ACCORDING TO EATING SPEED AMONG MEXICAN CHILDREN

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Introduction: Childhood obesity and overweight are important risk factors for cardiovascular diseases, as well as dyslipidemias. In our population there are none studies focused on the relation between speed of eating and abdominal obesity and the presence of cardiovascular risk factors among children. The aim of this study was to screen and compare waist circumference (WC), Body Mass Index (BMI) and lipid profile among children according to speed of eating. **Methods:** Study subjects were school-aged children of a public elementary school in Mexico City. Weight, height and WC were measured. BMI was determined according to international guidelines. Blood samples were taken and complete lipid profiles were determined. Information about eating speed was obtained using a self-administrated questionnaire. Children were classified according eating speed into three groups; fast eating, normal eating and slow eating. Statistical analyses included ANOVA tests and were performed using SPSS Version 22.0. **Results:** 90 children were included; of them 52.2% were females. 17.7% of the sample reported fast eating. Children who reported fast eating had a higher BMI (20.39 ± 4.34 vs. 17.06 ± 3.20 ; $p = 0.169$), larger WC (70.73 ± 12.28 vs. 61.73 ± 9.46 ; $p = 0.09$), higher levels of triglycerides (96.37 ± 77.97 vs. 84.25 ± 43.75 ; $p = 0.77$), higher total cholesterol (139.93 ± 34.32 vs. 127.56 ± 35.33 ; $p = 0.59$) and lower HDL (36.12 ± 13.85 vs. 39.81 ± 20.33 ; $p = 0.82$) compared with slow eating, respectively. **Conclusions, discussion and/or practical application:** Our analysis indicated that despite no statistical significance were found there was a positive trend between fast eating speed and cardiovascular anthropometric parameters, including a higher WC, BMI and for higher lipid levels, suggesting that speed eating could increase cardiovascular risk factors.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-189: DIETARY AND OTHER LIFESTYLE HABITS ASSOCIATED WITH WEIGHT LOSS MAINTENANCE: THE MEDWEIGHT STUDY RESULTS

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Introduction: Successful long term weight loss maintenance is a challenging part in obesity treatment. Regular physical activity, breakfast consumption, and frequent weighing are linked with weight loss maintenance but evidence on other lifestyle habits is scarce. Purpose of this work is to explore dietary and other lifestyle habits linked to successful weight loss maintenance. **Methods:** The sample of the MedWeight study consisted of 528 adult volunteers, aged 33±10yrs, 61% women, who had intentionally lost weight (≥10% of initial body weight) and were either maintaining it for ≥1yr (maintainers, N=362) or had regained weight (regainers, N=166). Participants were asked to fill 8 questionnaires (including demographics, weight history, physical activity, sleep patterns, lifestyle habits) and reported on two 24h telephone dietary recalls. **Results:** Maintainers weighed more frequently than regainers (p<0.001) and stated that weighing has positive effect on their weight, while regainers negative or no effect (p<0.001). Regainers reported to have more meals away from home than maintainers (p=0.008), especially women (p=0.001), and shared more meals with company (p=0.054), especially men (p=0.037). Moreover, men regainers skipped breakfast more often than maintainers (p=0.020). Maintainers were mainly smokers or never smokers, while regainers had mostly quit smoking (p=0.007), which applied in particular to women (p=0.002). Maintainers were engaged more often in physical activities than regainers (p<0.001) and reported more minutes of both walking (p=0.001) and vigorous activities (p=0.002) per week. Maintainers slept more at night than regainers (p=0.005) and total sleep quality for maintainers was higher than regainers (p<0.001). **Conclusions, discussion and/or practical application:** As MedWeight Study is on observational study, we cannot conclude on causative mechanisms; however, our data indicate that frequent weighing, consumption of meals at home, eating alone, breakfast consumption, regular physical activity and adequate sleeping are lifestyle behaviors associated with successful weight loss maintenance while quit smoking is associated with regaining.

COMPETING INTERESTS: The Study was funded by Coca-Cola foundation.

P-190: DIETARY INTAKE OF THE HONG KONG MIDDLE-AGED AND OLDER CHINESE

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Introduction: Though the health indices of Hong Kong rank among the best in the world, we observed an increasing burden from non-communicable diseases (NCDs), which was quite similar to many developed economies. As the middle-aged and older adults are susceptible to different nutrition-related degenerative conditions, it would be crucial to obtain their dietary data to formulate the strategic plan tackling NCDs in the local community. **Methods:** 72 healthy local Chinese aged 40 to 75yr-old were interviewed from December 2014 to January 2015 and their dietary intakes data were collected by 2 non-consecutive 24-hour dietary recall and short Food Frequency Questionnaire (FFQ). A Dietary Practice Questionnaire was also used to capture their routine dietary practices. Selected anthropometric parameters were also measured during the first interview. **Results:** The mean BMI of the respondent is 23.9kg/m² with 15.3% and 37.5% of them were classified as overweight and obesity respectively according to the local criteria. The percentage body fat of male and female respondents were 23% and 32%, respectively. Their mean calcium intake from FFQ was 767mg/day, with 61.1% of the respondents failed to meet its Recommended Nutrient Intake (RNI) of Chinese Dietary Reference Intakes (DRIs). Though the mean EPA+DHA intake (478mg) from FFQ was higher than the Acceptable Macronutrient Distribution Range (AMDR) of China and the recommendation of EFSA (0.25g/day), but 41.6% of them had intake below the recommended level. As reflected in the 24-hour dietary recall, all of the respondents failed to meet the Chinese RNI of vitamin D, and suboptimal intakes of folate, vitamin B1, B6, B12 were common. **Conclusions, discussion and/or practical application:** The suboptimal intake of some micronutrients and omega-3 fatty acids was common in local middle-aged and older adults and targeted community nutrition programme and policy should be formulated to prevent the NCD and functional decline in the old-age population.

COMPETING INTERESTS: We received financial support from FrieslandCampina Consumer Products International B.V on this project.

P-191: DOES ECONOMIC CRISIS INCREASE PROBABILITY OF OBESITY?**Aurora Isabel Norte Navarro^{1,*}, Isabel Sospedra López², José Miguel Martínez Sanz¹, Rocío Ortiz Mocada³**

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Introduction: The European economic crisis began in 2007. Spain was one of the most affected countries. The quality of the diet can be affected by economic situation. Limited social and economic resources led to disparities in access to healthy foods. Patterns of food production and consumption are associated with a number of significant public health concerns. Many food-related diseases and economic conditions are interlinked. The objective of this work is to evaluate if the risk of obesity increase with the worsening of socio-economic conditions produced during the economic crisis in Spanish population.

Methods: Comparative analysis of two iterations of the Spanish National Health Survey (2006 and 2011). Association between obesity and three socio-economic variables modified during the crisis period was studied. The education level, employment situation and social class were the independent variables. Obesity was the dependent variable. **Results:** There were significant associations between obesity and the three socio-economic situations. The odds ratios for unskilled works increase in 2011 (OR:2.22) in comparison with 2006 (OR:1.54). The other variables analyzed showed similar results, being all of them statistically significant. **Conclusions, discussion and/or practical application:** Population with unskilled works, low education level and without regular incomes have a major probability of obesity. Those values increase significantly during economic crisis period. An economic recession leads to a potential health consequences. The effects on health of economic crisis affect mainly to most vulnerable groups. Loss of jobs, reduced income linked to high food prices, is a combination that threatens health.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-193: KNOWLEDGE ABOUT HYDRATION RECOMMENDATIONS AND SCOPE OF SUCH IN A UNIVERSITY COMMUNITY**Arely Vergara Castañeda^{1,*}, Virginia Sánchez Delgado¹, Victor Manuel Camacho Morales¹, Alonso Fabian Calvario Nieto¹, Juana Guadalupe Díaz Rodríguez¹**

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Introduction: Proper hydration is important for maintaining homeostasis in all physiological processes and avoids some diseases. Recommendations for Mexican population are estimated between 2.5 and 4L, depending on the age and gender. Most of people considered that the general recommendation is 2L/day. This study was aimed to assess the knowledge scope of hydration recommendations among a University community. **Methods:** A cross sectional study was performed using an electronic survey, which included items as "What is the recommended daily water intake" and "How much plain water do you consume daily". Statistical analyses included X2 test and were performed using SPSS Version 22.0. **Results:** 227 subjects were included (59.5% females). 11.9% suggested that the daily intake was 1L or less, 29.1% mentioned the daily recommendations was between 1.5-2L/d, and only 11% answered that they need to drink more than 2L/day, meanwhile 4% reported not knowing the water intake recommendation. Regarding gender differences were observed, females reported higher recommendations than males (X²=14.972; p=0.036). According to the informed water consumption 56.8% drink 1L or less, while 25.1% mentioned they drink 1.5-2 L/d and only 7.5% consume more than 2L/d. When comparing the agreement between the knowledge and the reported daily consumption, those who reported lower recommendations drink more water than the informed and only 25.1% agreed that they need and consume 1.5-2L/d and 7.8% in the 2L/d. **Conclusion:** There is a low awareness of the real recommendation for daily water intake. 96% reported lower figures than the real recommendation. Also, it was observed that even they reported higher suggestions the reported consume of water were different.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-194: LIVING WELL MULTICULTURAL – DOES IT CHANGE BEHAVIOURS IN MIGRANTS TO REDUCE THE RISK OF CHRONIC DISEASE?

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Introduction: People from migrant and refugee backgrounds in Australia have an identified higher risk of chronic disease compared to the Australia-born population. These risks are associated with behaviours related to diet, physical activity, smoking and alcohol consumption. There are few programs that target chronic disease prevention and management in these diverse communities. The Living Well Multicultural – Lifestyle Modification Program (LWM) is a tailored eight week program and is delivered by trained Multicultural Health Workers (MHW). **Methods:** The evaluation of the LWM follows a combination of the program logic model and REAIM. A pre and post questionnaire was developed based on a previous pilot, using questions that have been routinely used within Australian populations and adapted to include examples for the targeted migrant/refugee groups. The questionnaires were verbally delivered in language by the MHWs. Heights, weights, waist circumference and blood pressure were measured at weeks one and eight, and six weeks post program. **Results:** Programs commenced in April 2015 and as of November 2015, 13 (eight week) programs have been completed with 154 participants from Arabic-speaking, Pasifika, Sri-Lankan, Sudanese, and Vietnamese communities. Attrition was 10.4% with 138 participants completing the program, and the average “dose” was seven sessions. Average BMI at baseline was 28.5 (SD7.1) kg/m² and at completion was 28.0kg/m² (SD7.0) (p<0.05), the Pasifika participants were the heaviest. There was an increase in fruit (p<0.001) and vegetables (p<0.001) and a decrease in takeaway foods (p<0.001) and sugar sweetened beverages (p<0.01). Physical activity also increased but this was not statistically significant. **Conclusion:** A culturally tailored program delivered over eight weeks appears to have good attendance and compliance and be successful in changing dietary and physical activity behaviours. These changed behaviours lead to changes in factors such as weight, which contribute to the risk for developing chronic disease.

CONFLICT OF INTERESTS: Funding Queensland Health.

P-195: NO DIFFERENCES IN BLOOD LIPID PROFILE DUE TO SKIPPING BREAKFAST AMONG A MEXICAN CHILDREN POPULATION

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Introduction: It is estimate that children consume nearly 20% of their daily energetic expenditure at breakfast and if this is not consumed it would be difficult to recover during the day. It has been suggested that those who skip breakfast have raised daily intakes of fat, cholesterol (energy) and a lower consumption of fiber, vitamins and minerals. It’s important to consider that breakfast cannot be taken for granted, it is the most important meal of the day. **Objective:** To evaluate the differences in the lipid profile according to the consumption of breakfast in a pediatric population in Mexico City. **Methods:** A cross sectional study including children was conducted in Mexico City; anthropometric measurements (weight, height and waist circumference) and blood samples were taken. From those samples the values of total cholesterol, HDL-C (High density lipoproteins), LDL-C (Low density lipoproteins) and triglycerides were determined. Also, children were asked how many times they ate breakfast and were classified into two groups: “Regular Breakfast Eater (RBE)” (>3d/week) and “Seldom Breakfast Eater (SBE)” (<3d/week). Statistical analysis were performed using “SPSS IBM 22.0”. **Results:** 106 children were assessed; the average age was 10.37±1.69yrs-old, 46.2% of them were males. The number of subjects classified as RBE and SBE were 51.9% and 48.1% respectively. Despite there was not a significant difference between both groups (p<0.05), the averages of lipids were lightly higher among the RBE compared to the SBE group, for triglycerides (89.6±55.2 vs. 83.9±33.0mg/dL), LDL-C (92.2±36.76 vs. 84.9±26.01mg/dL), HDL-C (41.01±17.92 vs. 36.1±15.52mg/dL) and total cholesterol (130.4±37.84 vs. 125.5±28.67mg/dL), respectively. **Conclusion:** Even though there are slight differences in the lipid profile those are not significant and do not establish a clean pattern, suggesting that other factors can contribute. We suggest continuing this research following a bigger population considering a prospective design.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-196: OBESITY-RELATED KNOWLEDGE LEVEL ACCORDING TO BODY SIZE PERCEPTION AND NUTRITIONAL STATUS IN ADULTS

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Introduction: Obesity is a chronic, complex and multifactorial disorder that stems from a genetic and environmental interaction, being most important environmental or behavioral. Perceived Body Image (PBI) would be relevant for clinical evaluation of those individuals at risk of developing obesity and to identify practices derived from knowledge. **Objective:** To compare obesity-related knowledge level according to body size perception and nutritional status in a University Community. **Methods:** In a University Community in Mexico, Body Mass Index (BMI) was determined. Also, perceived body image (PBI) was measured using the Stunkard scale and obesity knowledge was assessed using a self-administrated questionnaire including true or false items. Answers were evaluated as the number of correct answer and with a score; 0-3 presented low knowledge, 4-7 intermediate knowledge and 8-10 high knowledge. Subjects were classified according to BMI and PBI. Analyses were performed with SPSS 21.0. Student T-test or X² were performed. ANOVA test was performed to compare the scores obtained on the basis of nutritional status and image perception. **Results:** 211 participants (58.9% women) were assessed. Mean age was 25.4±11.4yrs. 30.3% were either overweight/obese. Regarding the PBI, 54.4% of the population considered having an appropriate weight, while 36.7% considered themselves as overweight or obese. Mean correct response was 6.13±1.5, 72.6% reported an intermediate knowledge, while the 5.7 and 18.9% reported low and high knowledge, respectively. A trend to get higher scores in those people who preferred to be thinner by comparison with those ones who expressed that were satisfied with their weight (6.21±1.49 vs. 5.9±1.5; p=0.502). Also it was observed a tendency to have higher scores in those with obesity and overweight compared with those of normal weight (6.85±1.07; 6.30±1.51; 6.0±1.52, respectively; p=0.229). **Conclusion:** Among a University Community, obesity-related knowledge level is the same regardless PBI and nutritional status.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-197: SA COMMUNITY FOODIES; THE EXPERIENCES OF VOLUNTEERS AND PARTICIPANTS BEING TRAINED AND TRAINING IN THEIR LOCAL COMMUNITY

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Introduction: With an increase in nutrition-related disease and reductions in funding for nutrition programs there is a strong need for peer-led and sustainable nutrition programs. **Objectives and target population:** SA Community Foodies is a statewide nutrition program that aims to build the capacity of individuals and communities to make healthy food choices through training and supporting volunteer community members to act as agents for change. The program targets disadvantaged adults in South Australia (e.g. low income earners). **Previous theories and investigations:** The program is underpinned by primary health care and community development frameworks that aims to holistically empower volunteers and participants. **Intervention:** The volunteers ('Foodies') receive 35 hours of training in nutrition, food safety, group work and leadership from a qualified Dietitian. Once training is complete, Foodies are themselves equipped to deliver healthy eating education sessions to participants in their local community. Foodies work alongside disadvantaged adults, delivering programs in meal preparation, menu planning, label reading and cultivating edible gardens in community-based settings. **Evaluation:** Over 12 months, 4471 participants were involved in activities and programs. A subset of these participants were surveyed and reported increased knowledge and skills around healthy eating, as well as improved social connectedness. **Results:** Currently, 140 people volunteer for SA Community Foodies. Preliminary findings show that volunteers reported increased nutrition knowledge, cooking skills, personal satisfaction, confidence, teaching skills and social engagement as a result of being trained and being active as a Foodie. Additionally, volunteers reported positive behavioral changes and improved physiological outcomes. **Conclusion:** Using a peer-led approach is a strategy which not only increases the physical reach of the program, but increases community capacity. SA Community Foodies aims to improve the long-term health outcomes of communities through growing the program and by establishing key relationships that ensure the model is sustainable into the future.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-198: THE EFFECT OF “FOOD AND NUTRITION EDUCATION (SHOKUIKU)” IN JAPAN – FROM THE DIETARY SITUATION AND AWARENESS IN UNIVERSITY STUDENTS

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Introduction: In Japan, the Food and Nutrition Education (Shokuiku) Basic Law was enacted and promotion basic plan was formulated nearly a decade ago. However, the percentage of skipping breakfast is still high and selection of desirable food is low in university students. The purpose of this study is to clarify the effects of “Shokuiku” by the analysis of dietary situation and food intakes in the university students. **Methods:** In May 2014, a self-administered questionnaire survey of 30 items on health and lifestyle including food intakes was carried out and recovered in 379 university students (139 males and 240 females). **Results:** Body weight in about 80% of the subjects were appropriate (BMI between 18.5 and 25), and 12.2% of males was overweight, 17.1 percent of females were underweight. About 80% of self-rated health was “healthy or almost healthy” mentally and physically. The percentage of breakfast skipping was 40.3% in males and 25.0% in females, which was not significantly different from those in previous studies. Also the degree of awareness and interest of “Shokuiku” was not different from previous studies. Breakfast skipping was not associated with self-rated health, but associated with late dinner and bedtime ($p < 0.001$), low vegetable intakes ($p < 0.01$), and eating habits of poor balance ($p < 0.01$). In the multiple logistic regression model, good balanced diet was associated with breakfast intake [odds ratio (OR) 3.4; 95% confidence interval (CI) 1.71-6.70] ($p < 0.001$) and vegetable intakes [OR 1.6; 95% CI 1.31-1.89] ($p < 0.001$), but not associated with awareness and interest of “Shokuiku”. **Discussion and conclusion:** The dietary situation in university students has not been improved and it seems that “Shokuiku” in each life stage has not been continuously advanced over the past decade. Japanese-style good balanced diet in university students was strongly associated with not skipping breakfast.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-199: THE MEANING OF “EATING WELL” FOR CHILDCARE PROVIDERS AND PARENTS OF 2-5-YEAR OLD CHILDREN IN CHILDCARE SERVICES

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Introduction: Preschool is an important time for children to acquire healthy eating habits. Several stakeholders, especially parents, foodservice managers and educators in childcare services, influence preschoolers with their knowledge, practices and perceptions with regard to eating and nutrition. But what does eating well mean to these stakeholders? **Methods:** A qualitative study was used to explore the meaning given to the expression “eating well.” An open-ended question was integrated into three self-administered questionnaires taken from a broader research project on dietary environment and practices within childcare services. The question asked participants to finish the sentence, “For me, ‘eating well’ is...”. The first author developed a coding grid, which was then approved by the second author. An inductive approach was applied and 34 themes were used to classify the data. **Results:** A total of 113 foodservice managers, 302 educators and 709 parents of 2-5yr-old children in childcare services in Quebec, Canada answered the question. Qualitative data revealed the recurrence of several themes: variety, balance, moderation, vegetables and fruits, as well as pleasure, health, Canada’s Food Guide, organoleptic qualities, coercive practices and commensality. Findings indicate that variety, health and balance are perceptions common to all three stakeholders categories, while Canada’s Food Guide, pleasure, healthy eating and organoleptic qualities are specific to certain stakeholders. **Conclusions, discussion and/or practical application:** This research helps shed light on how “eating well” is understood by stakeholders who play a determining role in the development of 2-5yr-old children. It also shows interventions that could be undertaken to ensure that childcare service environments encourage the adoption of healthy eating habits and that social norms on healthy eating evolve properly.

COMPETING INTERESTS: The authors of this document confirm there are no conflicts of interest in this research.

P-200: UNHEALTHY EATING ASSOCIATED WITH PREMENSTRUAL SYNDROME IN ADOLESCENTS

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Introduction: Premenstrual syndrome (PMS) is a worldwide problem affecting a large number of women, and directly reduces life quality. The components of diet such as calcium, omega-3 fatty acids, sodium or B group vitamin intakes were associated with the symptoms of PMS. However, the effect of whole diet including both nutrients and food groups on symptoms of PMS was not examined. This study aimed to examine the relationship between diet quality and premenstrual syndrome symptoms.

Methods: The study was conducted on 272 adolescents (155 with and 117 without PMS), aged 13-18yrs, in Ankara. PMS was diagnosed with Premenstrual Syndrome Scale (PMSS)-Gencdogan 2006 in consecutive 2-months. General characteristics of adolescents were recorded and anthropometrical measurements were taken by research dietitian. Eating attitude was evaluated using Eating Attitudes Test-26 (EAT-26) and Three-Factor Eating Questionnaire-R18(TFEQ-R18); dietary intake was assessed using 24-h-dietary recall. Healthy Eating Index-2010 (HEI-2010) scores were calculated, and classified into three groups: good (over 80-points), moderate (between 51-80points), and poor (50 and under points). **Results:** PMS prevalence was found 56.9% in study population. The mean HEI-2010 score was 47.5 ± 23.95 in PMS group, and 53.5 ± 20.98 in control group ($p=0.034$). Among PMSS subscales, depressive feeling ($p=0.016$), anxiety ($p=0.009$) and changes in sleeping ($p=0.000$) were higher in PMS group and associated with HEI-2010 scores; whereas fatigue, irritability, depressive thoughts, pain, changes in appetite and swelling weren't influenced by diet quality. Furthermore, HEI-2010 score was associated with neither anthropometrical measurements nor eating attitudes scores of adolescents. **Conclusions, discussion and/or practical application:** Improving diet quality in adolescents may prevent the occurrence of PMS or alleviate the severity of the PMS symptoms.

COMPETING INTERESTS: The authors declare that there is no conflict of interests.

P-201: VALIDATION SOFTWARE ANTHROPOMETRIC AND BLOOD PRESSURE IN CHILDREN 6-11 YEARS OLD

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Introduction: Malnutrition and Hypertension (HTA) are most common diseases in children and adolescents. However, sometimes it is not detected early. In order to facilitate the assessment of nutritional status and hypertension, the technical team of the Provincial School Health Plan, developed a software tool called NutriTe. The study aims to validate the software NutriTe® schoolchildren of 6-11yrs. **Methods:** The association between anthropometric NutriTe® and Anthro (WHO) was evaluated by ANOVA. In the absence of normality and/or homoscedasticity, it was used the nonparametric Kruskal-Wallis test to compare the medians of the data. Chi-square test was used for the association of TAS and TAD between Nutrite and table TA. Kappa index (k) was estimated to assess the percentage of agreement between the two instruments. **Results:** We studied 1,132 schooled kids. The BMI/age for female and male gender showed no significant difference ($p=0.952$ and $p=0.951$) between the two tools as the height/age ($p=0.9884$ and $p=0.9996$ respectively). In addition, the TAS for girls was $X^2=1152.55$; $p<0.00001$; $k=0.806$ and for children $X^2=536.22$; $p<0.00001$; $k=0.888$. Regarding TAD was $X^2=652.01$; $p<0.00001$; $k=0.878$ and $X^2=X^2=1126.91$; $p<0.00001$; $k=0.829$ for girls and boys respectively. **Conclusions, discussion and/or practical application:** The concordance size/age Nutrilite® and Anthro® was 99.97% for girls and 99.94% for children. In the case of BMI/age, the degree of agreement was 99.88% and 99.98% in girls and boys, respectively. The concordance of percentiles TAS was 80.6% in girls and 88.8% in children. Regarding the TAD expressed a concordance of 87.8% and 82.9% for girls and boys, respectively. The fact of not find statistically significant differences, allow validation of anthropometric NutriTe® software.

COMPETING INTERESTS: The authors declare that there is no conflict of interests.

P-202: EFFECTS OF RICE OR BREAD BASED DIETARY PATTERNS IN BREAKFAST ON BODY MASS INDEX IN JAPANESE ELDERLY

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Introduction: There has not been reported about the direct relationship between actual dietary contents, (dietary patterns) and the healthy longevity so far. The aim of this study was to investigate the cause of the healthy longevity in terms of dietary patterns in people dwelling in the region where it is said as a longevity prefecture in Japan. This report was examined to clarify the association of dietary patterns with body mass index (BMI) and age to keep the ideal body shape to prevent the metabolic syndrome. **Methods:** We used intake food and frequency data obtained by self-recording food diary records (4 days) of women's data (n=244) as part of the Saku cohort study (n=4454). Dietary patterns and subjects were classified by factor analysis and cluster analysis for each breakfast, lunch and dinner. The association of dietary patterns with BMI and age were analyzed. **Results:** The subjects with bread pattern for breakfast showed lower BMI (median [min-max]=20.6[19.1-28.2]) than that of the subjects with rice pattern or noodle pattern (22.9[16.0-31.4], 23.0[17.0-27.3]), respectively. The bread intake were associated with the intakes of seafood (β =-.389), meat (.194), potatoes (-.180), and dairy products (.156) in breakfast and also associated with intake of dairy products, seafood, fruit and vegetable significantly in lunch, and with intake of dairy products and seaweed in dinner. **Conclusion:** The difference of staple food may implicate the breakfast dietary pattern. The monotonous dietary pattern with bread as staple food was one of causes of the lower BMI. The choice of staple food might be a key role to prevent the malnutrition in elderly Japanese people.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-203: AN INTERVENTION STUDY ON THE AWARENESS OF SALT INTAKE REDUCTION AMONG COMPANY WORKERS

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Introduction: The common causes of death among Japanese people are malignant neoplasms, cardiac disorders, pneumonia, and cerebrovascular disorders, which are attributed to an increase in the prevalence of lifestyle-related diseases, such as hypertension, hyperlipidemia, and diabetes. In order to reduce the prevalence of hypertension, it is important for people to take measures to reduce salt intake from their earlier years. Since a person's preference for salty food is based on habit, it is difficult to change a long-term habit and reduce salt intake in a short period of time. With this background, an intervention study involving company employees, in which the salt content in soup dishes served at the company cafeteria was reduced in stages, was conducted based on an original intervention program to examine changes in their awareness of salt reduction. **Methods:** The subjects were 154 males and females aged between 20 and 60 years old working in three special feeding centers in Niigata Prefecture. One year after intervention designed to reduce the salt content in soup dishes served by the centers with the cooperation of the cooks, an awareness survey was conducted. The subjects received information from notes placed on the tables once every two weeks, which was based on the behavior change theory. **Results:** There was a mean 0.11% decrease in the salt content of miso soup ($p < 0.001$). There was a mean 0.49% decrease in the salt content of noodle dishes ($p < 0.05$). Following the intervention, 87% of the subjects preferred both miso soup and broth used for noodle dishes containing less salt. **Conclusions:** The results suggest that the gradual introduction of low-sodium food may motivate people to reduce salt intake with no difficulty.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-205: MOMS AND DADS: HOW THEY DIFFER IN THEIR ROLES AS FAMILY FOOD GATEKEEPERS

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Introduction: As family food gatekeepers, parents create the structure/lifestyle environment within the home, and thus, strongly influence food behaviors of children and are key players in obesity prevention. **Methods:** The primary food gatekeeper in U.S. families with preschool children completed an online dietary intake and food-related practices survey as part of the HomeStyles program. **Results:** Participants were 20-46yrs and mostly white (58%). Comparison of mothers (n=646) to fathers (n=55) using T-tests revealed that fathers consumed significantly (P=0.05) more fruits/vegetables, higher percent of calories from total and saturated fat, and more sugar-sweetened beverages. There were no sex differences in the total number of meals eaten together as a family, however in households where fathers were the primary food gatekeeper, significantly more fast food was eaten and families ate meals more often in front of the television. Using 5-point rating scales, mothers who were primary food gatekeepers were significantly more likely to: value family meals (4.41+0.68SD vs. 4.00+0.81SD), devote time and energy to family meals (4.09+0.96SD vs. 3.80+0.95SD), have positive family meal environments (4.04+0.88SD vs. 3.72+1.07SD), feel confident in abilities to prepare meals (3.97+0.92SD vs. 3.68+0.92SD), and recognize benefits of healthy eating (4.57+0.57SD vs. 4.34+0.52SD). With regard to child-feeding practices, results from 5-point rating scales indicate fathers were significantly more likely to pressure (2.73+1.15SD vs. 2.30+0.98SD) and bribe (2.77+0.93SD vs. 2.36+0.77SD) kids to eat, overtly control child food choices (3.16+0.80SD vs. 2.91+0.73SD), and give children more access to low nutrient-density foods (2.98+1.42SD vs. 2.92+1.48SD). Fathers also were more likely to have sugar-sweetened beverages (1.61+1.19SD vs 0.98+1.06SD) and fatty/salty snacks (1.62+1.14SD vs 1.16+1.04SD) servings available daily in the home. Fathers who were family food gatekeepers reported significantly less family cohesion (3.81+0.68SD vs. 4.02+0.76SD), but less stress (3.03+1.03SD vs. 3.40+0.76SD). **Conclusions, discussion and/or practical application:** Study findings indicate important nutrition education opportunities that would benefit family food gatekeepers, especially fathers.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-206: "THE SHOP IS MORE THAN A SHOP": LISTENING TO THE 'LOCAL VOICE' TO ILLUSTRATE THE CONNECTION OF HEALTH AND PLACE, WHEN CONSIDERING FOOD ACCESS IN A RURAL ISLAND COMMUNITY

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Introduction: In recent years the UK health care, social care and local planning agenda have frequently incorporated a focus on the issue of food deserts, food access and food choice to deliver a range of diet, health, social, regeneration and planning policy goals (Cummins and Macintyre 2002). Retail food access is an important factor in both individual diets and in the provision of a sustainable food supply. This is particularly evident when considering the health of rural community residents. This paper presents a case study of a remote and rural Scottish Island community where geographical access to food is addressed by the presence of a community owned shop which also provides a home delivery service. **Methods:** A participatory action research approach explored local resident's perceptions of the health impacts of the place where they live, including access to food. All members of the community were invited to participate. The theory of therapeutic landscapes of wellbeing was applied in a thematic analysis to the qualitative data gathered and captured through participatory mapping techniques. **Results:** Results showed that residents consider "more than food" in their perception of how their local shop has an impact on their health, illustrating how location, space and place matter to health. This highlights how the contribution of the shop to a sustainable community reaches beyond the question of food choice, food affordability, and food availability. **Conclusions, discussion and/or practical application:** In conclusion the results support that policy and intervention needs to consider physical, social, and economic elements of food access (Smith and Cummins 2012) in influencing shopping and purchasing behaviours, in the

context of the connection of health and place. Implications are for health professionals to consider geographies of health as a 'wider determinant of health' when considering a sustainable food supply and its contribution to the health of individuals living in rural communities.

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P-207: FACTORS TO UTILIZE RECIPE BOOKLET WITH A HIGH DIETARY FIBER CONTENT AMONG GENERAL POPULATION

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Introduction: Recently, the average intake of dietary fiber in Japan generally continues to be flat at about 14-15g/day, and results in underreach the amount of dietary goal. The recipe booklet with a high dietary fiber content was produced to aim the intake of dietary fiber. We investigate the factors to utilize this recipe booklet among general population. **Methods:** The recipe booklet with a high dietary fiber content was sent to all the households (about 3000 households) in Fukuoka Prefecture on March, 2010. Health survey among 5162 residents aged 30 to 79 years old was conducted on February, 2012. A total of 2259 people responded this survey. Survey items are as follows: dietary awareness (utilization of recipe booklet, interest in food education, knowledge of Japanese food guide, etc.), life-styles (smoking, drinking, exercise, and dietary habit). The subject of this study is 971 women aged 30s to 60s, because women play a key role in serving home cuisine. Logistic regression modeling was used to estimate the association between non-utilization of recipe booklet and dietary awareness and life-styles. Adjusted odds ratio (AOR) was reported with 95% CI. **Results:** Little knowledge about Japanese food guide and no interest in administrative food education projects were associated with significantly increased odds of non-utilization of booklet, (AOR=3.00 95%CI:1.09-9.73, AOR=3.07 95%CI:1.50-6.61), respectively among women aged 30s to 40s. We found the similar results among women aged 50s to 60s. As for life-styles, subjects who skipped breakfast every day had significantly increased odds ratios of non-utilization of booklet (AOR=3.09, 95%CI:1.46-7.19) compared with those who took among women aged 30s to 40s. **Conclusions, discussion and/or practical application:** This study indicated the importance of generating interest in nutrition and health as well as provision of information related to nutrition and diet to improve of dietary habits.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-208: INFLUENCE OF COMORBIDITIES ON COGNITIVE ABILITY IN ADULTS (40-60 YEARS)

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Introduction: Although age remains the major risk factor for cognitive decline, vascular risk factors such as type 2 diabetes mellitus, hypertension, and obesity may also contribute to the risk of dementia. The combination of risk factors may further increase the risk of cognitive impairment. Therefore the present study aimed at assessing the prevalence of Mild Cognitive Impairment (MCI) in obese persons with comorbidity, i.e. a clinical condition accompanied by obesity. **Methods:** 117 obese hypertensive, 118 obese diabetic and 114 apparently healthy obese adults (40-60yrs) were selected purposively from different clinics and hospitals. Cognitive ability of the participants was assessed using Mini Mental State Examination (MMSE) questionnaire. BMI and visceral fat (indicators of general obesity and abdominal obesity respectively) were measured using standard procedures. Data was analysed using Microsoft Excel ver. 2007. **Results:** Prevalence of MCI varied as per the type of obesity among the three groups of participants, i.e. MCI was the highest in hypertensive adults with general obesity (24.5% in males and 21.8% in females) followed by diabetic adults with general obesity (11.5% in males and 16.5% in females) and lowest in apparently healthy obese participants (5.2% in males and 12.5% in females). Different trend was seen with respect to abdominal obesity. Although the prevalence of MCI was highest in hypertensive adults with abdominal obesity (27% in males and 100% in females), diabetic individuals with abdominal obesity did not show cognitive impairment. However 10% of the apparently healthy but abdominally obese participants also showed MCI. **Conclusions, discussion and/or practical application:** Obesity accompanied by metabolic conditions like hypertension and type II diabetes mellitus may increase the risk

of cognitive impairment. The findings support prevention of general and abdominal obesity to protect the cognitive abilities among adults. Also the study indicates a need to study the effect of other comorbidities on cognition.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-209: THE PREGNANCY AND BREASTFEEDING FOOD PRODUCT CATEGORY IN SINGAPORE: AN EVALUATION OF NUTRITIONAL VALUES AND ITS OPPORTUNITIES

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Introduction: Health and nutrition status of the mother during pregnancy and breastfeeding periods (P&BF) plays a crucial role in children's optimal growth and development. Micronutrient deficiencies are still prevalent in Southeast Asia during these periods. Food industries have developed mainly micronutrient-fortified food products to complement the maternal diet during P&BF periods. There are some differences in the recommended daily allowance (RDA) values between these two periods, e.g. vitamin A, folic acid & protein. The aim of the study is to create an overview of the nutritional values of P&BF products and check against the P&BFs incremental RDA values of Singapore's Health Promotion Board (HPB). **Methods:** Nine commercial milk-based products for P&BF in Singapore were analysed, 7 products are marketed for P&BF combined, 1 product for pregnancy and 1 for breastfeeding. **Results:** The incremental RDA values are calculated based on the RDA for P&BF women minus RDA for women in general assuming that they continue to consume healthy diet during these periods. Ideally the P&BF products could fulfil 100% of these incremental nutrient needs. For pregnant women, based on daily serving suggestions, all of the studied products met the incremental RDA for folic acid and protein, however only 1 product met the incremental RDA for vitamin D. For breastfeeding period, only five products met the incremental RDA for vitamin A. The RDA for vitamin A is twice during breastfeeding as compared to pregnancy which could be one of the reasons to develop products specific to address different incremental RDAs during P&BF periods. **Conclusions, discussion and/or practical application:** Product compositions based on incremental RDA cannot equally well meet the requirements during pregnancy and lactation and thus should target to only one period. A more sophisticated approach is to consider actual dietary intakes of pregnant and lactating women, relate those to RDA and formulate P&BF tailored food products to fill the nutritional gap.

COMPETING INTERESTS: KCJvM was a student intern at Nutricia Research, Singapore. LM, SNM, JGB, EMvDB are full time employees of Nutricia Research.

P-211: DIETARY NON-ENZYMATIC ANTIOXIDANT CAPACITY AND THEIR FOOD SOURCES IN THE EPIC-GRANADA AND EPIC-GIPUZKOA COHORTS

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Introduction: Dietary Non-enzymatic Antioxidant Capacity (NEAC) is a global measure of the antioxidant potential of the diet to inhibit the oxidation of several biological molecules. It is important to assess the relative antioxidant capacity of the diet so as to characterize antioxidant-rich diets. **Objective:** To estimate dietary NEAC in two Spanish populations of the European Prospective Investigation into Cancer and Nutrition (EPIC) study in terms of total-radical-trapping antioxidant-parameter (TRAP), ferric-reducing-antioxidant-power (FRAP) and Trolox-equivalent-antioxidant-capacity (TEAC). **Methods:** This study included of 15,720 participants (63.5% women), aged 32-69yrs, of EPIC-Granada and Gipuzkoa, recruited during 1992-1996.

Dietary data was obtained through a validated dietary questionnaire. Dietary NEAC was estimated using published values of NEAC in food (Pellegrini *et al.*) with and without coffee's NEAC. The assessment of dietary NEAC also comprised NEAC by food groups and their contribution to the total dietary NEAC. Wilcoxon signed-rank test was applied to evaluate statistically significant differences ($p < 0.05$) of mean intakes between groups. Results: Mean dietary NEAC was: 11,174 and 3,883 $\mu\text{mol TE/d}$ for TRAP, 25,699 and 11,403 $\mu\text{mol Fe}^{2+}/\text{d}$ for FRAP, and 8,059 and 4,020 $\mu\text{mol TE/d}$ for TEAC, with and without coffee's NEAC, respectively. Dietary NEAC intake was higher in men than in women overall and by food groups ($p < 0.001$), except for fruits and non-alcoholic beverages. NEAC from alcoholic beverages was the main source of dietary NEAC in men (49.7%, 37.8% and 40.1% for TRAP, FRAP and TEAC, respectively), whereas NEAC from fruits was the major contributor to dietary NEAC in women (37.3%, 37.0% and 41.2% for TRAP, FRAP and TEAC, respectively). **Conclusions:** The diet of these Spanish EPIC cohorts has a relatively high NEAC value. These data can be used in studies about the relationship between antioxidant intake and chronic diseases.

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P-212: RELATIONSHIP BETWEEN PROFILE OF NUTRITIONAL STATUS ACCORDING TO WAIST CIRCUMFERENCE ASSOCIATED OF ADOLESCENTS AND CHILDREN FROM BOGOTÁ, COLOMBIA: THE FUPRECOL STUDY

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Background: Excessive body weight has become a major public health issue worldwide since the presence of this disturbance has alarmingly increased in the last decades¹. The global prevalence rates of overweight and obesity among children and adolescents have grown from 4,2% in 1990, to 6,7% in 2010, and this trend is expected to continue in the next years, being estimated in a 9,1% for the year 2020. This study aimed to analyze the nutritional status among Colombian children and to determine the relationship between the nutritional status according to the waist circumference (WC). **Methods:** was a cross-sectional analysis from the 2010 Colombian Demographic and Health Survey and the National Nutritional Survey that included 14,754 pregnant women between 13 and 44 years old. Sociodemographic factors included and the supplementation of iron, calcium and folic acid, were collected by structured questionnaire. Associations were established through multivariable and binary regression models. **Results:** Overall, 57.9% of the participants were girls (mean age 12.7 \pm 2.3-yrs-old). The nutritional status was low without large differences by sex and decreasing by age. WC was associated with a lower-quality diet score in the "Kreca Plus" in both sexes, shown progressively worse with advancing age. **Conclusions:** The low nutritional level is related to changes in the nutritional status WC in scholars from Bogota. These findings may encourage further interventions for the improvement of nutritional habits among scholars from Colombia.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-213: OVERWEIGHT AND ITS ASSOCIATED FACTORS IN COLOMBIAN WORKERS

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Introduction: Unhealthy lifestyle that includes inadequate diets and physical inactivity is a modifiable behavioral risk factor related to chronic noncommunicable diseases. Overweight and obesity in work settings have a high impact on entire populations' health. **Methods:** A cross-sectional analytical study of workers in Bucaramanga, Colombia (n=258) was carried out. A survey that included sociodemographic variables, personal history of cardiovascular disease, dietary habits, smoking,

and physical activity was realized. The assessment of body composition was performed. The dependent variable of this study was overweight (overweight or obesity, $BMI \geq 25 \text{ kg/m}^2$). Multivariate analysis type backward, using models of binomial regression to obtain prevalence ratios (PR) was performed. **Results:** Median age was 34 years; most participants belonged to middle socioeconomic level (65.99%). 69.41% had a monthly income of less than ± 626 USD. Median inactivity was 8 hours per day; 25.41% consumed fast food 2-7 times a week, 70.37% consumed fruits only once a day, 83.64% consumed vegetables only once a day. The prevalence of overweight or obese workers was 48.06% (95% CI: 41.82% to 54.34%). Risk factors associated with overweight and obesity were male sex (PR:1.38; 95% CI 1.09-1.74; $p=0.006$), age 35 or older (PR:1.41; 95% CI 1.08-1.84; $p=0.012$) and a monthly income higher than USD 626 (PR:1.37; 95% CI 1.07-1.76; $p=0.010$). **Conclusions, discussion and/or practical application:** The work environment should and could be a scenario that facilitates the early identification of behavioral and biological factors for cardiovascular disease. Effective interventions on an economically active population, could reduce the burden of morbidity and mortality in later years.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-214: QUINOA: STUDENT'S ACKNOWLEDGMENT AND CONSUMPTION. HEALTH SCIENCES FACULTY. SALTA, ARGENTINA

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Introduction: Quinoa is an Andean grain which most significant traits are: wide genetic variability, adaptability to adverse weather and soil conditions, higher and greater nutritional value than cereals, functional food, usable in several preparations, low production cost. FAO (Food and Agriculture Organization of the United Nations) considers quinoa one of the most promising crops for the future of humanity. It is seen as a viable alternative to solve great problems of human nutrition. **Methods:** Sample: ninety three students. Dietitian 1st year. Nutrition Faculty. National University of Salta. A questionnaire was applied, previous informed consent, to inquire about quinoa knowledge, ways of preparation and consumption. Descriptive analysis and Association Tests with Info Stat v.12 usage. **Results:** 71% of the population interviewed was female. Average age gap: 20,65-4,23yrs-old. 15% of males and 28% of females had previous knowledge of quinoa grain. 21% of students from Jujuy and 26% of students from Salta had previous knowledge of quinoa. Origin and gender were independent from product knowledge. Only 9% of the students from an average age gap of 21.5yrs-old, consume quinoa. 89% of students who consume the product are women from Salta. Half of them prepare their own food using quinoa. The other half, gets it prepared by their mothers. 78% consume quinoa monthly and 2 students stated having previous knowledge of its nutritional value. **Conclusions, discussion and/or practical application:** Quinoa didn't turn out being well known as a high nutritional value product and it is not frequently incorporated to the diet either. Knowledge of this highly recommended product for college student's nourishment, must be promoted.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-215: ANTHROPOMETRY: A TOOL FOR COMPREHENSIVE ASSESSMENT WITHIN THE NURSING

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Introduction: The anthropometry is a tool that allows us to evaluate of the individual and community for planning interventions in nutrition. The Nutrition subject in nursing career offers the anthropometry contents of contributing to the comprehensive assessment by the nurse practitioner applying the scientific method by Nursing Care Process (NCP). The aim this work was

that nursing students can recognize to anthropometry as a tool in the evaluation within the NCP and develop skills in its use. Evaluate the perception of practices in public school by nursing students. **Methods:** In the first instance were used written and audio-visual resources to teach the anthropometric technique. Secondly, in anthropometry cabinet was working in small groups, using the demonstration of the instruments, anthropometric techniques and the use of nutritional assessment charts. Finally, the nutritional assessment was performed by anthropometry in children 5-12yrs of age attending of the "Eva Perón" School, Salta, Argentina, with BMI/Age and graphic's WHO. Then, a semi-structured survey of students was conducted by consulting both practical experience in anthropometric cabinet, as well as the practical experience at school. **Results:** 197 scholars were evaluated: 75% had a normal nutritional status, 15% high weight, 4% very high weight and 6% underweight. Malnutrition children were referred to the nutritionist Health Center for follow up. Regarding the perception of the students of the subject: the practice in cabinet anthropometric: 46% rated "excellent" 39% as "very good" and 9% as "good". The practice in public school 40% rated "excellent", 36% as "very good" and 14% as "good". And 92% of students said to continue these practices. **Conclusions:** The anthropometric assessment and its application favored the comprehensive assessment of children according to the NPC. Nursing students expressed a positive view of the cabinet and practices in public school, reaffirming the continuity of these practices to improving the future professional performance.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-216: ASSOCIATION OF PERCEIVED FOOD ENVIRONMENT WITH FRUIT AND VEGETABLE CONSUMPTION IN JAPANESE WORKERS

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Introduction: Previous studies have suggested that perceptions of food environment are associated with dietary patterns in residents. The present study aims to investigate the association of perceived food environment with fruit and vegetable consumption in Japanese workers. **Methods:** From September to November 2014, a self-administered questionnaire was completed by Japanese workers at 8 workplaces in Niigata, Japan. Perceived food environment were measured using a Likert scale assessing 1) accessibility to fruit and vegetables in home, workplace cafeterias, and restaurants, and 2) accessibility to information about fruit and vegetables in home, workplace, and community. Fruit and vegetable consumption was assessed using a validated, brief-type self-administered diet history questionnaire. Analysis of covariance was used to examine the association of the perceptions of each food environment with fruit and vegetable consumption while adjusting for sex, age, body mass index, household income, family structure, and smoking habits. **Results:** Of 457 respondents, 399 participants' data were analyzed. Fruit consumption showed a significant and positive association with perceived accessibility to fruit in home, and perceived accessibility to information about fruit in home. Vegetable consumption was significantly and positively associated with perceived accessibility to fruit in home and workplace cafeterias. **Conclusions:** The findings of this study suggest that accessibility to fruit and vegetables in home, vegetables in workplace cafeterias, and information about fruit in home are positively associated with fruit and vegetable consumption in Japanese workers.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-218: THE COST OF A CARDIOPROTECTIVE DIET COMPARED TO A CONVENTIONAL UK DIET

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Introduction: It is a widely held view that healthier dietary patterns are more expensive than typical diets as commonly consumed. Studies modelling healthier diets consistently conclude they are more expensive, but intervention studies costing

actual changes in food intake are variable. We hypothesised that changing to a diet consistent with current UK dietary guidelines (cardioprotective) would be more expensive than a conventional UK diet (control). **Methods:** Four-day food diaries of participants (healthy adults, 40 to 70 years) who completed CRESSIDA (ISRCTN 92382106; a randomized controlled trial comparing a cardioprotective diet (n=80) with a control diet (n=82) for 12 weeks) were analysed. Forty participants were randomly selected from those allocated to each intervention group. Estimated dietary costs (including cost of foods provided as part of the study) at baseline and endpoint were calculated using UK internet supermarket prices. Mean daily cost of all food and beverages, and changes in cost from baseline to endpoint, were calculated. Paired T-tests compared mean baseline and endpoint costs within each group; independent sample T-tests assessed difference in cost of the intervention diets. **Results:** Baseline diet costs were similar between groups; mean (SD) daily food cost for all participants was (1.83). The intervention diets were not more expensive: at endpoint the mean (SD) cost/day of the cardioprotective diet was (2.05) vs. the control diet which was (1.53). The difference between cardioprotective and control diets was not significant. **Conclusions, discussion and/or practical application:** This study provided no evidence to support the hypothesis that a cardioprotective diet is more expensive. Despite the perception that healthier foods are less affordable, these results suggest that cost may not be a barrier when modifying habitual intake. Understanding the impact of dietary changes on actual food costs may be useful for dietitians tailoring advice for cardiovascular disease prevention for individuals and populations.

COMPETING INTERESTS: Dr Reidlinger and Dr Goff report no conflict of interest. Professor Sanders is a scientific governor of the British Nutrition Foundation and Honorary Nutritional Director of Heart UK, and reports a financial interest in respect of payment for attendance at scientific advisory panels for Heinz PLC, Global Dairy Platform, Malaysian Palm Oil Board and the Natural Hydration Council.

P-219: BREAKFAST SKIPPING HABITS IN YOUNG ADULTS AND THEIR ASSOCIATIONS WITH THEIR LIFESTYLES, DIETARY AWARENESS, AND ENVIRONMENTAL FACTORS

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Introduction: Skipping breakfast is associated with inadequate nutrient intake and negative health effects. In Japan, skipping breakfast is most common in their 20s. Although some studies have examined the factors related to breakfast skipping in university students, there have been few reports with large samples including male students. We aimed to clarify the characteristics of both male and female breakfast skippers in universities, focusing on their lifestyles, dietary awareness and environmental factors. **Methods:** Questionnaire surveys have been conducted in four universities in Japan from 2009 to 2012. Students answered a questionnaire concerning frequency of eating breakfast, lifestyle and dietary awareness. Their mothers also answered questions about frequency of eating breakfast, socioeconomic states and implementation of dietary education when the students were growing up. We analyzed 1050 pairs of students and their mothers and examined the factors related to students' breakfast skipping (≥ 1 day/week) by multiple logistic regression analysis. **Results:** Following positive relationships with breakfast skipping were observed; living alone (Odds ratio, 95% CI: 2.84, 1.94-4.18 in men; 2.99, 1.63-5.47 in women), habitual smoking (1.94, 1.03-3.66 in men), habitually went to bed after 1 am (2.24, 1.56-3.21 in men; 3.11, 1.93-5.01 in women), belief that skipping breakfast was harmless (3.64, 2.03-6.52 in men; 7.62, 2.36-24.55 in women), not looking forward to eat breakfast (2.43, 1.25-4.71 in women), mother's breakfast skipping (2.01, 1.17-3.44 in men; 2.11, 1.02-4.34 in women) and mother's part-time job (0.42, 0.24-0.73 in women). Significant relationship was not seen in dietary education during childhood. **Conclusions:** Our results suggested environmental factors such as living alone and mother's breakfast skipping and individual factors such as unhealthy lifestyle and dietary awareness were contributed to breakfast skipping in university students.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-220: SCHOOL-BASED MULTIFACETED NUTRITION AND PHYSICAL ACTIVITY INTERVENTION DECREASED OBESITY PREVALENCE IN A HIGH SCHOOL: AN INTERVENTION STUDY FROM TURKEY

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Introduction: Childhood obesity is increasing, and school based prevention efforts to be performed in children and adolescents are an intervention area of first priority in combating obesity. Thus, the aim of this study is to evaluate the efficacy of a school-based multifaceted nutrition and physical activity intervention program on prevalence of obesity. **Methods:** Planned cross-sectional onset and interventional afterwards, nutritional knowledge, nutritional behaviors and obesity status are determined in 1st (n=204) and 2nd (n=180) Grade high school students, and then multifaceted nutrition and physical activity interventions are carried out, and nutritional knowledge, nutrition behaviors and obesity status are reevaluated with the final test. Obesity status was defined using BMI percentiles, and ≥ 85 percentile was deemed overweight. Interventions included classroom sessions, a movie, posters, competitions and festivals. Data was collected via a questionnaire and the weight and height measurements were done by the researchers without shoes with light clothes on. Independent samples T-test, Chi-square test and paired samples T-test was used for analyzes via SPSS 15.0. $p < 0.05$ considered significant. **Results:** Approximately one fourth (25.7%) of the adolescents (n=349) who participated in the study are overweight. Age, appearance of mother, unawareness of weight and nutrition related behaviors all significantly affected the condition of being overweight. Nutritional knowledge has significantly improved ($p=0.004$), positive behaviors related with nutrition significantly increased ($p=0.002$), and in parallel to this, mean BMI values for all age groups ($p=0.001$) and the prevalence of overweight participants (<0.001) have significantly decreased after the interventions. **Conclusions, discussion and/or practical application:** Weight and height of students should be regularly measured every year and the condition of being overweight should be followed-up. Countries should adopt provision of healthy nutrition education in compliance with cultural characteristics in schools, ensuring access to healthy food and encouragement of physical activities as their priorities. Effectiveness of interventions being performed should be determined with advanced research.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-222: THE ROLE OF SOCIAL CAPITAL ON THE EATING HABITS AND LIFESTYLE OF A SAMPLE OF CATALAN ADOLESCENTS

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Introduction: As obesity rates continue to be a concern in most developed and developing countries, the search for news opportunities to tackle the situation is a priority in Public Health. Social capital, described as the resources that can be accessed thanks to the membership in groups or networks, has been recognized as social determinant of health. However, its effect has been little investigated in relation to obesity and its health related behaviors and in adolescent population. The aim of this research was to study the association of social capital and the lifestyle, dietary habits and weight status of a sample of Catalan adolescents from different socioeconomic contexts. **Methods:** A mixed methods approach combining both quantitative and qualitative methods was used. Specifically, this research was developed through two concurrent studies: a quantitative cross-sectional and a multiple-case studies. The former was conducted on a sample of 258 adolescents from 4 socioeconomic contexts in which a set of questionnaires gathering data on sociodemographic variables, adherence to the Mediterranean Diet, other lifestyle indicators and social capital aspects. 33 adolescents participated in the multiple-cases studies whom, besides responding the questionnaires used in the quantitative study, were interviewed in-depth to allow a better comprehension of the association of social capital and eating habits and lifestyle. **Results:** Results show that the different constructs of social capital act separately and have allowed to characterize some of the several mechanisms through which they influence lifestyle and health behaviors in adolescents. In the framework of this research, higher levels of social capital in the family

domain are the most protective factor for the health outcomes included in this investigation, and its influence on health outpace socioeconomic status as the main social predictor of health in our study. **Conclusions, discussion and/or practical application:** Further research should contribute to refine the role of social capital in different domains, especially the family context, as a social determinant of health in adolescents and in relation to other determinants of health. The constation of its influence on obesity and its related behaviours might allow to open additional ways to revert current situation.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-223: DIETARY INTAKE PER DAY COMPARISON BY AGE CATEGORY FOR MEN IN THE RURAL AREA WITH THE HIGHEST LIFE EXPECTANCY IN JAPAN

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Introduction: The area in this study has the highest life expectancy for men in the Japanese life expectancy by municipality table. Although various factors affecting all age categories affected the result, the dietary lifestyle of the elderly in this area might contribute greatly to this outcome. This study aims to reveal the dietary characteristics of the elderly in this area. Therefore, to compare dietary intake differences among age categories, we investigated dietary intake per day for different generations of men in this area. **Subjects & Methods:** We investigated 82 junior high school boys (analytical data obtained from 76 boys) living in a rural area of Nagano regarding dietary intake estimated using a brief self-administered diet history questionnaire for older Japanese children (BDHQ15y) in June, 2012. We also obtained dietary intake of 172 adult men (analytical data comprised 80 elderly aged 80 and over, 60 adults over 60 and under 80 years old and 29 adults aged under 60) using a brief self-administered diet history questionnaire for Japanese adults (BDHQ) in June/July, 2014. Nutrient or food intake per day was compared among these groups by ANOVA or Kruskal-Wallis test. Additionally, multi-regression analyses were conducted to explore a significant relationship between nutrient intake and relevant food groups. **Results:** Protein intake of the elderly was higher than other age groups ($p < 0.001$). In boys, many micronutrients and dietary fiber were significantly lower than other age groups. In the multi-regression analyses of protein, fat, carbohydrate, sodium, potassium, calcium, iron, V.C and total dietary fiber, a different relationship existed between relevant food groups. **Conclusions:** The elderly aged 80 and over in this area have kept a healthy diet. Younger generations may have to inherit dietary characteristics from their elderly neighbors.

COMPETING INTERESTS: The authors declare no conflict of interest associated with this presentation.

P-225: KNOWLEDGE, ATTITUDE, AND PERCEPTION TOWARD BREASTFEEDING SUPPORT AT WORK: A COMPARISON BETWEEN CAREER WOMEN IN THE PUBLIC AND PRIVATE SECTORS IN TRINIDAD AND TOBAGO

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Introduction: The World Health Organization recommends exclusive breastfeeding for the first 4-6 months of an infant's life. Despite this recommendation, many mothers do not breastfeed because of constraints, such as returning to work. In that light, this study evaluated the knowledge, attitudes, and perceptions towards breastfeeding support at work among women in public and private sectors in Trinidad and Tobago. **Methods:** In this cross-sectional study, 338 female employees were surveyed using a 16-item structured questionnaire. Data were analyzed using SPSS version 21. The level of significance was set at the 0.05 level. **Results:** The mean breastfeeding knowledge score for the entire sample was 2.31 ± 0.83 , with the public sector employees having a mean score of 2.42 ± 0.76 , which was statistically significant ($p = 0.004$) when compared to the private score of 2.14 ± 0.91 . The mean readiness score to utilize breastfeeding support for the public and private sectors employees were

1.08±0.48 and 1.14±0.53, respectively; however, no significant difference was observed between the two groups ($p=0.294$). The mean perception scores were 1.75±0.99 for the public sector and 1.90±0.95 for the private sector, with no significant difference between groups ($p=0.184$). **Conclusions, discussion and/or practical application:** Respondents had adequate breastfeeding knowledge and a positive attitude and perception towards breastfeeding at work. The main helpful factor in the continuation of breastfeeding after returning to work was suitable facilities for expressing and storing milk. There is limited research describing mothers' perceptions of workplace breastfeeding support in Trinidad and Tobago or the Caribbean. Hence, the results of this study cannot be directly compared to published literature in more industrialized countries. Employers and policy makers can utilize the information to better understand some of the factors that influence a mother's ability to meet her breastfeeding goals.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-227: CULTURAL CLASHES AND PERCEPTIONS OF DIETARY GUIDELINES AMONG NUTRITION STUDENTS AND GRADUATES FROM ETHNIC MINORITY BACKGROUNDS

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Introduction: Ethnic minority groups often access healthcare less despite higher risk of certain diseases. Concepts of nutrition and diet can be influenced by cultural beliefs. Lifestyle interventions aim to engage ethnic minority groups but are not always successful. This study sought to ascertain the extent that Nutrition and Dietetics students from ethnic minority backgrounds experienced cultural clashes between taught material and culturally held beliefs on nutrition, in order to improve culturally appropriate interventions. **Methods:** All students in their final year of study, or recently graduated from degree programmes in Nutrition and Dietetics at universities in London, UK, were invited to complete an on-line questionnaire on cultural background and contrasts in nutrition principles. Responses were analysed using descriptive and inferential statistics. Respondents who had indicated that they experienced significant cultural clashes were then invited for interview. Interviews were transcribed immediately after each interview and analysis and modification of the interview schedule were continued in line with grounded theory. Ethical approval was obtained from London Metropolitan University. **Results:** More than 70% of the $n=153$ respondents indicated that there were clashes between their cultural understanding and UK nutrition and health guidelines, with White Irish and White British ethnicities being those who disagreed. The Black African, South Asian and South-East Asian respondents reported a contrast in the perception of a healthy body image. Several themes emerged from the interviews regarding the proposed barriers to achieving healthy eating guidelines in the UK, including importance of taste, lack of availability and affordability of healthy cultural foods and increased access to processed energy dense foods. **Conclusions, discussion and/or practical application:** Results from the study provide insight into conflicting information on healthy diet that may be encountered by those from ethnic minority backgrounds engaging with health promotion activities. A better understanding of these issues will inform delivery of lifestyle interventions in ethnically diverse communities.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-228: DIETARY ADVICE SHOULD CHANGE TO HELP AVOID MICRONUTRIENT SHORTAGE IN PEOPLE ON A WEIGHT LOSS REGIME

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Introduction: Three quarters of the European Population are overweight or obese. The WHO goal to halt the rise in obesity focuses on correcting energy imbalance, however conscious restriction of energy intake (to prevent weight gain or achieve loss), may have the undesirable consequence of reducing micronutrient intake. A review of published evidence was carried out to assess baseline micronutrient deficiency; impact of energy restriction on micronutrient intake and the potential role of fortified in correcting shortfalls during weight loss. **Methods:** An electronic search of the Pubmed and Ovid databases, clinical guidelines, National Dietary surveys and reports. Limits included: Adults aged 19+ years, English language and publication

between 1950-2015. Papers identified included: 295 on micronutrient intake; 543 on role of fortified foods. Findings from 13 European national dietary surveys were included: Titles, abstracts/summaries were reviewed and relevant full papers obtained. **Results:** One in five adults across Europe have pre-existing low intakes of vitamin D, folic acid, vitamin C, calcium, selenium, and iodine. Zinc inadequacy is also common, especially among women. Energy restriction results in a concomitant reduction in micronutrient intake, even when macronutrient balance is improved. Consumption of voluntarily fortified foods can reduce risk of sub-optimal micronutrient intakes and improve individual status for selected micronutrients (e.g., folate, vitamin D and riboflavin). Commonly consumed fortified foods include breakfast cereals, milks, breads, fat spreads, cereal bars and juices. **Conclusions:** National Clinical Guidelines for weight control universally adopt an 'eat less, exercise more' approach and prescribe energy restriction (e.g., UK NICE, EASO, German DGE, US-NIH) but fail to acknowledge micronutrient consequences of energy restriction. Dietitian's need to adopt effective strategies to ensure that all overweight individuals in their care take appropriate action to maximise micronutrient intake. For some supplements may be the solution, but for many conscious selection of fortified foods as part of daily eating habits will be an effective solution. The message to encourage selection of fortified foods should also be disseminated to other healthcare professionals.

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P-229: EFFECTIVENESS OF MALNUTRITION PREVENTION PROGRAMS TARGETED AT COMMUNITY-DWELLING OLDER ADULTS

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Introduction: As fertility rates decline and life expectancy increases, an aging population is predicted to affect many countries in the twenty-first century. Malnutrition is estimated to affect 10-30% of community-dwelling older adults, and the aging population will exacerbate this problem. Although the effects of malnutrition in older adults are often multi-factorial, considerable resources have mainly been invested in the identification and treatment of malnutrition. The effectiveness of primary prevention programs are yet to be reviewed. This study aims to review the effectiveness of malnutrition prevention programs to better understand effective strategies for older community dwelling adults. **Methods:** Systematic electronic literature searches were conducted in Medline, PubMed, Scopus and CINAHL databases. Randomised controlled trials involving community-dwelling adults, aged ≥ 65 years who were healthy or at risk of undernutrition were included. Studies intervening after malnutrition diagnosis were excluded. Study quality was assessed using the Academy of Nutrition and Dietetics Quality Criteria. **Results:** The search strategy captured 441 articles. Twenty articles from seventeen studies that met the criteria were reviewed. Study quality was assessed as positive for eight studies. Results provided evidence that physical training and oral nutritional supplements were beneficial as adjunct interventions. Conversely, evidence for nutritional education was weaker and multidisciplinary management as an interventional strategy did not result in significant improvement in nutritional status. **Conclusions, discussion and/or practical application:** Directed physical training and nutrition interventions each lead to positive outcomes suggesting their effectiveness as malnutrition prevention strategies. Heterogeneity between the studies included, created challenges in the comparison of this literature. However this is the first review to our knowledge, to examine the effectiveness of malnutrition prevention programs in older community-dwelling adults. Further research should focus on developing programs including physical activity and nutritional supplements to assist with the prevention of malnutrition in the community.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-231: KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) OF DIABETIC PATIENTS AND DIETITIANS REGARDING NATURAL ANTI DIABETIC AGENTS

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Introduction: Diabetes mellitus (DM) is a chronic progressive metabolic disorder characterized by hyperglycemia mainly due to absolute (Type 1 DM) or relative (Type 2 DM) deficiency of insulin. The side effects from pharmaceutical agents lead to the promotion of the use of natural therapies as an alternative. The present study assessed the knowledge, attitudes and practices (KAP) of diabetic patients and dietitians regarding non-conventional natural anti-diabetic agents. **Methods:** A survey was conducted on 102 diabetic patients (49 females and 53 males) and 25 practicing dietitians, purposively selected from various clinics. Data was collected on KAP regarding consumption trends of non-conventional anti-diabetic agents, benefits and side effects experienced, dosage and method of consumption etc., using a rapid assessment questionnaire. The data collected was evaluated using Excel 2007. **Results:** Around 48% of the diabetes patients including the newly diagnosed patients and specially those with consistently high blood sugar levels preferred non conventional anti-diabetic agents including Fenugreek seeds, *Momordica charantia*, jamun seeds, Insulin leaf, etc., in addition to the drugs, out of which, 79% enjoyed the clinical benefits such as relief from complications, reduced drug dosage, etc. However, around 13% also experienced side effects such as acidity, indigestion etc. Only 15% knew the correct dosage and method of consumption. All the dietitians were well aware of the effective natural anti diabetes remedies. Majority of them preferred to prescribe these agents as an adjunct with pharmaceutical therapies. **Conclusions, discussion and/or practical application:** Globally in the past few years there has been an exponential growth in the field of natural remedies because of their minimum side effects. Using natural approaches to control hyperglycemia is an age-old practice Several plant products have been scientifically proved to be effective in the management of diabetes and however, there is a need to create awareness among the patients as well as dietitians and promote their usage.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-232: NUTRITIONAL STATUS AMONG UNIVERSITY STUDENTS IN DIFFERENT TYPES OF HOUSING

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Introduction: This study aims to examine the variation in the number of daily meals, energy and macronutrient intake, BMI and physical activity among university students by their type of housing. **Methods:** This study was conducted with the participation of 1,435 university students. Data for the study were collected using a questionnaire, which contained general items, anthropometric measurements (height and weight), daily food consumption records (24 hour dietary recall), number of meals and physical activity levels. Students were examined in three categories by housing type: those who lived with their families (16.5%), in dormitories (57.9%) and in apartments (25.6%) alone or with housemates. The WHO's classification used in assessment of students BMI. **Results:** The mean age of university students was 21.6±1.6yrs, and their mean BMI was 21.7±2.9kg/m². The percentages of students who ate three meals a day were 71.3% for those who lived with their families, 60.3% for those who lived in dormitories and 57.5% for those who lived in apartments, and the relationship between type of housing and number of meals was found to be significant (p<0.05). **Conclusions, discussion and/or practical application:** The lower levels of BMI and daily energy and protein intake among students who lived in dormitories may be associated with having easy access to three main meals with a balanced and adequate nutritional content. Students should be provided with more alternatives to have easier access to balanced and adequate meals, and nutritional awareness should be raised among them.

COMPETING INTERESTS: The authors declare that there are no conflicts of interest.

P-235: VALIDATION OF A FOOD GROUPS FREQUENCY QUESTIONNAIREJ Alfredo Martínez^{1*}, Leticia Goni², Maritza Aray³, Marta Cuervo¹

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Introduction: Assessment of habitual intake and dietary habits become increasingly important on related to the risk of disease. In this context, the food frequency questionnaire (FFQ) is a dietary tool widely used in both clinical practice and epidemiological studies in order to define nutritional patterns. The aim of the study was the validation of a food group frequency questionnaire (FGFQ), in relation to a 7 days food record (FR) as reference. **Methods:** A total of 60 healthy adults of both sexes were recruited. The dietitian-nutritionist applied the FGFQ to be validated and then gave instructions for completing the 7 days FR used as a reference standard to each participant. **Results:** The correlation coefficients between the FGFQ and the 7 days FR were found between $r=0.3$ and $r=0.6$ and the intraclass correlation coefficient (ICC) between $r=0.2$ and $r=0.6$. The cross-classification analysis revealed that over 80% of individuals were classified into identical and contiguous quartiles from both dietary methods. **Conclusions:** The FGFQ achieved comparable results to other similar validation studies for assessing energy and macronutrients intake and dietary patterns.

COMPETING interests: The authors declare no conflict of interest concerning this research.

P-505: BODY COMPOSITION INDICATORS ARE POSITIVELY ASSOCIATED WITH UNDERREPORTING OF ENERGY INTAKE IN EUROPEAN ADOLESCENTS: RESULTS FROM THE HELENA STUDYSilvia Bel-Serrat^{1*}, Cristina Julián-Almárcegui¹, Theodora Mouratidou¹, Marcela González-Gross², Luis A. Moreno¹, Inge Huybrechts³

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Introduction: Misreporting of food intake, including underreporting, is a major concern when addressing diet-disease associations and remains a key limitation of self-reported dietary intake. Although information is still scarce among adolescents, existing literature suggests a positive association between underreporting and body mass index (BMI); however, there is no evidence about the association with body composition indicators. Therefore, we aimed to investigate the association between underreporting and body mass compartments in European adolescents. **Methods:** Two self-administered computerized 24-hour dietary recalls were obtained from 1,493 adolescents aged 12.5-17.5 across eight European countries (Austria, Belgium, France, Germany, Greece, Italy, Spain and Sweden). Objective measures of height, weight, waist circumference and tricipital and subscapular skinfold thicknesses were obtained. The percentage of fat mass (%FM) and total FM (kg) and fat free mass (FFM, kg) were calculated by applying skinfold-thickness equations from Slaughter *et al.* Bioelectrical impedance was used to obtain indices of FM and FFM. Adapted Goldberg cut-offs were applied to identify underreporters using individual objective measures of physical activity. Associations between underreporting and body composition indicators were investigated by multilevel logistic regression analyses after adjustments for age, sex, center, socioeconomic status, BMI, moderate-to-vigorous physical activity and energy intake. **Results:** The risk of underreporting significantly increased with the predicted %FM (OR=1.07, 95%CI=1.03-1.11) and with predicted total FM (kg) (OR=1.13, 95%CI=1.08-1.18) and FFM (kg) (OR=1.12, 95%CI=1.08-1.18). Identical results were observed for FM (kg) and FFM (kg) measured with bioelectrical impedance. Waist circumference was positively associated with underreporting (OR=1.12, 95%CI=1.07-1.17). **Conclusions, discussion and/or practical application:** Underreporting seems to be influenced by adolescents' abdominal fat and total body mass, regardless of the compartment evaluated, i.e. FM or FFM. However, adolescents reporting low energy intake may reflect attempts to lose weight corresponding

to real underreporting rather than underreporting. Identification of factors influencing underreporting in young populations is crucial to interpret potentially biased findings.

COMPETING INTERESTS: The authors of this document can confirm that there is no conflict of interest.

P-506: IRON DEFICIENCY AND OBESITY

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Introduction: Hidden hunger is a global public health concern with iron and other nutritional deficiencies masked by signs of over-nutrition. The inverse relationship between iron status and obesity was first reported by Wenzel *et al.* (1962) and over recent years there has been renewed interest. Research by Kaner (2014) found the prevalence of iron deficiency and iron deficiency anaemia in the obese, overweight and normal weight in women in Turkey were 45.6%, 27.4%, 41.9%, 24.0%, 23.5%, 12.4%, respectively. Reasons why obese individuals are more likely to be iron deficient include inadequate dietary iron intake and increased iron requirements because of increased blood volume (Failla *et al.*, 1988). More recent studies have suggested impaired duodenal iron absorption, obesity-associated low-grade inflammation influencing iron status and alterations to the iron regulatory protein hepcidin. There is no guidance on the best means of treatment to improve iron status in the obese person and whether recommended dietary iron intake should be increased to compensate for alterations to the iron regulatory processes. The aim of the study is to evaluate interventions which treat iron deficiency anaemia in obese individuals, particularly in women of reproductive age, with a view to informing public health recommendations in Turkey. **Methods:** A systematic review will be undertaken to assess the effectiveness of interventions designed to address iron deficiency among women of reproductive age who are either overweight or obese. The findings will be used to influence the development and feasibility of an intervention to be delivered to the same population group in Turkey with the primary outcome measure being level of iron deficiency. **Results:** The review will be completed by September 2016 and the key findings reported. **Conclusions, discussion and/or practical application:** Obese individuals who develop iron deficiency have an increased health burden. The review and feasibility intervention study will inform public health recommendations in Turkey.

COMPETING INTERESTS: The authors of this document can confirm that there is no conflict of interest.

P-507: RECOMMENDATIONS FROM THE WORLD CANCER RESEARCH FUND (WCRF) AND THE CASE OF CHILE

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Introduction: Cancer is the second leading cause of death in Chile and America, representing the 25.6% of total deaths in 2007 in the country. In 2007, the World Cancer Research Fund (WCRF) and the American Institute for Cancer Research (AICR) made recommendations that were summarized in three major guidelines: "Prefer plant foods, limit consumption of red meats and avoid processed meats"; "Be physically active for at least 30 minutes every day"; and "Maintain a healthy weight throughout life". **Methods:** Recommendations of the WCRF and AICR were evaluated with respect to the situation in Chile. **Results:** Plant foods and animal foods: Studies from the authors, based on the food expenditure described in the IV and VI Family Budget Surveys (1987-2007), showed a per capita intake of 240g (1987) and 390g (2007) per day of vegetables, legumes and fruits for the Total Households of the Gran Santiago, and an increase in the intake of red meats and processed meats, with an intake of 560g (1987), 730g (1997) and 630g (2007) per week, of which 90g (1987), 320g (1997) and 150g (2007) correspond to processed meats. Sedentary behavior and body weight: National Health Surveys of 2003 and 2010 showed that 89% of Chilean adult population was sedentary, with no difference during the period. There was a prevalence of obesity of 22% (2003) and 25.1% (2010) and of overweight of 38% (2003) and 39.3% (2010). Abdominal obesity, measured by waist circumference, was

of 90.7cm for men and 86.2cm for women and in 2010, 62% of Chilean population had abdominal obesity. The analysis of this data shows that Chilean population has cancer risks associated with diet, sedentary behavior and nutritional status, among other factors.

COMPETING INTEREST: Part of this abstract was published in the *Revista Médica de Chile*, Rev. Méd.Chile, vol. 141.nº 5, Santiago, May 2013.

P-508: NUTRITIONAL STATUS AND FOOD PATTERNS OF PRESCHOOL CHILDREN ATTENDING INTEGRA FOUNDATION NURSERIES IN VALPARAISO, CHILE

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The aim of this study is to determine the diet of preschool children (4-5yrs-old) attending INTEGRA Foundation nurseries in Valparaiso, and to establish the influence of this diet in their nutritional status. INTEGRA Foundation is a non-profit national organization that works for children. The objective of the study is to establish a relationship between household alimentation with nutritional status and cardiovascular risk, according to consumption patterns (servings and nutritional quality) of children at the nursery and at home. Methods: Target population was 33 preschool children (19 male and 14 female) attending nurseries. Items evaluated: 1) nutritional status and cardiovascular risk according to reference values of the World Health Organization; the study analyzed anthropometric variables (weight, height, waist circumference). 2) Food service was also evaluated, checking that grams and serving sizes correspond to technical standards established by the institution in relation to the daily meals. 3) Alimentation and nutritional quality of the children's diet at their households. These variables were evaluated by the application of two eating habits surveys, applied to preschool children and parents or guardians, in order to specify eating habits in the household. Results: 75.8% of preschool children has a normal nutritional status, 21.2% has malnutrition by excess and 12% has a high cardiovascular risk. Regarding eating patterns, it was established that INTEGRA meets the recommended caloric intake, nevertheless, caloric intake in the households was 38% over the standard, which means that overall calorie intake per capita per day was 17% higher than recommended (1325kcal/day). In conclusion, household alimentation has an influence in children's nutritional status.

COMPETING INTERESTS: There is no conflict of interest. Part of this abstract was published in the *Revista Española de Nutrición Clínica y Dietética*, vol. 20, nº 1, España, April 2016.

P-509: USE OF ADVERGAMES AFFECTS FOOD INTAKE IN CHILDREN

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Introduction: The use of advergaming by children is a topic of intense public debate among scholars. The debate focuses on whether or not children's use of advergaming can be linked to children's increased food intake and subsequent risk of obesity. This review explores issues pertaining to the growing interest, genuine controversy, research uncertainty, and strength of evidence surrounding the use of advergaming in affecting food intake by children. It considers options for developing research in public health nutrition and psychology to inform policy debate about advergaming's educational and health value for children. **Methods:** Evidence from over 80 databases was examined, including CINAHL, Cochrane Library, Google Scholar, Hinary, Ovid, Pubmed, PsycINFO, Science Direct, Taylor, and Web of Science. **Results:** While empirical research indicates that use of advergaming affects food intake in children, it is difficult to prove a correlation with the current methodologies used and the dearth of evidence available. Children's food intake is a complex topic involving intricate human behaviors and dynamic interactions with the environment and social determinants of food. A variety of innovative methods and creative approaches in public health nutrition and psychology research is needed to inform the policy debate, coupled with lessons learned from experiences using current advergaming on food intake. **Conclusions, discussion and/or practical application:** Given the fact that advergaming will evolve, there is a need to focus research efforts on how advergaming are used and how they could be

used to promote healthy food intake by children. There is also a need to understand if use of advergames affects a particular group of children more than others based on psychological theories, such as children who are prone to storytelling and narrative. Other theoretical approaches, such as how age relates to cognitive processing and how to apply persuasion theory to advergames to promote healthy food intake by children, should also be considered.

COMPETING INTERESTS: The author of this document can confirm that there is no conflict of interest.

P-510: THE IMPACT OF BREAKFAST CEREAL ON NUTRIENT INTAKE OF UK CHILDREN AND ADOLESCENTS

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Introduction: Many studies have shown that regular consumption of breakfast cereal is associated with positive health outcomes, amongst others higher micro-nutrient intakes. Breakfast cereals are a nutritionally beneficial choice for breakfast as they are nutrient dense. **Objectives:** Assessing the current contribution of breakfast cereal consumption to UK children and adolescent's macro- and micro-nutrient intakes. **Method:** Analysis of the latest UK National Diet and Nutrition Survey (NDNS 2008-2012) was carried out, assessing nutrient intake and nutritional status of the general UK population. Specific focus is given on the contribution of breakfast cereal to macro- and micro-nutrient intakes in UK children (4-10yrs.) and adolescents (11-18yrs.). **Results:** Breakfast cereals contribute towards many nutrients daily. Energy from breakfast cereals provide between 6 and 8% of the total energy intake for UK breakfast consumers aged 4-18. They also provide an average of 5.9-10.5g of sugar daily without milk, which provides 5.9g of milk sugars. Fat from breakfast cereals contributes to 0.6-0.8% of the daily energy intake. Breakfast cereals are also important contributors of micro-nutrients. Thiamin, riboflavin, niacin, B6 and folate from breakfast cereals provide between 12-19% and 8-16% for 4-10 and 11-18 year olds respectively to daily intakes. Iron contributes between 15-23% of the total daily intake in diets of UK children and adolescents. **Conclusions:** Results demonstrate that breakfast cereals contribute to a relative small fraction of energy and macro-nutrient intakes but lead to significantly higher intakes of thiamin, riboflavin and folate compared to children who do not eat breakfast cereal. Consuming fortified breakfast cereal appears to be a valuable approach to improve the overall diet of UK children and adolescents.

COMPETING INTERESTS: Employee of Kellogg European Trading Limited.

P-511: THE IMPACT OF BREAKFAST PROGRAMS ON HEALTH AND WELLBEING IN WESTERN EUROPE

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Introduction: School based breakfast programs are increasingly being established in a number of European countries. It is important to assess the impact of these school based breakfast programs on dietary shortfalls, health and wellbeing. **Methods:** (i) A literature review was conducted to assess differences in compliance with food and nutrient based dietary guidelines and prevalence of suboptimal status of micronutrients between low and high socioeconomic groups. MEDLINE databases were searched to collect original studies and reviews published from 1990 to 2015. Studies involving >100 subjects whose dietary intake had been assessed at the individual level and/or used best practice biomarkers reflecting micronutrient status were included. (ii) Dietary modelling was conducted to assess the impact of foods provided at breakfast clubs in addressing dietary shortfalls. Information on foods provided at breakfast clubs was obtained from local organisers in a number of European countries. Macronutrient and micronutrient composition of foods was accessed using local food composition databases. **Results:** A positive association was found between socioeconomic status and micronutrient (but not macronutrients) and fruit & vegetable intake (Twenty-five studies included). Foods routinely provided at breakfast clubs (e.g., ready to eat breakfast cereals, fruit and vegetables, bread) can provide important contributions (17-50% of Dietary Reference Values) to intakes of key nutrients, e.g. vitamin D, folate, vitamin B2, iron and iodine. Evidence of low intakes of these nutrients exists among

lower socioeconomic groups in Europe. **Conclusions, discussion and/or practical application:** The finding that people with lower socioeconomic status had less optimal micronutrient, fruit and vegetable intake may prompt further research and have implications for public health policy in addressing previously reported socioeconomic dietary inequalities in Europe. School based breakfast clubs may form part of a multi-pronged approach to address nutritional and health inequalities between people with different socioeconomic status.

COMPETING INTERESTS: This project was funded by Kellogg Company.

P-529: FACTORS ASSOCIATED WITH THE NUTRITIONAL STATUS OF ELDERLY PEOPLE IN HOUSEHOLDS IN MEDELLIN AND ITS DISTRICTS

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Introduction: Elderly people are at high risk of malnutrition due to physiological, psychological and social changes that come with aging. Therefore, the aim of this study was to determine the factors associated with the nutritional status of elderly people in households in Medellin and its districts. **Methods:** Descriptive study involving 1,187 individuals aged 60 and older from households assessed in the project Profile of Food and Nutritional Security in Medellin and its Districts 2015. To assess the nutritional status anthropometric measurements such as weight, height and waist, calf and mid-upper arm circumferences were taken; the Mini Nutritional Assessment (MNA) was also used to measure the risk of malnutrition, a score of <17 is regarded as an indication of malnutrition, 17-23.5 indicates a sign for malnutrition risk and 24 and higher signifies normal level. The nutritional status was analyzed against socioeconomic and demographic variables such as sex, age, socioeconomic status (SES), marital status and level education, for which disparity ratios for risk/malnutrition were calculated through logistic regression, and for the different BMI classifications through multinomial regression. **Results:** 65.2% were women, average age 70.0±8.0yrs, 61.5% were low SES and 55.4% were primary education level. According to the BMI, 36.8% were excess weight and 20.8% underweight, women and elderly between 60-74yrs-old were more likely to be overweight or obese. According to the MNA 41.4% were at risk of malnutrition. The likelihood of risk/malnutrition by MNA increased in women (OR=2.0; 95%CI=1.5-2.6), elderly 75 years old and older (OR=1.7; 95%CI=1.2-2.4), low income (OR=3.2; 95%CI=1.5-6.8), with primary education level (OR=2.1; 95%CI=1.1-4.4) or no education (OR=3.4; 95%CI=1.5-7.5) and from rural areas (OR=1.7; 95%CI=1.1-2.5). **Conclusions, discussion and/or practical application:** Elderly women and unfavorable socioeconomic conditions are directly correlated with some degree of malnutrition.

COMPETING INTERESTS: The authors of this communication declare that they have not conflict of interest.

P-530: INFLUENCE OF DIETARY HABIT'S TEENAGERS IN OVERWEIGHT AND OBESITY: A BI-NATIONAL STUDY (SPAIN-ARGENTINA)

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Introduction: Nutrition plays an important role in body composition. The aim of the study was to analyze the relationship balanced diet pattern in 2 groups of adolescents 2 countries. **Methods:** Descriptive, comparative, cross-sectional study. Participants (n=272) from 11 to 16 years of schools in Tucuman-Argentina (n=166) and Madrid-Spain (n=106) were recruited. Instruments: Frequency Questionnaire food consumption, questions about breakfast, KIDMED questionnaire (Quality Test of the Mediterranean Diet in Childhood and Adolescence). In addition, height and weight was measured, and BMI was calculated to be determined by the WHO percentiles for age and gender distribution of overweight (>P85) and obesity (>P97). **Results:** The excess of weight was 41.8% and 44% in Argentina and Spanish population, respectively, 12.2% and 21% obese (Chi-square=8.4, p=0.078). These higher levels of obesity in Argentina were related with lower consumption of legumes

(Chi-square=28.92, $p<0.001$), dairy (Chi-square=12.83, $p<0.001$) and a high consumption of fast food (Chi-square=18.12, $p<0.001$), pastries/sweets (Chi-square=10.2, $p=.006$) and candy (Chi-square=18.17, $p<0.001$) in Argentina compared to the Spanish population. Increased consumption of nuts (Chi-square=28.72, $p<0.001$), olive oil (Chi-square=56.58, $p<0.001$) and fish (Chi-square=72.23, $p<0.001$) in Spanish population against Argentina was found. Lower adherence to breakfast in Spanish population than Argentina, 79% vs. 89% was also noted. **Conclusions, discussion and/or practical application:** Argentina teenagers had worse adherence to a healthy food consumption and breakfast, which was associated with higher rates of obesity.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-531: DIETARY PATTERNS AND SEMEN QUALITY IN YOUNG MEN IN POLAND

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Introduction: Man nutrition and nutritional status are two of the factors which signify the biological quality of semen. While many nutritional studies of semen quality have focused on isolated micronutrients and various antioxidants, very few studies have focused on food groups or dietary patterns. **Methods:** The semen and anthropometric measurements of 71 males, aged 24-42, were tested. All the subject were patients to a medical centre of infertility treatment. The semen analysis was performed via the Sperm Class Analyser method. The semen classification was done according to WHO referential values. Nutrition habits were defined with the use of the FFQ6 validated questionnaire. Dietary patterns were defined by principal component analysis with varimax rotation and described by multivariate analysis. **Results:** In the studied population reported abnormalities of sperm parameters. Two major patterns were identified: "common Polish" and "varied". The components of the "varied" pattern were vegetable fats ($r=-0.79$), refined grain ($r=0.66$), fruits ($r=-0.65$), natural dairy products ($r=-0.64$) and eggs ($r=-0.82$). The components of the "common Polish" pattern were meat ($r=0.75$), animal fats ($r=0.82$), whole grain (0.61) and sugar, sweets and snacks ($r=0.75$). **Conclusions, discussion and/or practical application:** Both analyzed patterns of nutrition that were considered dominant in the sample, were much different from any recommendation in prevention of diet-related diseases. The research revealed anomalous semen parameters in the tested population. Unbalanced food consumption may foster obesity and amplify the danger of infertility. Further research is needed to extend these results to larger populations and to confirm these findings.

COMPETING INTERESTS: Anna Danielewicz, Katarzyna Przybyłowicz and Sławomir Wołczyński declare that they have no conflict of interest.

P-539: ADHERENCE TO MEDITERRANEAN DIET AND ACADEMIC ACHIEVEMENT IN OVERWEIGHT AND OBESE CHILDREN: RESULTS FROM THE ACTIVEBRAINS STUDY

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There is evidence suggesting that overweight and obese children have worse academic achievement compared to **normal-weight** children. It is therefore important to identify modifiable determinants, such as dietary habits, that may influence academic achievement in overweight and obese children. A total of 84 overweight and obese children (age 8-11yrs, body mass index: $26.8\pm 3.5\text{kg/m}^2$) participated in the ActiveBrains project (<http://profith.ugr.es/activebrains>) were included for the present analysis. Adherence to the Mediterranean diet was assessed using the KIDMED questionnaire. Academic achievement was assessed using the Batería III Woodcock-Muñoz™, which is the Spanish adaptation/translation of the Woodcock-Johnson III®(WJ III®). For this analysis, we used total academic achievement score and scores for the mathematic,

reading components of the test. Higher adherence to the Mediterranean diet was associated with higher scores in mathematics ($r=0.24$, $P=0.025$) and was borderline associated with greater total academic achievement ($r=0.21$, $P=0.053$) and reading scores ($r=0.19$, $P=0.079$). Results remained similar after adjustments for sex, age, body mass index and maternal education. In conclusion, higher adherence to Mediterranean diet was associated with higher scores in Mathematics.

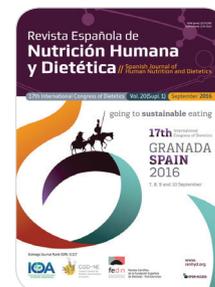
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POSTER COMMUNICATIONS

CUISINE AND GASTRONOMY

P-236: CHEMICAL COMPOSITION OF LOCAL AND COMMERCIAL QUINOA (*CHENOPODIUM QUINOA WILD*) SEEDS, FLOURS AND THEIR UTILIZATION IN A FERMENTED MILK PRODUCT

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Introduction: Nowadays, there is a renewed interest in quinoa because of the ethical and cultural appreciation of this ancient crop and considerations associated with its nutritional quality. The aim of this study was to evaluate the chemical composition of local and commercial quinoa seeds, flours and their utilization in a fermented dairy product (FDP). **Methods:** Local quinoa seeds Accession N° CHEN60 (LQS) from Abrajaite of Colanzulí, Department of Iruya, Province of Salta, Argentina, commercial quinoa seeds (CQS) and flour (CQF) were used. Saponins of LQS were removed by washing in cool water, oven dried, grounded and sieved into Mesh 60 to obtain flour (LQF). Carbohydrates (Fehling-Causse-Bonnans), protein (Kjeldahl), fat (Soxhlet), moisture and ash (AOAC) were determined. Three FDP were formulated with milk, *Lactobacillus delbrueckii susp. Bulgaricus* and *Streptococcus salivarius susp. termophilus* (HANSEN), sugar, vanilla and three concentrations of LQF (1, 3 and 5g%) to select preferred. Rank test with 100 consumers and Newell MacFarlane tables were used. Statistical analysis was carried out by ANOVA and Duncan test. **Results:** Moisture and carbohydrates were higher in CQS and CQF (13.6a, 10.05b and 60.66c, 60.72c g%). LQS and LQF fat content were 6.03 and 5.60g% still lower than commercial. A higher protein value was determined in LQS (16.41g%). Ash content ranged from 0.95g% (CQS) to 2.26g% (LQF). No significant differences in preference (P>0,05%) between FDP at 1 and 3% (175^a and 198^a) were found but not among these and FDP at 5% (253b). **Conclusions, discussion and/or practical application:** Data shows differences in chemical composition of local and commercial grains, probably due to seed variety, crop conditions and grinding methods used. LQF can be used in the formulation of FDP at 1%.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-237: MEDICATED DIETS DEVELOPED FROM A STANDPOINT OF TRADITIONAL CHINESE MEDICINE

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Introduction: Traditional Chinese medicine (TCM) has been developed as a tailored medication. Medicated diets based on TCM promote health status in response to individual constitution, because medicated diets have the function coping with individual constitution. We developed medicated diets with various functions based on TCM for health promotion. **Methods:** We chose 501 foods that were available in Japan from Chinese Herbal Medicine Dictionary. Out of 501 foods, 69 foods were selected in terms of common foods. We cooked medicated diet with various function in combination of 69 foods and ordinary foods according to the traditional daily meal patterns of Japan consisting of three dishes with a soup. A total of 19 functions are as follows: improvement of digestion and absorption, diuretic effect, anti-inflammatory effect, improvement of bowel movements, sedative effect, anti-anxiety effect, promotion of blood circulation, anti-fatigue effect, sudorific properties, warming body, improvement of blood deficiency, circulation of qi, removal of phlegm, complement of yin, removal of wind pathogen, removal of cold pathogen, antitussive activity, removal of summer-heat pathogen, suppression of sweating or diarrhea. We conducted preference survey such as taste, portion, smell, color, and overall judgment for each medicated diet. Each preference was scored out of 5. **Results:** We made 19 medicated diets that consisted of 90 kinds of dishes: staple diet(19), main dish(15), side dish(21), soup(16), dessert(16), beverage(3). The range of energy in 19 medicated diets was 600 to 875kcal. The range of average score of each preference in 19 medicated diets was 3.5 to 4.5. **Conclusions, discussion and/or practical application:** Medicated diets with 19 functions are expected to play an important role in health promotion as well as modern nutritional science. Further studies are warranted to provide the scientific evidence.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-532: NUTRITION BENCHMARKING OF TRADITIONAL GREEK CUISINE

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Introduction: The Mediterranean diet (MeD), by definition, is the dietary pattern followed by the people of Crete and South Italy around 60's. The health benefits of this dietary pattern are well established, as it is found to protect against several chronic diseases, such as cardiovascular disease, neurodegenerative diseases, metabolic diseases and many types of cancer. An excellent representative of such diet is the traditional Greek cuisine followed by Greek people till 70's. **Methodology:** Our study aims to create the nutritional profile of traditional Greek dishes given in a consolidated database and make a comparative nutritional analysis between dishes or groups of dishes. For that cause, more than 1,500 different recipes of traditional Greek dishes were collected and a consolidated database was created. The sources of the recipes were derived from traditional books, Chef's Clubs, Folklore Associations, websites and blogs with traditional topics in Greece. Nutritional analysis of these traditional dishes, benchmarking and statistical analysis were performed among recipes of the same dish at different regions or between main dishes among different regions to strengthen our results. **Results/Discussion:** Our findings enhanced the nutritional value of the traditional Greek dishes and we consider this to be a first step for the development of local agriculture and return to more traditional and healthier dietary pattern of the Modern Greeks. Future studies for the association of the traditional Greek cuisine to health or primary agricultural production are needed.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-533: NUTRITIONAL PROFILE AND BENCHMARKING OF TRADITIONAL GREEK PIES ("PITES")

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Introduction: The traditional Greek cuisine can be considered a characteristic example of the traditional Mediterranean Diet (MeD). Pies in the traditional Greek cuisine ("pites") are mostly salty with different fillings such as cheese, spinach, meat and vegetables and with different variations of the pastry sheets ("phyllo") and the cooking methods. There is less scientific evidence for their nutritional profile. Therefore, the aim of this study is the creation of the nutritional profile of traditional Greek pies given in a consolidated database and the comparative nutritional analysis between them. **Methodology:** More than 250 different recipes of traditional Greek pies were collected and a consolidated database was created. The sources of the recipes were derived from traditional books, Chef's Clubs, Folklore Associations, websites and blogs with traditional topics in Greece. Nutritional analysis of these traditional dishes, benchmarking and statistical analysis were performed among recipes of the same dish at different regions or between main dishes among different regions to strengthen our results. **Results/Discussion:** Our findings enhanced the nutritional value of the traditional Greek pies and we consider this to be a first step for the development of local agriculture and return to more traditional and healthier dietary pattern of the Modern Greeks. Further studies for the association of the traditional Greek pies to health or primary agricultural production are needed.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-534: THE EVALUATION AND ASSESSMENT OF THE KIND AND AMOUNT OF SOLID WASTE PRODUCED IN A HOSPITAL KITCHEN

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Introduction: The environment is the most important source in meeting the nutritional needs of people's basic needs. Solid waste is one of the most important causes of environmental pollution. Today, increasing of the population and the development of technology leads to increase the production of not only types of package materials but also the waste per capita. **Methods:** In the hospital, the waste that may occur at the end of the food and meal production was calculated according to records of the menu items. On those days produced waste was collected and separated according to their types (glass, paper-cardboard, composites, metals, organic, plastic, porcelain, wood). Then all the separated waste groups were weighted and recorded. **Results:** The total weight of all types of solid waste were obtained according and 7238.5kg total solid waste produced was found. 1106.2kg of this waste (15.3%) were plastics, 272.0kg (3.8%) were metal, 1132.8kg (15.6%) were paper and board, and 3013.8kg (41.6%) were organic waste. The amount of plastic waste collected from produced solid waste were 323.8kg (7.3%), the amount of metal waste were 205.4kg (4.6%) and 318.5kg of waste were paper and cardboard (7.2%), respectively. During the study period in the kitchen 3317.3kg, of recycle package waste were produced and 967.7kg (29.2%) were found to be collected. 21.0% of the collected organic waste were found to be used in composting. It is evaluated that, the 148.9kg of total waste were organic which is able to eat, can be reduced by appropriate revisions in the receipts. **Conclusions, discussion and/or practical application:** It is important to plan how to reduce the amount of waste before production and collect the waste effectively will be beneficial to solve the waste problem.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-535: CREATING A DATABASE OF SCIENTIFIC KNOWLEDGE ON THE INGREDIENTS OF THE GREEK CUISINE WITH ADDED NUTRITIONAL VALUE

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Introduction: More and more scientific interest lays upon the dietary pattern followed by the people around the Mediterranean basin, the so-called Mediterranean diet. The Mediterranean cuisine, and especially Greek cuisine, provides ingredients of high nutritional value, including several vitamins, minerals, mono- and polyunsaturated lipids (particularly n-3 and n-6), phenolic antioxidants, carotenoids, sugars (e.g., glucose, fructose), secondary metabolites (e.g., terpenoids, alkaloids), phytochemicals (e.g., lignans, phytosterols), probiotic bacteria, proteins, enzymes and essential amino acids in different proportions.

Methodology: The purpose of this study is to create a concise database for the registry of ingredients of the most important foods of the Greek cuisine. More than 20 ingredients were selected and registered, including Chios mastic gum, nuts, sesame, Cretan rusk, legumes, olive oil, table olives, pomegranate, saffron, trachanas, yogurt, small fish, fish roe, snails, tomatoes, Florine's red peppers, honey and herbs. For each ingredient the general description of the product, the culinary use, the nutritional value and health benefits were reported based upon the available scientific information. **Results:** All ingredients were registered with a unique code (token) to be used for reference in a database matrix. Currently a number of 65 bibliographic references were used to support the information registered. **Discussion:** This database could be a benchmarking tool for the selection of the proper ingredients in culinary preparations and a concise review that can be amended any time, whenever new scientific findings are published.

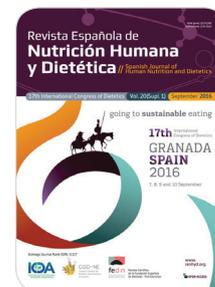
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POSTER COMMUNICATIONS

CULTURE AND FOOD ANTHROPOLOGY

P-238: A QUALITATIVE STUDY EXPLORING THE ROLE OF RELIGION ON FOOD AND DIET CHOICES IN UNIVERSITY STUDENTS WHO ARE SEVENTH-DAY ADVENTISTS

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Introduction: There is an emerging body of evidence related to the area of religion, diet and health. Studies among various religions show diet is an important part of their religion. There is evidence regarding the association of Seventh-day Adventists (SDA's) and positive health outcomes in relation to dietary choices (Fraser 1999). However evidence is limited regarding what individuals feel about the role religion plays in their dietary choices and how this impacts their behaviour. The aim of this study is to develop an understanding of the experience of religious influences on diet and food choices in SDA students. **Methods:** This study followed a qualitative phenomenological approach. Four participants were recruited from the Adventist Student Society using purposive sampling on the Coventry University campus. Individual semi-structured interviews were conducted, these were audio recorded and transcribed verbatim. Data was analysed thematically, member checked and peer reviewed. Ethical approval was granted from the ethics committee at Coventry University. **Results:** Five themes were identified: dietary choices; religious and social influence; motivation through impact on the 'whole-person' and impact on their spiritual journey. **Conclusions:** Religious teachings from The Bible and Ellen White influence SDA university students to make a conscious effort to choose a vegetarian diet and limit their dairy intake. In addition to this religious influence there is also a notable impact of culture on these choices, e.g. upbringing and immediate peer influence. Both this research and that of Nath (2010) show SDA's feel their diet has an impact on their spirituality as well as their physical and mental health. As a result of this, there was a strong sense of determination to reach the ideal way of eating that they believe God has prescribed for them through The Bible. There appears to a spiritual drive to change dietary behaviours which needs further exploration in dietary counseling.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-239: PROBIOTIC FOODS FROM PAST TO PRESENT IN ANATOLIAN CULTURE

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The term of probiotic means “life first” comes from Greek and is described in different ways by many researchers. Having positive effects on human health by improving endogenous microflora, including living organisms such as yeast, bacteria cultures called probiotics. Probiotics regulating the intestinal flora, demonstrating immunomodulator, anti-carcinogenic, cholesterol-lowering and antihypertensive effects, besides competing with pathogenic microorganisms while preventing adhesion of pathogens to epithelium. The commonly used probiotic microorganisms are lactobacillus (*Lactobacillus acidophilus*, *Lactobacillus johnsonii*, *Lactobacillus casei*, *Lactobacillus rhamnosus*, *Lactobacillus gasseri*, *Lactobacillus reuteri*,... etc.) and bifidobacterium (*Bifidobacterium bifidum*, *Bifidobacterium longum*, ve *Bifidobacterium infantis*,... etc.) spp. There are 10¹² living bacteria/g in colon, to observe therapeutic effects of probiotics, minimum amount is determined approximately as 10⁷. For centuries probiotics which are taken part in human diet have a significant role in Anatolian food culture. Koumiss, boza, tarhana, kefir, yoghurt are probiotics commonly consumed on these land and they contain lactobacillus spp. Koumiss firstly is obtained by shaking mare’s milk in a churn however today it is produced by using standard methods. As for boza, believed to be about 9000 years of history and spreaded over a wide geographical area (Central Asia, Caucasia, Balkans), is one of the most ancient Turkish beverages. It is obtained by boiling various cereals, adding some raw materials as a result of fermentation of lactic acid and alcohol. Another probiotic tarhana that comes from Central Asia to Anatolia, does not have standard producing technique, it usually occurs by the alcoholic fermentation of dough using the yogurt bacteria and yeast. Likewise kefir has probiotic properties and is obtained by adding kefir granules to milk types, and is originated from Caucasus. Lastly, it is known that yoghurt is consumed by lots of civilizations throughout history however it is considered the origin of it is based on Asia. Furthermore, today bio-yoghurt is obtained by addition of bifidobacterium spp. In this article, information about some probiotics historical developments will be given.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-240: TEACHING THE COUNTER STORY: AN ANALYSIS OF NARRATION IN AFRICAN AMERICAN COOKBOOKS USING CRITICAL RACE THEORY

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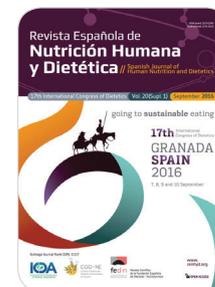
Introduction: I am a teacher of dietitians, whose medium is food. I have been concerned with the stereotypes projected by my nutrition students regarding “soul food” and eating patterns in the African American community. Voices from this community, both professionals and clients have been missing from the conversation. Currently 94% of dietitians in the U.S. come from Caucasian communities. As nutrition educators we must promote consciousness and sensitivity to the historical roots of eating and food patterns. **Methods:** This report is analysis of narratives from a sampling of introductions from cookbooks written by African Americans. It represents an attempt to give voice to an unconventional source of documentation regarding the historical experiences of people oppressed by enslavement and institutionalized racism, as told through recipe sharing. Critical Race Theory provided a lens to examine the counter story told by these authors. **Results:** The themes that emerged from an examination of the missions and motivations expressed by the authors included; history, work, cultural tradition, and empowerment in the struggle to survive. The counter story documented the unrecognized contribution and influence of African Americans to all American Food Culture through their roles as cooks in domestic and industrial settings, as well as their own homes. **Conclusions, discussion and/or practical application:** This projects helps develop an appreciation of the celebration of life that is expressed through food in the African American community. As Dietitians, we must advocate for the right to good food, healthcare and education for all of the communities and people we serve.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

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POSTER COMMUNICATIONS



FEEDING IN EMERGENCY SITUATION

P-242: NUTRITION FOR LIFE CARE IN AN INTERCULTURAL SPACE

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Introduction: Cooperation project focused on building a model of intercultural nutritional recovery, trying to find traditional food, to achieve food self-sufficiency. Indigenous communities have increasingly barriers that limit access to health services, because of its geographical situation, social and/or economic. The main objective was evaluate the nutritional status of children from Arhuacos' indigenous community. **Methods:** Cross-sectional study of the Arhuacos' indigenous community, inhabiting the Sierra Nevada de Santa Marta in Colombia, held in August of 2014. A total of 187 subjects (98 females) were recruited between 0 and 16 years old. Evaluated measurements were: weight, height, blood pressure, and waist, hip and arm circumferences. The nutritional status was assessed with the World Health Organization Child/Adolescents growth standards. **Results:** Most indigenous presented very low or extremely low height (57.1% girls; 68.2% boys). Girls were better nourished (45.9% eutrophic) than boys (27.1% eutrophic), according to weight for age classification. However, both girls (23.5%) and boys (40%) were classified with severe malnutrition. Its causes are related to the increase of coffee monoculture, which displaced traditional agriculture, and introduced the consumption of industrialized foods. **Conclusions, discussion and/or practical application:** Chronic malnutrition was identified in the majority of Arhuacos' children and adolescents. Diet changes, food neglect of parents, and lack of traditional education in young marriages are important contributors to chronic malnutrition affecting this community. These results aim to contribute with interventions that consider the Arhuacos' culture and traditional food habits for their nutritional recovery.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-244: AUSTRALIA'S CHARITABLE FOOD SECTOR - AN APPROACH TO SUPPORT, CONNECT AND ULTIMATELY TRANSLATE RESEARCH INTO EMERGENCY FOOD RELIEF PRACTICE

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Introduction: As seen internationally, demand for emergency food relief in Australia is increasing, adding pressure to the charitable food workforce. While this sector collectively aims to support individuals experiencing food insecurity, effective collaboration has historically proven difficult due to resource limitations and competition for common funding sources. This case study describes preliminary evaluation of a web-based community of practice which aims to support and connect Australia's charitable food workforce. **Methods:** In April 2015 a food security research forum was hosted in Melbourne. This forum brought together stakeholders from Australia's charitable food sector (n=25). Forum participants requested a platform for ongoing collaboration and hence, a web-based community of practice was developed. This online portal facilitates three main areas of action: (1) collaborative research via an interactive discussion forum for members; (2) capacity building via the promotion of relevant training opportunities and (3) resource sharing amongst members. Preliminary evaluation involved participation data (e.g., website visits, registration numbers, quantity and relevance of content submitted), an online survey and a focus group for members. **Results:** In its first three months, the community of practice attracted 100 members representing all eight states and territories of Australia, 17 contributions of content and an average of 50 page views per week. A focus group of members in April 2016 will reveal member satisfaction and feedback about the online portal's ability to support networking, training opportunities, capacity building and research sharing. **Conclusions, discussion and/or practical application:** Australia's charitable food sector is under pressure to meet a growing demand for emergency food relief. Preliminary evaluation demonstrates that a web-based community of practice has potential to support and connect the workforce. The next step for this community of practice is to influence practice by inspiring and supporting evidence-based, preventative approaches within Australia's charitable food sector to ease the demand for future emergency food relief.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-245: NUTRITION, SOLIDARITY AND COOPERATION IN THE SAHRAWI REFUGEE CAMPS. ANOTHER WAY TO DEVELOP OUR PROFESSION

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The objective of sensitizing students towards cooperation and development must necessarily pass through an awareness of the real situation of disadvantaged of human beings in the world. The project based on data identifying nutritional problems of the population saharawi, in particular, the high percentages of chronic iron deficiency in children under 5 years and pregnant and lactating women, as reported by Sahrawi Red Crescent Society (SRCS) and Spanish Agency for International Cooperation for Development (AECID). The main causes are the chronic and neglected long-term crisis, the stalemate in the process of negotiation, the arid environment with little chance of sustenance, and of aggravated external aid-dependency by in the current global crisis. The NHID students (Association of Dietitians and Nutritionists at the UVEG (ADINU)), have developed a project of "direct awareness in situ", covering basic requirements as: 1) Select a "vulnerable group" to determine their main nutritional deficiencies (above described); 2) Propose a project to be committed in a viable period of time; 3) Find a way to act with compromise and efficiency in the field; and 4) Motivate and sensitize students in cooperation projects, as well as offer them ways to develop their profession. We have focused on the "Sahara refugee camps", a durable "refugee crisis" that last 40 years unsolved. We have the expertise and infrastructure of "SaharaMarathon" the consolidated solidarity project that, through an international sporting event, denounce the situation of abandonment of Sahrawi refugees. The

project, involved in solidarity and cooperation, will serve to initiate a life journey in awareness, living with people suffering inequality and lack of most basic necessities, and raising consciousness of a harsh reality unknown in our welfare states. The success of the project will be to get them a perspective to live with dignity finding another way to exercise our profession.

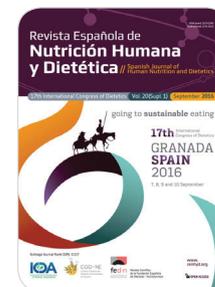
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FOOD AND NUTRITION SECURITY

P-248: A COCHRANE REVIEW OF INTERVENTIONS TO IMPROVE COMMUNITY FOOD SECURITY IN DEVELOPED COUNTRIES: PROGRESS TO DATE

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Introduction: The adverse consequences of food insecurity are well established. A growing number of interventions to improve community food security using a food systems approach are being implemented in developed countries. A comprehensive systematic review to investigate the impact of these interventions is urgently needed and is currently underway. **Methods:** Thirteen electronic databases were searched from 1980 to July 2015 for relevant studies in any language. Database searching will be supplemented by hand searching of reference lists. Randomised controlled trials (RCTs), cluster randomised controlled trials (cRCTs), controlled before and after studies (CBAs), interrupted time series (ITS), historically controlled studies (HCS), and prospective controlled cohort studies with a minimum of six months follow-up from the start of the intervention to measurement of outcomes are eligible for inclusion. Participants are people living in developed countries who are exposed to the intervention (particularly those within groups most at risk of food insecurity). Food security interventions are interventions that aim to improve availability and/or accessibility of nutritious food. Outcomes of interest include changes in household food security status, dietary intake and physical, mental and social health and wellbeing. Data from included studies will be extracted and analysed in line with Cochrane Public Health Group systematic review guidelines. Meta-analyses will be carried out when there is a minimum of two studies that can be combined. **Results:** Database searching yielded 24213 records. It is anticipated that preliminary results will be available mid-2016. **Conclusions, discussion and/or practical application:** The results of this Cochrane review can be used to inform the planning, funding, implementation and evaluation of interventions designed to improve community food security in developed countries.

COMPETING INTEREST: This project is funded by a Canadian Institute of Health Research Knowledge Synthesis Grant. The protocol was originally published in The Cochrane Library 2010, Issue 12.

P-251: A PARTNERSHIP APPROACH TO TACKLING INEQUALITIES THROUGH A SUMMER HOLIDAY ENRICHMENT PROGRAMME

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Introduction: The Summer Holiday Enrichment Programme (SHEP) is a multi-agency pilot to provide good quality meals to children living in areas of deprivation in Cardiff, enhancing children's quality of life and reducing inequalities in health and learning loss during summer holidays. **Previous theories and investigations:** Wales has the highest rate of child poverty in the UK. People living in poorer households are more likely to suffer from health related conditions. Free School meals are vital to low income families easing financial burden, maintaining health and well-being and social inclusion. Children's food intake during school holidays can be sporadic and lower in nutritional value than at school. Poor nutritional intake and more sedentary behaviour during holidays increases the risk of obesity. **Intervention(s):** SHEP involved more than 20 partners including dietitians and community members. It ran for 3 days a week for 4 weeks across 5 settings and provided children with a healthy breakfast, food and nutrition educational activities, sporting activities, creative and educational play. A hot lunch was provided that complied with Welsh Legislation. Families joined children for lunch once a week. **Evaluation:** Mixed method evaluation of health, well-being, financial and social outcomes. **Results:** 41% of children skipped at least one main meal on the day they did not attend compared to 22% on day they attended. 33% of parents skipped fewer meals and also relied less on food banks. Fruit and vegetable consumption increased on days of attendance. Children enjoyed learning about nutrition and participating in sport and were able to create and sustain new friendships. **Conclusions of authors and discussion:** SHEP was successful with results submitted to the All Parliamentary enquiry into Hunger and Food Poverty and the School Holiday Hunger Task Force. We hope the evidence will provide policy makers in Wales with an effective tool to help alleviate food poverty whilst providing wider social, educational and economic benefits.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-252: AN EXPLORATION OF FOOD PURCHASING PRACTICES AMONG MULTICULTURAL URBAN RESIDENTS AT RISK OF FOOD INSECURITY IN THE UK

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Introduction: Food insecurity is believed to be on the increase in urban areas of the UK, with an increase in demand from food cooperatives. The impact of food insecurity on health and risk of chronic disease can be far-reaching. There is little extant literature on food shopping habits and decision making among those at risk of food insecurity, and this limits the success of health interventions that focus on this group. The aim of the study was to gain an insight into decision-making and practices around food shopping by individuals at risk of food insecurity in order to inform dietetic advice. **Methods:** This was a qualitative study using focus groups (n=6) with local residents (n=41). A central London Dietetic service recruited participants who were identified as being at risk of food insecurity, from a range of ethnic backgrounds, via local advisory groups. Topics explored included aspects that impacted upon choice of location, considerations in choosing produce, and preferences for particular items. Focus groups were audio-recorded and transcribed verbatim. Framework Analysis was conducted on the transcripts. Ethical approval was sought but not required for the study. **Results:** Key themes included value for money, brand preferences for some products, and willingness to shop around for the best deals. Value for money was judged on shelf-life and freshness rather than price alone. Taste was a key theme for brand preference, and many participants indicated that they would go elsewhere if these were not available. Planning, bulk buying and storage was of high importance for those who had experienced food insecurity for some time, but less so among those who had experienced this only recently. **Conclusions, discussion and/or practical application:** The results of this study will inform dietetic interventions to develop successful approaches for multicultural groups at risk of food insecurity.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-253: BRIDGING THE GAP BETWEEN HOSPITAL AND HOME: EXPLORING AND DEVELOPING A 'PANTRY BOX' FOR MEALS ON WHEELS CLIENTS

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Introduction: The number of community living older adults (>65yrs) is growing. This ageing demographic is at increased nutritional risk and there are a limited number of strategies supporting their nutrition needs. One current strategy is Meals on Wheels (MOW), which delivers approximately 14.8 million meals to Australians each year. This project aimed to develop 'The Pantry Box' as a strategy to provide food items to community living older adults during times when access to food is limited.

Methods: Northern Illawarra MOW clients and volunteers were interviewed to explore the needs of MOW clients for grocery items at times of illness, or return from hospital, or when unable to shop for themselves. Their views about what should be included were sought, as well as their opinions on the box design, marketing, cost and accompanying educational resources, before they evaluated a prototype. Data was analysed using Microsoft Excel™ and QSR NVIVO™. **Results:** There was strong interest in the product including items such as cheese, eggs, bread, milk, custard, baked beans, tuna, chips, milk drinks and creamed rice. An accompanying education resource including high energy, high protein options, social events, 4 day meal plan, food accessibility and safety advice was also found to be useful for MOW clients. The prototype, costing \$25 was evaluated positively for MOW clients in times of illness or post discharge from hospital and could provide support to community living older adults at nutritional risk. **Conclusions:** The implementation and evaluation of 'The Pantry Box' initiative within this population is the next stage of this research and is planned for 2016.

COMPETING INTERESTS: A University of Wollongong Community Engagement Grant has previously been made available to the research team for a project with Northern Illawarra Meals on Wheels.

P-255: MEASURING FOOD SECURITY OF HOMELESS ADULTS

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Introduction: National health surveys in Canada use the Household Food Security Survey Module (HFSSM) to measure population levels of food security. However, published results should be interpreted with caution as data collection efforts exclude some of the most marginalized populations, including homeless individuals, people living on First Nation Reserves or Crown Lands, in prisons, and some remote areas of Canada. **Objectives:** To assess whether the current food security measurement tool used in Canada, is appropriate for use with homeless adults. **Methods:** The Household Food Security Survey Module, a validated measurement tool utilized for determining food security status of the Canadian households, was used to determine food security of a group of homeless men (n=40). In depth interviews were conducted with participants to obtain particulars about their food environment. Data was analyzed by comparing the results of the HFSSM with qualitative data. **Results:** The HFSSM measurement tool identified that 90% (n=36) of the study participants experienced food insecurity. The majority of participants (n=27) experienced severe food insecurity, while 22.5% (n=9) were categorized as moderately food insecure. The qualitative data however, suggested that all participants (n=40) food insecure based on self-reported food acquisition practices, food accessibility, and diet quality. **Conclusions, discussion and/or practical application:** The pervasiveness of poverty, homelessness, and hunger in Canada influences national policies and programming aimed at addressing food insecurity. Inclusion of homeless individuals in any future efforts to determine the prevalence of food insecurity in Canada is urgently needed. Presently, the interpretation of the questions presented on the national HFSSM tool is influenced by the unique frame of reference for a homeless individual. Nutrition professionals and other key stakeholders should work together to develop valid tools for measuring food security status of homeless individuals.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-256: IT IS SAFE TO USE MICROWAVES IN UNIVERSITY CANTEENS?

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Introduction: The use of microwave ovens has increased in recent years, because they allow cooking or reheating cooked food in a short period of time. In this sense, the hygienic quality of microwaves is important due to the possible food contamination when heating food stuffs. The retention of bacteria on food contact surfaces increases the risk of cross-contamination of these microorganisms to food. Thus, the aim of this study is to survey the hygienic quality of microwave surfaces in some Spanish restaurants. **Methods:** A total of 30 microwaves (120 surface points) were analyzed during June and July 2012 to determine the microbial contamination of the microwaves. Samples were tested for the presence of *Listeria monocytogenes*, *Salmonella*, *Escherichia coli*, *Staphylococcus aureus*, *Enterobacteriaceae* and mesophilic aerobic counts. **Results:** The results obtained in the present survey showed that more than 60% of the microwaves analyzed were contaminated with any of the bacteria analyzed in this study, showing differences according to the different points or surfaces analyzed. In 31% of the surfaces analyzed, high levels of contamination by *Enterobacteriaceae* were found and levels of MAC were higher, too. No sample were only positive to *Enterobacteriaceae*, as this bacteria was reported in cooccurrence with *S. aureus*, *L. monocytogenes* or MAC. **Conclusions, discussion and/or practical application:** The bacterial contamination found in these microwave surfaces could play a role in the transmission of health-care associated food borne pathogens. The surface contamination of public microwaves has to be improved and cleaning procedures have to be established in order to ensure proper food hygiene and consumers safety.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-257: NUTRITIONAL STATUS AND COGNITIVE ABILITIES OF ADOLESCENTS BELONGING TO LOW SOCIOECONOMIC GROUP

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Introduction: Malnutrition affects brain growth and development and hence future behavioral outcomes. Impact of malnutrition on physical growth of adolescents has been well studied. But its influence on cognitive abilities is very sparse. The present study thus aimed at assessing the association between nutritional status and cognitive intelligence (CI) of adolescents (12-14yrs) belonging to low socio economic families. **Methods:** One hundred and sixty school going adolescents (12-14yrs) including 78 girls and 82 boys were selected using purposive sampling technique. A standardized interview schedule and repeated 24 hour recall method were used to collect information on dietary practices of the participants. Anthropometrical measurements were recorded using suitable techniques. Cognitive abilities were measured using Raven's Standard Progressive Matrices Scale based on which various levels of cognitive impairment (Mild, Moderate and Severe) was identified among the participants. Data were analysed using SPSS version 16.0. **Results:** An alarming 51% of the participants showed cognitive impairment with the incidence of mild cognitive impairment higher than the other two levels in the sample. The overall incidence of cognitive impairment was significantly higher amongst Girls than Boys ($F=123.78$, $P\leq 0.001$), who were also more undernourished with respect to their BMI, WHR and WHtR. Surprisingly only female participants showed incidence of severe cognitive impairment. The dietary energy and nutrient intake also showed gender specific trends. Dietary fat intake decreased with increasing cognitive impairment only among girls. Consumption of vitamin B3 in females; vitamin B6 and folic acid in males decreased with increased cognitive impairment. Similarly, calcium, iron and zinc consumption in girls, and only zinc consumption in boys decreased with increasing cognitive impairment. **Conclusions, discussion and/or practical application:** The higher incidence of cognitive impairment associated with under nutrition among adolescents, especially girls brought to light a new angle to the impact of food insecurity.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-258: HOW DO WE KNOW WE HAVE A SUSTAINABLE FOOD SYSTEM? WHEN THE POPULATION IS HEALTHY

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In our competitive global food market, being “food secure” is a strong desirable economic position for any nation. This is because being “food secure” has an implied positivity: the population is healthy, or at least, not starving, and the food system is [probably] sustainable. The current algorithm to calculate “food secure” status includes: food is available, accessible, acceptable and affordable. Australia, meets “food secure” requirements, and, Australia has the capacity to feed its population without a reliance on imports [sustainable]. However, two in three Australian adults (~60%) have a food-related chronic disease. Can Australia be “food secure” when its population is not healthy? It follows then, if the population is not healthy, the food system is out of balance and therefore, not sustainable. We set out to investigate “food security” as it is applied to high-income nations where there is [more than] enough food. We began with a critical analysis of the literature, definitions, and commentary to date on food security and sustainability. We then applied economic modelling to explore the current algorithm for determining “food secure” status and “sustainability”. From this, we present a proposed set of measurable components to determine food secure status. The algorithm leverages current definitions and concepts of food security and sustainability, and has the capacity to generate evidence of a food system in balance. This work provides a first step toward measuring and reporting on local and global food systems, and evidence-based sustainable food systems.

COMPETING INTERESTS: Melanie had her PhD Scholarship funded by the National Health & Medical Research Council of Australia (NHMRC) 2010-2015. Paul is a practicing physician and Professor of Medicine at Monash University. Other positions Paul holds are as a Director of Global Reconciliation [globalreconciliation.org], and a Director of PRAXIS Australia [praxisaustralia.com.au].

P-260: LOW TO MEDIUM INCOME VICTORIAN HOUSEHOLDS EXPERIENCING FOOD INSECURITY. AN EXAMINATION OF VICTORIAN POPULATION HEALTH SURVEY, 2006-2009

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Introduction: There is increasing international evidence suggesting food insecurity exists in income groups beyond those on the poverty line, however this trend has not been explored in Australia. This research examined food insecurity and associated factors in low to middle income households in Victoria, Australia. **Methods:** This analysis utilised data from the cross sectional Victorian Population Health Survey (VPHS) conducted in 2006-2009. The VPHS is an annual state wide health and wellbeing survey implemented by the Department of Health in Victoria. Respondents were randomly selected representative sample of Victorian adults, who reside in private dwellings. Food security status was determined by an affirmative response to the single item instrument ‘In the last 12 months were there any times that you ran out of food and couldn’t afford to buy more.’ Demographics of low to middle income households (household income: \$40,000–\$80,000 AUD) were described. Univariable and bivariable logistic regressions were completed to explore associations between demographic variables and household food insecurity within this income group using Stata version 14 (Stata Corp. LP., College Station, TX, USA). **Results:** At each year the prevalence of food insecurity reported in low to medium income households ranged between 4-5% of respondents. The frequency of food insecurity ranged from weekly to less than once a month. Food insecurity was associated with household composition, social support, ability to raise money in an emergency and inability to get some foods due to their expense. **Conclusions, discussion and/or practical application:** This study provides new evidence that households beyond very low

income in Victoria, Australia, are also at risk of experiencing food insecurity. The findings are generalisable to Victoria. There is increasing need to understand the extent and implications of household food insecurity across all income groups in Australia to inform effective and appropriate public health responses.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-261: PROFILE OF FOOD SERVICES REGISTERED WITH THE SANITARY INSPECTION SERVICE OF CURITIBA, PARANÁ, BRAZIL

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Introduction: Food services have been increasing in Brazil and the world, in both the number of establishments and the number of meals produced. For this reason, by knowing how they are distributed throughout a territory and identifying the greater risks, it is possible to establish priorities for Sanitary Inspection actions and promote food safety. **Objectives:** Identify the profile of the food services registered at the Sanitary Inspection Department of Curitiba, Paraná, Brazil. **Methods:** A quantitative, longitudinal, retrospective and analytical study was conducted based on the registered food services, in the nine sanitary districts of the municipality of Curitiba, Paraná (PR), Brazil, from January 1st, 2005 until July 1st, 2015, based on the report "Dynamic of Personal and Establishment", from the Municipal System of Sanitary and Environmental Information (Simivisa). Data were tabulated in Microsoft Excel and analyzed using SAS[®] software, with descriptive statistical analysis, measures of association, linear regression and Pearson correlation, all with $p < 0,05$ significance level. **Results:** The results show that there was a significant number of food services registered with the Sanitary Inspection Dept. of Curitiba, PR ($n=14,901$), in a variety of segments (9 groups), which reveals the great importance and scope of sanitary inspections. The restaurants ($n=5137/34,47\%$); snack bars, providers of juices and teas ($n=3528/23,68\%$); small supermarkets, supermarkets and hyper-markets ($n=2411/16,18\%$), were the categories with the most establishments. The mapping of the food services shows that most of the establishments are in the Central Sanitary District, named Matriz (39,1%) and Portão (10,64%), followed by the North Sanitary District, named Boa Vista (8,96%), which indicates a disproportional distribution of these segments in the municipality. The mapping also identified territorial discrepancies which could be explained by geographic, economic and political factors of each region and the municipality as a whole. **Conclusion:** The results indicate that this profile should be considered when planning the territorial divisions, as well as the healthcare actions of the Sanitary Inspection Dept., which can have a direct impact on the results of these actions and on the work process of the health professionals and those in the food services involved, and can influence food quality and food safety.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-262: THE COST AND QUALITY OF FRUIT AND VEGETABLES AT AND AROUND FARMERS' MARKETS IN CANBERRA, ACT, AUSTRALIA

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Introduction: Farmers' markets (FM) are flourishing in the western world to address the challenges of food sustainability. Nevertheless, farmers' markets have been criticised for catering to high-end customers. The aim of this study was to compare the price and quality of fruit and vegetables from four different retail streams – FM, fresh food markets (FFM), small (SSM) and large (LSM) supermarkets – in one metropolitan area. **Methods:** Individual fruit (13 items) and vegetables (17 items) were assessed at 3 farmers' markets. For each FM, up to 5 FFM, SSM and LSM within 5km by road were selected for data collection. Price was recorded in Australian dollars per kilogram. Quality was scored on visual appearance as 'poor', 'satisfactory' and 'good'. **Results:** For fruit, there were no statistical differences in price across the four retail streams, except apples ($F=21,22$,

Df=3 & 151, $P<0.001$), with the cheapest apples being obtained at a FM. For vegetables there were no significant differences in price. When a sub-set of fruit and vegetables were selected for a 'basket', there was a significant retail stream effect for fruit ($F=18.245$, Df=3 & 308, $P<0.001$) and vegetables ($F=4.823$, Df=3 & 1035, $P=0.0024$). On average SSM were the most expensive and FM the cheapest for fruit, while for vegetables, on average FM were the most expensive and FFM the cheapest. For quality, only apples, lettuces and potatoes were found to vary significantly in quality across retail streams. **Conclusions, discussion and/or practical application:** These results show that for most fruits and vegetables assessed for price and quality, there were no significant differences across all four retail streams. Therefore, this study suggests that the criticisms levelled at FM for being too expensive are largely unfounded.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-263: AN INVESTIGATION OF NUTRITION AND FOOD SERVICES IN CANADA'S FEDERAL AND PROVINCIAL CORRECTIONAL SYSTEMS: INSIGHTS FROM STAKEHOLDERS WHO USE AND IMPLEMENT SERVICES

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Introduction: Studies about nutrition and food services in Canadian correctional facilities have been lacking. Objectives: To analyze ex-offender, corrections staff, and contractors' (including dietitians) perceptions of nutrition and food services in provincial and federal correctional facilities. **Methods:** Detailed notes from visits, that included naturalistic observation of inmates, to a minimum and medium security federal institution and a provincial correctional facility were taken. Notes from observations during support groups provided to inmates were also included. Interviews were conducted with ex-offenders ($n=11$), who used the food services, and staff ($n=6$) and contractors ($n=7$) that implement food services, to examine perceptions about services. Data was analyzed for themes according to each group (e.g., ex-offenders, staff) and then compared across the groups for commonalities. **Results:** The food systems examined ranged from cafeteria-style service to meal preparation in self-contained living units. Inmates and ex-offenders discussed loss of control around food choices and not being fully aware of the options available to them (e.g., access to dietitians). Nutrition and food services contractors discussed many work constraints such as budget while adhering to dietary guidelines, working in isolation from interdisciplinary health providers, underutilization of professional skills, and suboptimal staffing levels. All stakeholders acknowledged that corrections-related programs and policies need higher visibility and should be aimed at fostering the health and well-being of end-users to facilitate societal reintegration. **Conclusions, discussion and/or practical application:** Based on insights from those who use and deliver corrections-based nutrition and food services, many opportunities exist to improve practice, programs, and policy. In particular, mechanisms aimed at creating healthier food environments within facilities could foster the health of inmates and potentially reduce the health and social costs associated with incarceration and reintegration. The dietetic professional can play a key role in guiding best-practice for nutrition and food service in correctional facilities.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-265: PATERNAL INCARCERATION AND FAMILY FOOD SECURITY: A CRITICAL ETHNOGRAPHY

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Introduction: While almost 5% of Canadian children are impacted by paternal incarceration and its collateral consequences on family food security, little is known about these relationships and their intergenerational impacts. Using an intersectional approach, data derived from multiple stakeholders of the Canadian federal incarceration system were analyzed to refine

understanding of the complex relationships between paternal incarceration and family food security. **Methods:** A qualitative study using ethnographic methods of naturalistic observation as well as in depth individual and focus group interviews with multiple stakeholders was conducted to examine food insecurity and the transition from incarceration. Data was analyzed using thematic clusters of text based on inductive, logical, and constant comparative methods. Using an intersectional approach, the findings were defined as complex interrelationships rather than specified variables. **Results:** Based on 16 months of naturalistic observation, interviews with stakeholders involved with the prison system (n=29) and societal reintegration (n=15), former male inmates (n=11) and their partners (n=7) who have children, and 3 focus groups (n=16) of current or former prisoners and stakeholders, different pathways of paternal incarceration and family food security were elucidated. These included: 1) custodial status and pre-incarceration experiences/lifestyles; 2) changes economic/social well-being and family relations; 3) the fathers' experiences and parental relationship quality during imprisonment and reintegration; and 4) declines in health status of family members. The intersecting factors of prejudice, stigma as well as social and structural constraints/supports affected sense of agency and family food security/insecurity. **Conclusions:** An intersectional approach clarifies the need for interventions that incorporate prescriptive ethics, social and restorative justice, and meaningful rehabilitation which could mitigate the familial and intergenerational effects of incarceration and food insecurity.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-512: STRATEGIC PLANNING ADAPTED TO INSTITUTIONALIZED ELDER ADULTS

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Introduction: In the Argentine Republic the elder adults represent the 10.2% of the population, this compels to plan actions which optimize the elder people's life quality. Those who are institutionalized depend of centralized technical decisions to satisfy their basic needs, like food, this can conspire against the full exercise of this human right. The aim of this research is to propose, according to those results, lines of steps in Food and Nutritional Security. **Methods:** A watching, descriptive and transverse research. The sample was made over 66 people, men and women, over 65-yrs-old who accepted to take part, They are neither laid up nor with enteral feeding. They are residents at a Geriatric State Hospital. It was made an alimentary survey and a record of anthropometric data through an ad hoc instrument. The investigated variables were grouped into socio-demographic, clinical, anthropometric and alimentary ones. **Results:** Average age: 72-yrs-old. 62% of this people have expressed neither drink alcohol nor smoke tobacco. 89% have damaged the oral health; 84% haven't problems in the swallowing process. 55% have a good vision, the others wear corrective lens. 20% have taste sense disorder. The average residents have a normal weight BMI 26. 53% expressed a high acceptance of the institutional menu. 58% considered to have a varied menu, Only 20% told can satisfy their appetite while 52% expressed that their individual preferences were respected. 49% admitted to eat food from outside the Institution. **Conclusions:** There's a lot of residents at risk they can't achieve and keep the FNS. To revert this situation it demands an integral approach in the institutional alimentary planning, considering old the common factors of this aged group. The cultural, social and psychological aspects aren't often considered by the centralized policies.

COMPETING INTERESTS: The author of this present paper has not any conflict of interests.

P-513: THE POTENTIAL ROLE OF FOOD GARDENS IN ADDRESSING FOOD SECURITY AND SUSTAINABILITY: A PILOT STUDY FROM A UNIVERSITY CAMPUS IN ACT, AUSTRALIA

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Introduction: Food sustainability challenges, which include climate change, land degradation and decreasing biodiversity, impact on food availability and accessibility, two of the three pillars of food security. University students are one population group at risk of being food insecure, but they are also future problem solvers. The purpose of this paper was twofold: 1) to determine the availability of affordable, healthy food on a university campus; 2) to explore the role of food gardens in addressing food security and sustainability in this setting. **Methods:** An online survey was disseminated via a teaching platform

for university students from the Health Faculty. The survey used closed and open-ended questions to assess food insecurity and potential roles of a newly constructed food garden. An audit of the availability of healthy food from all food outlets was assessed at two price points. **Results:** Sixteen percent of the student sample (81 respondents) had experienced food insecurity. The majority (76%) of respondents were interested in participating in the garden, with two-thirds expressing a desire to grow and prepare their own food. The most frequently identified educative roles of the garden were food literacy skills – how to grow, harvest, process and cook/prepare food (93%), nutrition education (83%) and raising awareness of sustainability issues (75%). The majority of the food available through food outlets for \$5 and \$10 was classified as unhealthy (69% and 67% respectively). **Conclusions, discussion and/or practical application:** This pilot study shows that there is a role for food gardens in a university setting for addressing food security and sustainability. This study was limited in its scope, so a more comprehensive survey that includes students from all faculties is needed to validate these findings. Future interventions that address the paucity of affordable healthy food available on campus are also needed to satisfy a comprehensive approach to food security and sustainability.

COMPETING INTERESTS: The author of this present paper has not any conflict of interests.

P-514: DETERMINATION OF HYDROXYMETHYLFURFURAL LEVELS OF POMEGRANATE SOUR, POMEGRANATE SOUR SAUCE AND GRAPE MOLASSES SOLD IN SUPERMARKETS IN ANKARA, TURKEY

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Introduction: 5-Hydroxymethylfurfural is an intermediate compound as a result of non-enzymatic browning reaction, appears with dehydration of hexoses in acidic conditions and is a compound gives information about applied thermal process to food. HMF is a quality parameter and mutagenic substance forming as a result of thermal process of fruits and other carbohydrate rich foods and could metabolize to harmful compounds for human health. Turkish Standards Institute allows 50mg/kg HMF levels for pomegranate sour and 75mg/kg for grape molasses. There is no standard HMF level for pomegranate sour sauce. **Methods:** 5 pomegranates, 9 pomegranate sauces and 4 grape molasses sold in the supermarkets in Ankara, Turkey were analyzed in terms of HMF levels. The pH analyses were done using a pH meter. The HMF analysis was done using a HPLC. **Results:** In this research HMF levels of pomegranate sour, pomegranate sour sauce and grape molasses were changed between 91.1 to 11485.7mg/kg, 41 to 151.9mg/kg, 11.9 to 101.7mg/kg respectively. The data obtained in this research shows pomegranate sours and 1 of grape molasses exceed the levels that are allowed for HMF in Turkish Standards. In addition, improper storage time and conditions, pH levels in these products after production may have increased levels of HMF. **Conclusions, discussion and/or practical application:** As a result, when taking account of the Turkish people consumed frequently these products and the other foods having HMF, HMF levels may exceed the maximum levels daily intake of HMF. It concluded that production techniques of HMF should be optimized and improved to reduce the HMF's negative effects on health.

COMPETING INTERESTS: The author of this present paper has not any conflict of interests.

P-515: BEST AND PROMISING PRACTICES IN COLLABORATIVE GOVERNANCE AND USING THE COLLECTIVE IMPACT PROCESS TO DEFINE A COLLABORATIVE GOVERNANCE STRUCTURE FOR THE ONTARIO FOOD AND NUTRITION STRATEGY

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A whole-system perspective is critical in efforts to create a healthy food and beverage environment since all components of the food system are interconnected. In 2009, the Ontario Collaborative Group on Healthy Eating and Physical Activity

undertook a bold initiative to develop a provincial strategy encompassing the entire food system, from environmental protection and food production to healthy food access and food literacy. The Ontario Food and Nutrition Strategy, which has been shaped by an extensive series of consultations, is a framework that sets strategic directions and covers a wide-ranging set of long-term outcomes for a productive, equitable and sustainable food system that is conducive to the health and well being of all Ontarians. Paramount to the Strategy's requirements is the establishment of a collaborative governance arrangement for a cross-government, multi-stakeholder coordinated approach to food policy development. Investigations of successful cross-sector collaboration have revealed best and promising practices related to the constellation model of governance and the collective-impact approach for system change. In 2014, the group began a Collective Impact process with funding from Innoveave to develop a theory of change and potential governance model. This poster presentation provides insights into the following questions: What collaborative governance structure would be suitable for the Strategy based on best/promising practices? What would a structured collaborative governance arrangement for a multi-stakeholder coordinated provincial mechanism look like? How has the collaborative group been involved in the Collective Impact process to develop a governance structure? How can focused attention on collaborative-governance conditions and requirements pave the way towards successful intersectoral action on priority recommendations geared towards the creation of a healthy food and beverage environment?

*The OFNS Design Team is made up of members from the Ontario Collaborative Group and others representing agriculture, food, health, education and Aboriginal groups – <http://sustainontario.com/work/ofns/who-we-are/>

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P-536: COMPARISON OF LUNCH MEALS IN TWO ELEMENTARY SCHOOLS IN CHENNAI, INDIA

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Introduction: Millions of school children in India eat lunches prepared at school. The goal of the current study was to compare two Indian schools to determine the quality of lunch meals served by the type of funding received to support the schools. The diet quality of the children consuming lunch meals prepared at two schools in Chennai, India were analyzed. One school was private and one received partial government funding. **Methods:** The students included were second through fifth graders with the age range of 7 to 10 years. Digital photographs were taken before and after meals in one private elementary school (A) and one school that was partially government funded (B). Photographs were used to make visual estimations to determine nutritional content and were analyzed using an Indian foods diet analysis system. **Results:** Differences existed between almost all nutrients analyzed and were apparent between each school (all values are mean + standard deviations (S.D.), $p < 0.05$) in calories: 269+112(A) and 463+234(B); protein (grams): 6+3(A) and 16.6+10(B); carbohydrate (grams): 46+20(A) and 80.1+34(B); iron (mg): 1.6+1(A) and 2.5+1.5(B); fiber (grams): 2.1+1.4(A) and 6.4+2.4(B) and saturated fat (grams): 0.98+0.1(A) and 1.8+1.5(B). **Conclusions, discussion and/or practical application:** Students in school A consumed 58% of the calories consumed in school B. Meals consumed in school A contained lower averages of calories, protein, carbohydrates, iron, vitamin A, vitamin C, saturated fat, and fiber. Sodium and calcium intake was higher in school A. To make a more comprehensive analysis of nutrient and calorie adequacy of school meal, more public and private schools need to be included in future investigations.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-542: CONSUMERS SURVEY SATISFACTION WITH PURCHASE OF PRODUCE FROM FARMERS' MARKETS – IMPLICATIONS FOR LOW-INCOME FAMILIES IN HOUSTON, TEXAS (USA)

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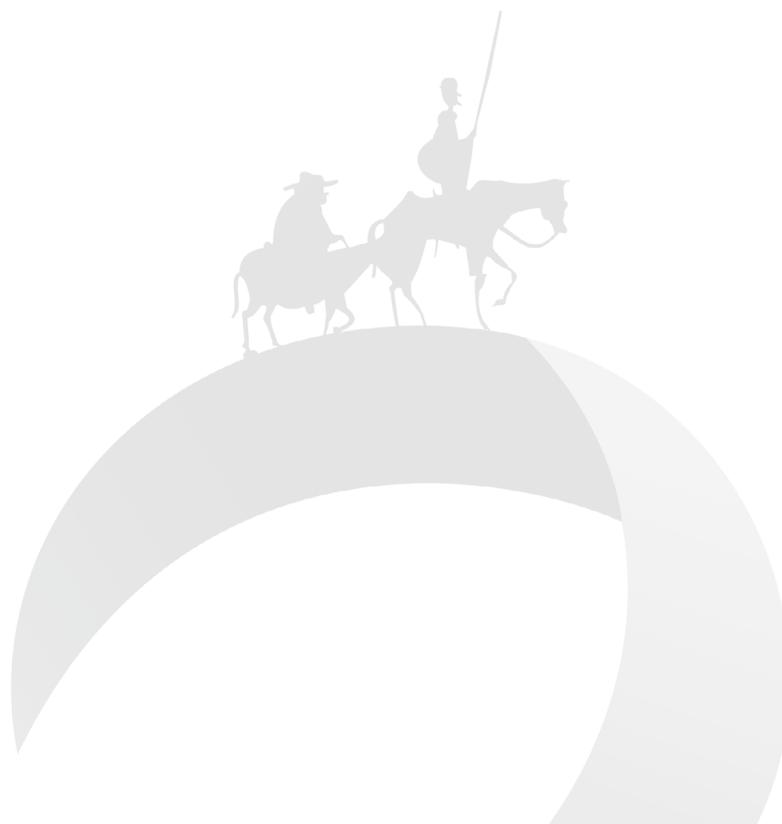
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Introduction: The Dietetics Program at Texas Southern University (TSU) is promoting healthy eating and lifestyle among low-income families residing in Cuney Homes. Cuney Homes is located in Houston, Third Ward, and is one of the largest government housings in the USA. It is a food desert without access to fresh fruits and vegetables, and other healthful whole foods. Easy access to fresh fruits and vegetables can play a role in a healthy lifestyle and can reduce incidence of chronic diseases and obesity. Barriers for low-income communities to access Farmers' Markets include the perception of higher prices, lack of awareness, the perception of limited food selection, and the lack of transportation. The results of this study may be used to educate residents of Cuney Homes to purchase produce from farmers' markets in order to increase their consumption of fruits and vegetables. **Methods:** A consumer survey containing demographic data and questions related to consumers' satisfaction with the freshness, price, variety of produce, the location and convenience of shopping at Farmers' Markets, and the overall experience was developed. The survey was administered to ninety nine (99) conveniently selected shoppers at the site of Urban Harvest Farmers' Market (Houston, TX) located 5 miles away from the Cuney Homes. Data from the survey were analyzed using the descriptive statistics of the Statistical Packages for Social Science (SPSS). **Results:** Results indicated that the majority were between 18 and 50 years old (77.8%), and 60.2% were females. The results also showed that the majority of shoppers were satisfied (satisfied includes the categories of "satisfied", "very satisfied", and "extremely satisfied") with purchase of produce at Farmers' Markets: 98% with the freshness, 88.8% with the price, 94.9% with the variety, 88.9% with the convenience, and 81.6% with the overall experience. **Conclusion:** Educating low income residents from Cuney Homes to purchase produce from the Urban Harvest Farmers' Market may be beneficial and may promote healthy diet among residents. Another advantage is that purchasing from Farmers' Markets (local producers) is sustainable.

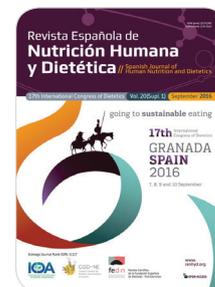
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POSTER COMMUNICATIONS



FOOD AND SUSTAINABILITY

P-267: ANALYSIS OF ASPECTS CONCERNING MEAT AND MEAT PRODUCTS IN THE MENU PLANNING OF STYRIAN HOSPITALS AND REHABILITATION CENTERS

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Introduction: The meat-consumption of Austrians is higher than recommended. This can cause health-disorders and negative effects on the environment, society and economy. Meat-consumption is a significant subject within a sustainably nutrition. Hospitals and rehabilitation centres are considered as places for nutrition education and serve as role-models for patients. This bachelor thesis analysed to which extent the recommendations and other aspects of meat and meat-products were already implemented in the menu planning of Styrian hospitals and rehabilitation centres. Furthermore hindering and supporting factors were investigated. **Methods:** A literature research was conducted to define aspects and recommendations for meat and meat-products in the menu planning, concerning health and sustainability. Criteria for the analyzation of lunch and dinner for one week were provided. Finally 670 main dishes were examined in 48 menu-lines of 9 hospitals (from 33) and 7 rehabilitation centres (from 16) in Styria. In addition an online questionnaire was used. **Results:** Aspects and recommendations for meat and meat-products in the food planning are partially implemented in Styrian hospitals and rehabilitation centres. For example the reduction of meat servings was already implemented in 75% (n=16) of all institutions. The total quantity of meat in the menus was twice as high as recommended. Three hospitals (n=9) already preferred meat from ecological production but no rehabilitation centre did. About 70% of all institutions were not interested in promoting vegetarian dishes on the menu. Price-pressure was a main obstacle for preferring meat from ecological or regional production. In 9 hospitals (67%) there was a need for more time to focus on these recommendations. All participants felt responsible for the implementation of the recommendations. **Conclusions:** Hospitals and rehabilitation centers should be aware of their responsibility as role-models concerning a healthy and sustainable diet and should optimize the meat-portion in their catering. In addition hindering factors must be solved.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-269: AN *IN VIVO* STUDY ON THE DIFFERENTIAL BIOAVAILABILITY OF ANTIOXIDANTS FROM ORGANIC AND CONVENTIONAL SPINACH DRINK

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Introduction: Antioxidant intake is crucial in maintaining health. There is a strong perception that organic foods are more nutritious than conventional foods. Organic foods are eco-friendly foods grown without using chemicals during production, processing or storage in contrast to conventional foods. But there are few studies on bioavailability of antioxidants in organic and conventional foods. Hence this study was taken up. **Purpose:** To study the effect of feeding spinach drink on plasma antioxidant capacity of healthy human subjects. **Hypothesis:** There is no difference in change in plasma antioxidant capacity before and after consuming organic or conventional spinach drink. **Method:** Spinach (*Beta vulgaris*) was selected for the study. Organic spinach was obtained from Era Organic foods, Bangalore (I.M.O. certified) and same variety of conventional spinach grown in the same agro climatic zone was used. Spinach drink was prepared using equal quantity of spinach and water, boiled at 100 °C for 5 minutes. It was grinded into a thick liquid to which salt and cumin powder was added for taste. The acceptability of the product was tested. After obtaining ethical clearance, *in vivo* total antioxidant capacity of the spinach drink was tested by Ferric Reducing Antioxidant Power (Benzie and Strain (1996) using the following protocol (n=30). The subjects were fed with a uniform diet the previous night. Fasting plasma antioxidant capacity was estimated the next morning. 250mL of conventional spinach drink was given. After one hour, plasma antioxidant capacity was estimated. After 15 days washout period, same procedure was repeated for organic sample. **Results:** There was decrease in plasma antioxidant level in case of conventional spinach drink as against organic spinach drink, where plasma antioxidant level remained unaltered. **Conclusion:** The antioxidants in eco friendly, organic spinach drink had higher bio availability than that of conventional spinach drink.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-270: ASSOCIATION OF NUTRITIONAL STATUS WITH EMOTIONAL AND COGNITIVE INTELLIGENCE OF ADOLESCENTS –THE GENDER SPECIFIC TRENDS

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Introduction: Adolescence is a stage where changes in biological, cognitive, physical and socioemotional domains occur. The impact of malnutrition on physical growth of adolescents is well studied. But its influence on cognitive and emotional intelligence is sparse. The present study thus aimed at assessing the association between nutritional status, cognitive intelligence (CI) and emotional intelligence (EI) of the adolescents (12-14yrs) belonging to low socio economic families. **Methods:** One hundred and sixty school going adolescents (12-14yrs) including 78 girls and 82 boys were selected using purposive sampling technique. A standardized interview schedule and repeated 24 hour recall method were used to collect information on dietary practices of the participants. Anthropometrical measurements were recorded using suitable techniques. Cognitive and Emotional Intelligence were measured using Raven's Standard Progressive Matrices Scale and Emotional Intelligence Scale respectively. Data were analysed using SPSS version 16.0. **Results:** Severe growth retardation and under nutrition were noticed among the participants especially in girls as per their BMI, WHR, WHtR and dietary nutrient intake. 62.8% of boys and 67.1% of girls showed above average EI which was significantly and positively associated with their CI ($p \leq 0.01$). Girls showed significantly higher level of cognitive impairment ($p \leq 0.01$) indicating gender difference. Cognitive impairment showed significant negative association and EI showed significant positive association with dietary intake of energy ($p \leq 0.05$), protein ($p \leq 0.01$) and iron ($p \leq 0.05$); and only those with above average EI showed significant positive correlation with B-carotene ($p \leq 0.05$) and B12 ($p \leq 0.01$) consumption as well. **Conclusions, discussion and/or practical**

application: In the present study malnutrition and growth retardation were identified as strong risk factors for poor emotional and cognitive intelligence among adolescents, indicating a strong need to correct the same early in life through suitable strategies.

COMPETING INTERESTS: The study involves 'NO CONFLICT OF INTEREST' as it has not been sponsored by any organisation.

P-271: ATTITUDES TO REDUCING MEAT CONSUMPTION IN URBAN VS. RURAL POPULATIONS

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Introduction: Reducing meat consumption and adopting meat reduction strategies within the UK is fundamental to achieving sustainable food security, limiting environmental damage and achieving public health benefits. This study aimed to compare the attitudes and barriers to adopting meat reduction strategies within two different population groups, with the hypothesis that people who lived in an agricultural location were more likely to have negative attitudes to meat reduction strategies than those living in towns or cities. **Methods:** 470 adult participants, from within the North East of Scotland, were recruited to complete the non-interviewer led online or pencil-and-paper version of the survey, which were disseminated using online fora and community groups. The study population was divided into two groups, individuals with an immediate link to the agricultural economy (n=174) and the general public (n=296). **Results:** The results showed that the agricultural economy group had significantly more negative attitudes towards meatless meals (P<0.05) and emphasised barriers which included habit, taste, limited choice when eating out, resistance of family members, lack of information in relation to meatless meals, their income being related to meat consumption and the status of meat within a meal. The results showed that male participants demonstrated significantly greater negative attitudes towards meatless meals in comparison to females (P<0.05). Individuals with a higher educational level showed significantly greater awareness of the health implications associated with high dietary meat consumption than participants with a lower educational achievement (P<0.05). **Conclusions, discussion and/or practical application:** Understanding the attitudes and barriers of these groups can facilitate meat reduction strategies which are tailored appropriately to the populations in question. Further studies investigating commercial stakeholders within the agricultural economy are necessary to validate the findings of the present study.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-272: COST OF FOOD WASTE IN ONE COMPANY FOOD SERVICE IN BOGOTÁ 2013-2014

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Introduction: This research determines the cost and type of waste generated by the improper handling of prepared foods in Company Food Service (CFS) in Bogota with 1500 units produced/day. It emphasized the importance of Social and Environmental Responsibility (SER) consumer and contractor company as important players in the Food Waste (FW). **Methods:** Observational, qualitative and descriptive study. At each stage of the manufacturing process were followed to quantify the FW in 2014 and compared the 2013 behavior of using the information system implemented by the contractor. We estimated the cost generated by adding the payment to the collecting waste management company and the price of discarded units were consumed in the year. **Results:** During 2013 and 2014 were reported 40,800kg (=3,400kg/month) and 78,200kg (=6,517kg/month) residue respectively although an asymmetric behavior monthly evidence. The cost represented during 2014 was USD6412.86. Differentiation account the decrease waste: organic inedible parts of food, and waste: leftovers by consumer food production. 92% had an inadequate management in the storage, messy processes during production and waste by users. **Conclusions:** The limitation of the study was inadequate documentation and data by contractor, compared with the calculation made by the researchers, also the cost of weight of the residue by stage; a worrying panorama for costs, FW and objectives of the national policy on food and nutrition security. The SER must begin with the contractual negotiation

of technical-administrative and political processes of good practices. Food consumer education should be based on food to manage your portions and socially conscious consumer guides.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-273: SELECTION OF METHODOLOGY TO ASSESS DIETARY HABITS FROM THE POINT OF VIEW OF SUSTAINABILITY

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Introduction: To provide healthy and sustainable foods is one of the major challenges of the modern society. The aim of this study was to select a methodology in order to analyze the greenhouse gas emissions (GHGEs) related to dietary habits of students from the University of the Basque Country (Spain). **Methods:** A search of the literature was performed using PubMed from 2000 to the present. Key words used were "greenhouse gas emissions", "food consumption", "sustainable diet", "life cycle", "carbon footprint", "cultivated planet" and "environmental impact". Articles were analyzed regarding the GHGE data expressed as kg eCO₂/kg of food. The selection of data was made taking into account geographical proximity to our environment. The GHGE data were compared between food groups using T-tests (SPSS 22.0). **Results:** One hundred of records were identified through searching and thirteen studies were included in the synthesis. The analysis of GHGE data shown that the higher values belonged to meats and derivatives (9.8(2.2) kg eCO₂/kg) and the lowest one to the group of non-alcoholic beverages (0.6(0.2) kg eCO₂/kg). Cereals and derivatives obtained intermediate values (2.6(1.3) kg eCO₂/kg). Additionally, when foods were classified according to their origin, significant differences were found between them: plant products, 2.0(0.5) kg eCO₂/kg; and animal products, 7.8(1.4) kg eCO₂/kg (P<0.001). **Conclusions, discussion and/or practical application:** GHGE data of the life cycle of foods in our environment were scarce. Anyway, the analysis of the information available allowed to confirm significant differences among food groups, especially between plant and animal products. The selected methodology should be applied in the analysis of the sustainability of the dietary habits of the population that lives in this geographic environment.

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P-274: WHY HISTORY MATTERS FOR DIETETICS EDUCATION, PRACTICE & RESEARCH

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Why does dietetic history matter? What do students, clinical practitioners, and dietitian-researchers have to gain from knowledge of the history of dietetics in Canada and internationally? What implications does teaching and learning about our history have for the culture of dietetics as a profession? These are some of the questions that inspire our work and that the panel will address. We contend that, for practitioners and students, knowing about dietetic history informs dietitians' identity development, inspires ongoing evolution of innovations in practice, and is key to dietitians' leadership roles in the societal changes that are necessary to move toward sustainable eating. Learning about our history punctuates the sociopolitical aspects of nutrition and dietetics, something that practitioners are increasingly required to address in a world of growing food

insecurity, community- and hospital-based malnutrition (especially in seniors), climate change and fear of food shortages, and calls for sustainable food systems. Moreover, understanding the national, international and interdisciplinary lineage of the dietetics profession matters for who we are as dietitians, as individuals and as a profession. Panelists will speak on an aspect of the history of dietetics as this relates to the culture of the dietetics profession, practice, research, and education. Topics include the naissence of the contemporary dietetics profession through an exploration of its roots in the mid-1800s, the transformation to evidence-based practice from one rooted in humour-based medicine, the contributions of historical understanding to informing what is valued as dietetics knowledge, collaboration with a university Archivist to raise undergraduate students' appreciation for their roots, and a modern history of dietetics in North America through oral histories of senior dietitians. These discussions present history as more than something that happened yesterday but rather as a catalyst for understanding today and informing our practices for tomorrow.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-275: THE BARRIERS AND DRIVERS OF SEAFOOD CONSUMPTION IN AUSTRALIA: A NARRATIVE LITERATURE REVIEW

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Introduction: Despite considering seafood to be an important part of a healthy and balanced diet, many Australians still do not consume the recommended amounts for good health. Fish is an excellent source of protein, omega-3 fatty acids and other nutrients, and life cycle assessment analyses indicate that seafood-rich diets have a lower impact on the environment than diets high in many other animal proteins. Concerns about health and sustainability have led to an increased interest in understanding consumers' attitudes towards seafood, and this review aims to assess the current knowledge on drivers and barriers to seafood consumption in the Australian context. **Methods:** Systematic search strategies were used to identify relevant peer-reviewed journal articles from three electronic databases (SCOPUS, Web of Science and Science Direct) and grey literature reports from targeted government and industry websites. Accepted studies investigated drivers and/or barriers to seafood consumption in Australia through qualitative, quantitative or mixed method designs. **Results:** Initial searches identified 504 publications from which fourteen were ultimately selected for the review process. These studies revealed that influences on seafood consumption in Australia are similar to those identified in other countries. The leading drivers of seafood consumption are health, taste and convenience, while the main barriers are price, availability, concerns about quality, and a lack of confidence in selecting and preparing seafood. **Conclusions, discussion and/or practical application:** Australian consumers identify seafood as a healthy food choice, but barriers still exist to its regular consumption. Some possible intervention strategies targeted towards reducing barriers to seafood consumption, such as providing point-of-sale consumer resources that offer meal preparation ideas, appear promising. Future research should focus on designing and implementing specific, effective interventions to increase seafood consumption in Australia for potential improved health and sustainability outcomes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-276: FORECASTING THE SUSTAINABILITY OF A FOODSERVICE ENTERPRISE CONFORMING TO HEALTHY EATING ENVIRONMENT AND LIVING WAGE POLICIES USING A GEOGRAPHIC INFORMATION SYSTEM (GIS) BASED ESTIMATION MODEL

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Introduction: Accurate estimation of a foodservice operation's viability is critical to its success. For publicly funded foodservices, correct financial projections are particularly important as adherence to healthy eating environment and fair

wage policies can create operational challenges in this highly competitive sector and losses require taxpayer subsidization. Among the most crucial and difficult tasks facing foodservice managers are predicting alterations in food sales during times of significant business environment changes. In recent years, engineers and urban planners have developed techniques for quantifying pedestrian activity levels at specific locations. Though never used in foodservices contexts, the application of these methods may have potential in forecasting pedestrian activity in close proximity to a given business during different operational scenarios. **Method:** This study utilized standardized manual count methodology before and after changes in the built environment (i.e., an addition of a pedestrian overpass) near a municipally owned outdoor foodservice operation were made. At baseline, we used an established geographic information system (GIS) based model of pedestrian activity estimation that included employment density, population density, and retail variables to project changes in foot traffic and sales volume. The predicted and actual pedestrian activity counts were compared to determine accuracy of the estimation method. **Results:** The predicted outcome was within 7% of the actual pedestrian activity measures (93.2%, 95% CI 92.6 to 93.9). Factors that may increase the predictive capacity and usability of the model include using video tracking and playback to optimize count accuracy as well as estimating transit ridership, bike paths, and industrial acreage in the vicinity. **Conclusions:** Given the efficiency of tracking pedestrian activity and using the prediction methods, foodservice managers may want to consider the use of GIS-based models of pedestrian activity estimation as an additional tool that could promote long-term and sustainable development of their operation.

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P-277: THE A'S, BEES & C'S OF A FULL CIRCLE FOOD SYSTEM NUTRITION CURRICULUM

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Introduction: Edible-garden programs have increasingly been used to expand nutrition knowledge and increase consumption of fruits and vegetables. Often, these curriculums do not include a key component of the food production circle – pollination. Honey bees are valuable, not just in honey production but also in pollinating food bearing plants. **Objectives and target population:** The objective of the “A’s Bees & C’s: From Bee to Bottle” curriculum was to include *Apis Millifera* (honey bees) as an integral part of a food ecology curriculum designed for College and University Students. The aim of the study was to improve students’ understanding of a sustainable food system as well as to elicit their interest in growing food and/or bee keeping. A secondary aim of the curriculum was to increase the student’s intake of fruits and vegetables. **Previous theories and investigations:** Social Cognitive Theory. **Intervention(s):** Honey bees are an integral part of the ecological circle of food production. Recent threats to their survival by various mite infections and colony collapse disorder increased public awareness of their importance to the human diet. The “A’s Bees & C’s: From Bee to Bottle” food ecology curriculum is a theory based nutrition program that guides the learner through the logical steps nature takes for food production. This theory-based, four part curriculum was taught in a working edible garden that houses four honey bee hives (200,000 bees) on a college campus. **Evaluation:** On-going. **Results:** A significant increase in positive eating behaviors. **Conclusions of authors and discussion:** Thus far students who engage in food growing and bee keeping tend to eat more fruits and vegetables and eat a more nutritious diet.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.



P-278: COMPOSITION OF EXOTIC BRAZILIAN FRUITS FROM *SOLANACEAE* FAMILY (*SOLANUM SESSILIFLORUM*) IN TWO MATURATION STAGES

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Introduction: Brazil has a considerable diversity of fruit trees, many of them with potential use. In the family *Solanaceae* especially the *Solanum sessiliflorum* namely cocona, is an exotic fruit from Amazon rainforest used to reforestation project and to improve the rural economy in Antonina, Paraná, Brazil. Cocona can be processed into various products such as pulp, juices, syrup and jelly. The objective of this work was to characterize pulp of fruits and quantify the carotenoids content in two stages of maturation. **Methods:** The fruit were harvest on august 2015, in Antonina. The samples were classified in two stages of maturation: intermediate and mature. All analysis was carried out in triplicate according to AOAC (2005) procedures (humidity, pH, ashes, titratable acidity, total soluble solids, organic acids and sugars, total protein, total lipids and dietary fiber); sugar and organic acids were determined by high-performance liquid chromatography (HPLC) according to Macrae (1998). The results were submitted to analysis of variance (ANOVA) in the program R Statistics. **Results:** The results showed significant increases during fruit maturation for ash, total soluble solids, carotenoids, saccharose, fructose and glucose. **Conclusions, discussion and/or practical application:** In general, occurred important changes in fruit's ripenin. Thus there given their results, there is a potential to produce cocona in Antonina for agroindustrial uses, also when cultivated outside the natural habitat.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-279: COMPOSITION OF FRUITS OF THE SPECIES *PERESKIA ACULEATA* MILLER IN DIFFERENT MATURATION STAGES

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Introduction: The species *Pereskia aculeata* Miller, popularly known as "ora-pro-nobis", is a Cactaceae originating from the tropics, found in the Brazilian's flora. Most studies are related to the chemical characterization of the species leaves due to the high intake of protein, dietary fiber, minerals, antioxidants and mucilage. **Objectives:** Therefore, the aim of this study was to evaluate the physicochemical characterization and to quantify the carotenoid content of the fruits of OPN. **Methodology:** The samples were collected in Curitiba, Paraná, Brazil, cleaned under running water and classified according to the maturation stages: green, painted (transition stage) and mature. The physicochemical analyzes implicated in the determination of humidity, pH, ashes, titratable acidity, soluble solids, organic acids and sugars, total protein, total lipids and dietary fiber, which were performed according to AOAC (2000) and the content of carotenoids according to Rodriguez-Amaya (2001). The organic acids and sugars were determined by high-performance liquid chromatography (HPLC) according to Macrae (1998). The results were submitted to analysis of variance (ANOVA) in the program SPSS Statistics 22. The averages were compared to the Tukey test. **Results:** The results showed a significant variation among the maturity stages for humidity values, ash, total lipids and total protein. There was a significant increase during the ripening of the fruit over the values of pH, soluble solids, glucose, fructose, sucrose, β -carotene and lycopene. However, the dietary fiber values and citric and malic acids significantly decreased with maturation. **Conclusion:** Due to the decline of dietary fiber values, there was an increase in carbohydrate intake as well as the total energy value of fruit ripening. In general, occurred important changes in fruit's ripening, presenting the ripe fruit a high carotenoid content, highlighting antioxidant potential of the OPN.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-280: DETERMINATION OF CONSUMERS MOTIVATIONAL ASPECTS USING FOOD CHOICE QUESTIONNAIRE

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Introduction: In the past few decades the concern about food choice, especially in relation to health, is widespread all over the world. Determination of food choice motives is important when establishing food and health policies, as well as desining marketing strategies. This study has been planned with the object of determining Turkish consumers' motivational aspects of food choice in terms of animal rights, health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity and ethical concerns. **Methods:** Food choice motives were measured by application of the food choice questionnaire. Consumers indicated their level of agreement on a 4-point scale. Questions on socio-demographic characteristics were also included. This cross sectional study was conducted in a random selected sample consisted of 820 consumers (50.9% woman, 49.1% man) in Ankara. The questionnaires were analysed with the statistical programme SPSS. **Results:** Participants were categorized according to their healthy nutrition habits and ecologically friendly behaviors. Participants food choice aspects in the case of health, mood, natural content, weight management, ethical concerns and animal welfare were significantly different between unhealthy and healthy eaters ($p<0.05$). Also eco-friendly participants gives more attention to animal welfare compare to non eco-friendly participants ($p<0.05$). **Conclusion:** Since assessment of the consumer decision making process is very complex, determination of food choice motives is important when establishing food and health policies, as well as desining marketing strategies.

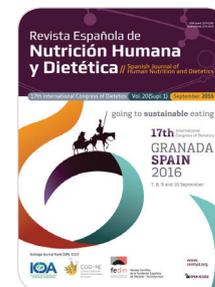
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INFORMATION TECHNOLOGY AND COMMUNICATION

P-281: APPLYING THE DUTCH NUTRITION CARE PROCESS AND INTERNATIONAL CLASSIFICATION ON FUNCTIONING-DIETETICS IN ELECTRONIC HEALTH RECORD SYSTEMS IN HOSPITALS IN THE NETHERLANDS

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Introduction: The Dutch Nutrition Care Process (DNCP) is a system of six structured steps for diagnostics and treatment by the dietitian. Using a standardized language will significantly enhance dietitians' ability to unambiguously document, communicate and research the impact of nutrition care and hence will facilitate an improved quality of care, quantitative research and outcome management. **Objectives and target population:** The aim of this project is to implement both the DNCP and the Classifications and Code lists for Dietitians (CCD), which includes the International Classification on Functioning (ICF)-Dietetics, in the Electronic Health Record System (EHRS). Previous theories and investigations: Until ten years ago, recording patients' diagnostic and treatment data mostly occurred on paper and using free text. During development of an EHRS it became apparent that for optimal use applying standardized language would be crucial. **Intervention(s):** The six structured steps of the DNCP were converted to four questionnaires, suitable for recording patients' diagnostic and treatment data in the EHRS. For the questions that were considered most important, answers were standardized using ICF-Dietetic or other CCD terms, and presented as dropdown lists. Amongst them is an assembled code list in which ICF-terms were combined with intervention goals. These lists were implemented in EHRSs in several hospitals in The Netherlands. **Evaluation:** Initial experiences with this combined system show a much clearer, unambiguous and objective use of terminology in dietetics diagnostics and treatment. **Results:** Implementation of the DNCP and CCD in the EHRS was realized gradually over a period of twelve years. Around fifty code lists were developed, selected from the CCD, for the recording of nutrition assessment, intervention, monitoring and evaluation. **Conclusions of authors and discussion:** Working with an EHRS with the DNCP and the ICF-Dietetics implemented has shown very promising first results. It is strongly believed that this approach will support evidence based practice in dietetics and will lead to unambiguous reporting and dietetic outcome databases for research.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-282: SOCIAL MEDIA USE BY REGISTERED DIETITIANS AND PRE-REGISTRATION DIETETIC STUDENTS IN THE UK AND IRELAND

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Introduction: Despite the dramatic rise in the use of social media (SM) to access health information and support, and the potential benefits and disadvantages to more active engagement by health professionals in this media, there has not been a comprehensive study of SM use by dietitians or student dietitians. This study aimed to define the uptake and use of SM by dietitians in the UK and Ireland. **Methods:** Informed by professional documents and literature, an online survey was developed and distributed to registered dietitians (RD) and student dietitians (SD) across the UK and Ireland. Questions were closed multiple choice and five-point Likert scale covering: demographic information; social media use; privacy and professionalism; opportunities, barriers and concerns about social media in dietetic practice. Means and percentages were calculated to estimate uptake and use. **Results:** 1005 responses were received: 753 RDs (8.5% of 8902 RDs in the UK and Ireland) and 252 SDs (15% of 1672 SDs studying dietetics). The majority (68%) were from England; others were from Republic of Ireland (14%), Scotland (9%), Northern Ireland (6%) and Wales (4%). 80% of RDs and 96% of SDs considered themselves users of SM. Overall 52% used SM for personal reasons alone, but 45% of SDs used SM for educational purposes and 41% of RDs used it for professional reasons. Whilst 36% of respondents were concerned that SM use by dietitians could undermine the public's confidence in the profession, the majority (66%) agreed that it is important that dietitians engage with SM to promote the profession. **Conclusions:** Registered dietitians are engaging with SM in their personal and professional lives. Student dietitians are very high users of SM. Inappropriate use of social media may have negative implications for the profession. Guidance and training should be further developed to ensure the opportunities are maximised and that risks are managed.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-283: A NOVEL POSTPARTUM INTERVENTION TO PROMOTE HEALTHY WEIGHT, DIET AND PHYSICAL ACTIVITY IN FIRST-TIME MOTHERS: RESULTS FROM THE MUMS ONLINE STUDY

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Introduction: Postpartum weight retention (PPWR) places women at risk for adverse health implications, including long-term obesity. Few interventions have been able to successfully limit PPWR and improve postpartum diet and physical activity (PA) habits. This study aimed to assess whether a nine month, online and telephone delivered intervention would assist women in limiting PPWR and improving postpartum diet and PA habits. **Methods:** Participants were drawn from those enrolled in a larger study. Forty women enrolled in the mums OnLiNE intervention. A further 120 women from the larger study were allocated to one of two control groups matched on BMI and education (C1) or (C2). Over nine months intervention group (I) participants received written material, three individual telephone calls from a Dietitian and access to an online nutrition and PA program, online group forum and smartphone application. Linear and logistic regression assessed changes in anthropometry, dietary intake and PA from 9 months to 18 month postpartum in the I group and were compared to C1 and C2. **Results:** Twenty-eight women completed the intervention (70% retention). When objective and self-reported anthropometric data was analysed, there was no significant change in PPWR over nine months between groups. Waist circumference (WC) decreased significantly for the I group (-6.4cm) compared to C1 (-1.1cm) (p=0.002) and C2 (-3.3cm) (p=0.001). Analysis of objective only data showed significant changes in PPWR in the I group (-0.7kg) compared to C1 only (0.0kg) (p=0.037). Significant differences in WC remained when the I group (-5.2cm) was compared to C1 (-1.1cm) (p=0.016) and C2 (p=0.014). There was no significant change in maternal diet or PA between groups. **Conclusion:** The novel delivery method of this intervention may have contributed to its success. Such delivery methods are likely to be particularly relevant to new mothers given the unique challenges and time restraints apparent during the postpartum period.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-285: PROHEALTH@HOME: A FEASIBILITY STUDY EXPLORING THE USE OF DIETITIANS COMMUNICATING WITH INDIVIDUALS AT HIGH RISK OF DIABETES VIA A WEB BASED APP TO REDUCE THE RISK OF DEVELOPING DIABETES

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Introduction: Worldwide Type 2 diabetes is increasing at an alarming rate. Lifestyle interventions successfully reduce the risk of Type 2 diabetes, however in practice high levels of professional support are not sustainable. The internet has the potential to provide an alternative means of supporting large numbers of individuals to make lifestyle changes. It is hypothesised that dietitians communicating with individuals at risk of Type 2 diabetes via a web-based lifestyle app will lead to changes in lifestyle behaviours resulting in an improved glycaemic control and reduction in diabetes risk. The purpose of this study was to determine the feasibility of using a web based lifestyle app with dietetic support in individuals at risk of developing diabetes.

Methods: Ten patients registered with General Practices in Plymouth were recruited. Contact between the dietitian and patients consisted of weekly messaging via the app to facilitate changes in diet and activity behaviour through motivational and cognitive behavioural strategies. Anthropometric, dietary, activity, blood biochemistry and well-being data were collected at baseline, 3 and 6 months. At 6 months patients were invited to participate in a focus group, to assess ease of use and barriers to using the technology and perceived benefits. **Preliminary Results:** All patients have engaged with the app, lost weight and improvements have been seen in fasting blood glucose values. Early qualitative data has highlighted the following; patients perceived understanding of their condition improved, as did understanding of blood biochemistry, tools to help cope with relapse were seen as important factors to help with behavioural change. In addition interaction with the dietitian was rated as an essential component of this web based care package. **Conclusions, discussion and/or practical application:** Dietetic support via a web based lifestyle app provides an alternative feasible method of care delivery and should be considered for patients at risk of developing diabetes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-287: DIETITIANS OF CANADA SPECIAL-INTEREST NETWORK COMMUNICATION SYSTEM UPGRADED TO SOCIAL MEDIA MODEL

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Introduction: Dietitians of Canada's (DC) 25 special-interest networks have 3249 members (57% of DC membership) belonging to at least one network. Offering a social media communication system required training network leaders and transferring networks from the labor intensive Kentico CMSDesk system to an intuitive TeamDeck web-based project-management software. Pilot project group (PPG) input was vital for successful completion of transfers and adjustment of operating tools to increase online traffic. TeamDeck is an acknowledgment of DC's mandate to adapt to the world in which its members work.

Methods: The DC Information Technology (IT) team enlisted three networks and one Local Action Group to TeamDeck's PPG. Communication between IT and the PPG was facilitated using Basecamp, a web-based project-management tool. Launching the PPG's to TeamDeck began September 2014 and was completed October 2014. Phase 1: training and launching the remaining 22 networks was completed August 2015. Phase two: TeamDeck enhancements started October 2015 using Fluid Surveys for member feedback. **Results:** The September 2014 PPG training and launch of TeamDeck was completed October 2014. Training for the remaining networks utilized a DC TeamDeck Guideline manual and Citrix, GoToMeeting online tutorials, completing their TeamDeck launch August 2015. **Conclusion:** TeamDeck's social media communication system enables network members to quickly post and share information. TeamDeck serves 25 networks. Phase 1 training and transfer took one year while phase two website enhancements are ongoing. TeamDeck features include Coast to Coast (C2C) texting, blogs, forums, member directory, file storage, resources and announcement tools.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-288: ENHANCING DIETITIAN-CLIENT RELATIONSHIPS WITH DIGITAL TECHNOLOGY TO IMPROVE HEALTH OUTCOMES AND EFFICIENCIES

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Introduction: Digital technology is increasingly impacting health service delivery in Europe. European health policy is encouraging the development of innovative, cost-effective and efficient technological solutions to support overburdened health sectors. However, many existing technologies are not evidence-based and have not been designed with practitioners to meet current challenges or to be meaningfully integrated into care pathways and workflows. They also fail to connect patients with their provider in a way that complements and enhances the care process. **Methods:** A programme of collaborative research with dietitians and consumers informed the conceptualisation, design, development and evaluation of technology to support dietitians in their practice. Data was collected with dietitians in five European countries using face-to-face interviews and two online surveys. These sought to understand the strategies dietitians use to enable lifestyle change. We then worked iteratively with practitioners to translate these strategies into digital tools to support practice. The platform has been evaluated in clinical settings in the UK, Europe and Australia. **Results:** The technology, called myPace, contains a web portal for dietitians and a mobile app for clients. Dietitians create digitised care plans for their clients which are delivered to clients' mobile devices. These mobile plans facilitate context-relevant engagement with nutrition advice and resources. Plans are developed using a series of modules that can be creatively combined to match each patient's needs. There are modules around diet, activity, behaviour and mood as well as knowledge provision, monitoring, communication and motivation. **Conclusions, discussion and/or practical application:** Technology has the potential to extend the value of the nutrition care process and inject added efficiencies into healthcare delivery. myPace is designed to be seamlessly integrated into the nutrition consultation. It is evidence and theory based and can digitally enhance healthcare provision while still valuing the positive influence that the dietitian-client relationship has on client adherence, perceived quality of care and clinical outcomes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-289: THE LOW-CARBOHYDRATE CRAZE ON THE WEB: A BIASED PRESENTATION OR AN IMPARTIAL TRUTH?

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Introduction: The internet has become one of the most popular means to obtain information on low-carbohydrate diets. This study explores the bias implicit in websites that address the use of low-carbohydrate diets. **Methods:** A web-based search for "low-carbohydrate" was performed by a registered dietitian in Arabic and English languages in four major search engines (Google, Yahoo!, Bing and ask.com). The search yielded more than fifteen million results in English and less than a quarter of a million results in Arabic. Results were saved for the top 100 links from each search engine. Websites were evaluated using a score sheet from 0 to 10 (lowest to highest) based on bias relevant to low-carbohydrate diets. **Results:** The bias comes in a number of forms, including framing the use of low-carbohydrate diets in positive terms, and failing to consider cultural aspects of diet. Compounding this problem is the nature of searching itself. Those sites with a particular bias, typically with .com and .org top level domain names, tend to appear at the top of search results. Sites that provide evidence-based information, typically with .edu and .gov top level domain names, appear later in search results where web users are less likely to look. The result is that those trying to understand the value of a low-carbohydrate diet are likely to use biased information, which could jeopardize their health. **Conclusions, discussion and/or practical application:** The low-carbohydrate craze has fueled one of the many innumerable nutrition debates on the web. It is critical to think about how might access to and use of the web and search engine change, under what condition or circumstance, and why? What impact will this change have on one's behavior and how can this impact be measured at best? What about advances in search operability technologies? How will they account for surfacing domains and fostering web user clickability?

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-290: A QUANTITATIVE ANALYSIS OF THE ACCURACY AND SAFETY OF HEALTH MESSAGE RELATED TO TYPE 2 DIABETES POSTED ON MICROBLOGGING SITE TWITTER

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Introduction: It is thought that more than 70% of the population who use the internet use social media (DAA 2011). A survey of patients and professionals use of social media demonstrated that almost 60% of patients who used Twitter did so to increase knowledge and to exchange advice whereas 51.2% of professionals used it to communicate with colleagues and for marketing purposes (Anthunis *et al.* 2013). The purpose of this study was to test the alternative hypothesis that 'tweets posted by Healthcare Professionals (HCPs) are more accurate and/or safe than those tweeted from other sources'. **Methods:** Data was collected using a quasi-experimental design to analyse the tweets posted on Twitter. To keep the data collection manageable a 5 day period was selected which was limited to 100 tweets. Information about the 'Tweeter' was obtained from the public 'Bio' on their Twitter profile. Tweets were collected from four simultaneous searches/hashtags: #Diabetes, #DiabetesDiet, #T2DM, #Type2Diabetes. Results were analysed using non-parametric tests. **Results:** Tweets were 44% accurate, 41% partially accurate and 15% inaccurate; of these 86% were safe and 14% were unsafe ($p=0.37$). Tweets posted by HCPs were safer than other sources ($p=0.025$). HCPs were more accurate ($p=0.331$) and safer ($p=0.049$) than members of the public. There were 16 tweets from HCPs of which 5 were from dietitians. Hashtags #T2DM and #Diabetes were the most accurate ($p=0.415$). #Diabetes was the safest ($p=0.355$). **Conclusions, discussion and/or practical application:** Results indicate that although tweets posted by HCPs are more accurate and safer than other sources, these are not all statistically significant; there is some argument these results are subject to type 2 errors due to the small sample size. The research highlighted the fact that any information posted or retweeted should be evidence based and that hashtags #T2DM and #Diabetes provide more accurate information.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-291: EVALUATION OF DIETITIAN OF CANADA (DC)'S EATRACKER MOBILE APP

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Introduction: DC's popular eaTracker diet and physical activity self-monitoring and support tool was released as a free mobile app for iOS™ and Android™ in 2014. User-experiences with eaTracker app were evaluated over summer 2015. **Methods:** The evaluation encompassed: 1) reviewing data on user demographics and usage patterns; 2) assessing perceptions of eaTracker app from adult users through in-person, phone or online interviews; 3) surveying English-speaking eaTracker users to elaborate on qualitative findings (FluidSurveys, Ottawa). **Results:** 1) eaTracker users accessed website only ($n=1,759$), app only ($n=301$) or both ($n=205$) (77.7%, 13.3% and 9.1% of users, respectively). Many users were from Ontario (42.3%), female (79.8%), 18-30y (44.0%), sedentary-low active (69.5%) and overweight/obese based on BMI (~50%). Of ~64.7 actions-per-user in 2mo, most were completed on website *versus* app (87.6% vs. 12.4%) and involved adding food (72.9% actions) using 'search' functions; 'favorites' (28.7% of app and 8.9% of web additions) and recipes (<3% of foods). Recording physical activity comprised only 4.4% of actions, with $n=710$ users adding activity. Adding and tracking goals accounted for 0.8% of actions; 70.6% of goals were 'ready-made' and 29.4% 'write your own'. 2) Interview participants ($n=23$ female/ $n=3$ male; 73.1% between 18-50y old) liked dashboard displays, DC's reputation, ease and convenience of the app. Suggested improvements included streamlining search processes, expanding food databases and customizing tracking displays. 3) Of survey respondents ($n=188$), 54.4% reported app use (4.2.6% of them daily), commonly to add food/meals and view diet progress. Respondents liked the ease to learn/use eaTracker app; 50.0% felt it helped improve their eating behaviours and 60% would recommend it to others. Suggestions for future mobile apps included: adding more foods e.g., by barcode scanner or self-entry, and graphing weight and diet progress. **Conclusion:** eaTracker mobile app is a promising, credible adjunct to eaTracker website for diet self-monitoring and support.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-292: REAL-WORLD USER PERSPECTIVES WITH NUTRITION MOBILE APPS FOR WEIGHT MANAGEMENT: A QUALITATIVE STUDY

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Introduction: Evidence supports nutrition self-monitoring as an effective adjunct to weight management. Traditionally, self-monitoring is completed using pen and paper methods; however, many nutrition self-monitoring mobile apps (e.g., MyFitnessPal®) are now easily downloadable from commercial app stores (e.g., Apple App Store, Google Play). Moreover, dietitians have reported commonly encountering clients asking about, or using these tools in their practice. The purpose of this research was to understand real-world user perspectives with nutrition mobile apps for weight management. **Methods:** Twenty-four healthy adults (79% female) who had used nutrition mobile apps for weight management for ≥1wk within the previous three months were recruited via Facebook, posters in public locations, and word of mouth to participate in an in-person one-on-one semi-structured interview. Interviews were transcribed verbatim, coded, and organized into themes using NVivo 10 (QSR International, Doncaster, Australia). **Results:** A variety of nutrition apps were used by participants; however, MyFitnessPal® was the most popular. In general, participants were enthusiastic about these apps and felt they were convenient, and an improvement over pen and paper self-monitoring methods. Most participants used these apps without health professional assistance and sometimes reported poor nutrition knowledge. Many reported food entry via shortcuts (e.g., favourites); barcode scanners and large food databases were also well liked. However, users sometimes found food entry difficult or lacked the motivation or time. Seeing progress (e.g., weight loss) promoted adherence to monitoring. Sharing nutrition data through social media was usually not desired. Some female users reported that nutrition app use could potentially be addicting. Suggestions for future mobile apps were provided. **Conclusions, discussion and/or practical application:** Overall, users were enthusiastic about apps, but data entry took time and motivation was needed. Professional support by dietitians can help individuals use these tools effectively and in a healthy manner. Supported by Canadian Foundation for Dietetic Research.

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P-294: SUPPLEMENTED AND FUNCTIONAL FOODS MESSAGES WITHIN CANADIAN NEWSPAPERS

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Introduction: Media monitoring is important to evaluate the potential influence this may hold on behaviour, such as food consumption patterns. The 'supplemented foods' category of foods were previously regulated as Natural Health Products but by 2010 were transitioned by Health Canada under the Food and Drugs Regulations. The objective of this research was to examine messages on both supplemented and functional food products to assess the quantity, topic, purpose, tone, and the accuracy of information regarding this food category. **Methods:** Six of the highest circulating nationwide English and French language Canadian newspapers (Toronto Star, Globe and Mail, Journal de Montreal, La Presse, The Gazette and Toronto Sun) were analyzed. Newspaper content published between October 2012 and October 2014 was coded. Articles were searched online via the media monitoring service Health Canada Newslink using 17 key words including: functional food(s), energy drink(s), fortified food s), and superfood(s). Deductive content analysis was conducted using pre-established criteria (ie: topic, purpose, tone, etc.). **Results:** A total of 112 newspaper articles were identified, resulting in 506 messages. The 'energy drink' topic dominated the newspaper media messages (68%) followed by superfoods (12%) and fortified foods (8%). A similar percentage of messages on this food category addressed 'food products & industry' and 'negative side effects & caution' (28% and 27%, respectively). Additionally, Approximately 24% of all messages related to 'policy' and 19% to 'nutrient content'. Over three-quarters of all messages were neutral in tone (81%), with few messages exuding a positive tone (7%). The content of the majority of newspaper messages was accurate (65%), with few messages coded as inaccurate (5%). **Conclusions, discussion and/or practical application:** The findings from this study reflect what is being discussed by the media regarding the 'supplemented foods' category. This work could help to inform education and policy efforts around these products.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-295: FIGHTING MISBELIEVES

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Introduction: The dietary and nutritional habits of the Hungarian population are not satisfactory and there are many misbelieve. 65% of the adults are overweight or obese; the energy intake is above the needs, the consumption of total fat, cholesterol and salt are much higher than the recommendations. **Objectives and target population:** The aim of our program is to help the fight with different communication actions against false opinions, e.g. food additives are poisons, there are many fashion diet which are harmful for health in the long run. **Previous theories and investigations:** The latest health communication survey in 2015 in Hungary has shown that the major sources of the health and dietary information are health care professionals on the 1st place, followed by the family and the internet. Therefore we use all 3 channels in our investigation. **Intervention(s):** We create a special curricula for dietitians, midwives, nurses about dietary misbelieves and their evidence based refutations. We provide posters, presentations and workshops for GP's. We target the family through our educational program for kids and mothers. We created a consumer-friendly homepage with trendy info graphs, animations, videos about nutritional misbelieves and use the power of the social media. **Evaluation:** Initial evaluation of the project is clearly demonstrating that we are moving into the right directions. **Results:** Preliminary results of surveys have shown that the health care professionals are very enthusiastic about the new communication form. The number of family participants of events is growing from the beginning, and the visiting of our homepage is getting popular. **Conclusions of authors and discussion:** The change of inveterate dietary habits will take considerable time and efforts. Therefore, collaboration between dietitians, physicians, nurses, and other professionals is essential to bridging the gap between the various field of interest and competence.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-296: THE BIRD OR THE F-WORD? A CASE STUDY IN E-RECRUITMENT STRATEGIES

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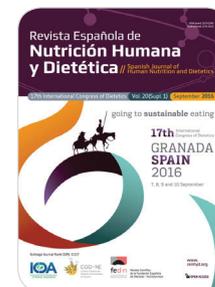
Introduction: The number and type of participants recruited to a study determines the translatability of research to practice. With the rise in online communication platforms, there are now a number of free and low-cost options to support recruitment. However, what is not well established is the type and mix of platforms most effective to use as "e-recruitment tools" to recruit a particular cohort. The literature suggests the type and mix of e-recruitment tools depends on three factors: the capabilities of the researcher in online platforms, capacity of the research institution to support use of online tools, and, that the strategies are tailored to the online capabilities of the cohort under investigation. We present a case study in the use of e-recruitment tools on a cohort of Australian dietitians. Recruitment was for dietitians to complete an online survey: a five-part, 45-question, 15-minute, anonymous survey, asking about the way they deliver their professional services. **Methods:** Recruitment of dietitians (total pool n=~1000) was in two rounds, R1 and R2. R1: September 2011; 6 weeks (42d); main strategy: a pay-for-access dietitian-specific email list; incentive - chance to win one of six \$50 gift vouchers; Total cost \$520. R2: October 2012; 12 weeks (87d); main strategy: launch with Webinar, supported by Twitter, Facebook and eMail; no incentives offered; Total cost \$0. **Results:** R1: 196 dietitians responded; 28 excluded; n=168 (146 (87%) completers); RR 14%. R2: 143 dietitians responded; 1 excluded; n=142 (117 (82%) completers); RR 12%. Overall response rate (RR): 26%. [15 to 25% RR reported acceptable/good]. **Conclusion:** This case study offers ideas for researchers in deciding the type and mix of e-recruitment tools for effective recruitment strategies. It is likely each new study will require a specific and well-planned set of e-recruitment tools, and, effectiveness will be dependent on the "three factors" reported in the literature.

COMPETING INTERESTS: This work was completed under a PhD Scholarship funded by the National Health & Medical Research Council of Australia (NHMRC) 2010-2015.

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INNOVATION IN FOOD, NUTRITION AND DIETETICS

P-298: A SORGHUM-ENRICHED DIET DOES NOT ENHANCE THE EFFECTIVENESS OF AN ENERGY-RESTRICTED MEAL PLAN IN OVERWEIGHT SUBJECTS OVER 3 MONTHS

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Introduction: Whole grain sorghum is a promising gluten-free ingredient in foods targeting satiety as an adjunct for weight control. We conducted a 3-month double-blinded, randomised controlled trial, designed to review the specific effects of whole grain sorghum incorporated in an energy-restricted meal plan. We hypothesized that the subjects receiving foods made from sorghum would lose more weight than the subjects on the control diet, and that changes in metabolic disease risk may be detected due to unique properties of the sorghum including high polyphenolic content and high levels of slowly digestible starch. **Methods:** Sixty overweight subjects (36 females; 24 males) were recruited to either a sorghum intervention or wheat control group, with four subjects withdrawing from the sorghum group. Both groups received advice on an energy-restricted diet from a dietitian. All subjects were provided with cereal products, in the form of flaked breakfast biscuits (45g), to include in their prescribed diets. The primary outcome was a difference in weight reduction between the control and sorghum groups. Secondary outcomes included glucose, HbA1c, insulin, total cholesterol, HDL, LDL, TAG, IL-1B, IL-6, IL-8, TNF α , hsCRP, HPX and TAC (measured at 0 and 12 weeks). **Results:** No significant differences between the wheat and sorghum groups were detected for any clinical parameter over time, although subjects in both groups lost weight over time ($p < 0.05$). **Conclusions, discussion and/or practical application:** Though previous acute satiety results are promising, they have not been able to translate to weight reduction differences between a wheat control and sorghum cereal group in an energy-restricted diet. Any subtle effects may have been masked by significant weight loss in both groups, though with longer exposure these differences may have been detectable. Importantly, there were no negative effects of consumption; hence sorghum represents a viable, gluten-free whole grain ingredient for foods targeting weight control.

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P-299: REGISTERED DIETITIAN IN THE GENOMICS ERA – A REVIEW OF PROGRESS TO DATE

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Introduction: The emerging field of nutritional genomics has the potential to drastically change dietetic practice, yet integration into practice has been very slow. This review examines factors associated with the integration of the emerging science of Nutritional Genomics (NGx) into the clinical setting by practicing registered dietitians. **Methods:** A search of 4 online databases (Pubmed, National Library of Medicine, Cochrane Library, Ovid Medline) was conducted on material published from January 2000 to December 2014. Any studies that sampled practicing dietitians and investigated involvement, integration or application of NGx and genetics knowledge into practice were eligible. Studies that considered only undergraduate students or were not in English were excluded. **Results:** A total of 11057 studies were identified, of which 9 met the inclusion criteria. The articles were assessed according to the American Dietetic Association Quality Criteria Checklist. Overall, there has been low involvement in nutritional genomics activities particularly in clinical practice for a variety of reason which include; poor perception of the field, lack of knowledge and confidence in genetics, mistrust in nutrigenetic testing companies as well as social, legal and ethical issues associated with nutrigenetic testing. Although most studies were of good quality, limitations of previous studies include; poor response rates, a limited number of countries included as well as the use of the term 'involvement' when referring to nutritional genomics in dietetic practice, as the term has neither been clearly defined nor consistently assessed. **Conclusions:** In order for dietitians to engage with and integrate NGx knowledge into practice in preparation for future demand, more research is required to develop strategies and policies that combine technical knowledge in genomics and genetics with clinical application. A supportive environment, especially for newly-qualified practitioners and that maximizes the use of digital technologies is urgently needed to boost confidence and promote wider acceptance.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-300: THE EFFECT OF COMMUNICATING THE GENETIC RISK OF CARDIOMETABOLIC DISORDERS ON MOTIVATION AND ACTUAL ENGAGEMENT IN PREVENTATIVE LIFESTYLE MODIFICATION AND CLINICAL OUTCOME: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS

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Introduction: Genetic risk prediction of chronic conditions including obesity, diabetes and cardiovascular disease currently has limited predictive power but its potential to engage healthy behaviour change has been of immense research interest. We aimed to understand if the latter is indeed true by conducting a systematic review and meta-analysis investigating whether genetic risk communication affects motivation and actual behaviour change towards preventative lifestyle modification. **Methods:** We included all RCTs since 2003 investigating the impact of genetic risk communication on health behaviour to prevent cardiometabolic disease, without restrictions on age, duration of intervention or language. We conducted random effect meta-analyses for perceived motivation for behaviour change and clinical changes (weight loss) and a narrative analysis for other outcomes. **Results:** Within the 13 studies reviewed, 5 were vignette studies (hypothetical RCTs) and 7 were clinical RCTs. There was no consistent effect of genetic risk on actual motivation for weight loss, perceived motivation for dietary change (control vs. genetic risk group SMD: -0.15, 95%CI: -1.03 to 0.73, p=0.74) or actual change in dietary behaviour. Similar results were observed for actual weight loss (control versus high genetic risk SMD: -0.29kg, 95%CI: -0.74 to 1.31, p=0.58). **Conclusions:** This review found no clear or consistent evidence that genetic risk communication alone either raises

motivation or translates into actual change in dietary intake or physical activity to reduce the risk of cardiometabolic disorders in adults. 8 of 13 studies were at high or unclear risk of bias. Additional larger scale high quality clinical RCTs are warranted.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-301: SMARTAPPETITE: USING INNOVATIVE TECHNOLOGY TO PROMOTE HEALTHY EATING AND STRENGTHEN THE LOCAL FOOD ECONOMY

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Introduction: Several of the most critical health issues facing Canadians are linked to poor nutrition (e.g., obesity, cancer, heart disease, hypertension, and type 2 diabetes). Innovative, research-driven solutions are required to address knowledge deficits regarding healthy eating. Smartphones are an appealing medium to deliver health-related interventions due to their ubiquity among teenagers and adults and are increasingly being used in intervention strategies targeting health-related outcomes. **Methods:** We have developed a multi-level approach to assess the impact of a smartphone 'app' on increasing knowledge about healthy foods ('food literacy') and encouraging healthier food purchasing and eating behaviours among adolescents and adults. Our cross-sector collaboration was forged out of our common interests in trying to address two of Canada's most 'wicked problems': reversing rising rates of childhood obesity and revitalizing our local food system. We conceived SmartAPPetite to promote healthy eating and strengthen the local food system in Ontario. Our SmartAPPetite app is different from other apps in many ways. It sends users personalized food tips (about nutrition, seasonal availability, healthy behaviours, food handling), as well as related recipes and vendors to inform and subsequently 'nudge' users from their personally-defined food goals to making healthier food choices and smarter purchases at pre-screened local vendors. SmartAPPetite contains an innovative combination of six key features that collectively set it apart from other food apps and will increase its effectiveness. **Results:** We piloted a version of our smartphone-based food messaging intervention on a sample of adults, with results suggesting that greater engagement with the program led to increased intake of fruits and vegetables and decreases in unhealthy snack foods. **Conclusion:** The next phases of our research are to develop the app for Android products, and to study the effectiveness of our app as an intervention to improve food literacy and healthy eating among different sub-groups of the population.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-302: FIBER CONTENT IN DIFFERENT VARIETIES OF TRADITIONAL AND NON-TRADITIONAL GRAIN FLAKES AS FACTOR PREDICTING GLYCEMIC AND INSULIN RESPONSES

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Introduction: There is a lot of evidence that wholegrains can be protective in prevention of metabolic syndrome as well as can delay progression of persisting metabolic disease. The potential protective effects of wholegrains include low glycemic and insulin response. Many factors are influencing glycemic properties of foods like nature of the monosaccharide components, nature of starch, food processing, fiber content. The aim of this study was to assess content of insoluble and soluble fiber in flakes made from different kind of traditional wheat, rye, oat, barley grains and non-traditional flakes, made from triticale, hull-less oat and hull-less barley grains. **Methods:** Grain flakes were obtained traditional technology processes. The total fiber content were measured by the AOAC method 985.29. **Results:** Total dietary fiber values were: 12.9g/100g in wheat flakes; 10.0g/100g in oat flakes; 13.9g/100g in rye flakes; 9.0g/100g in barley flakes; 15.5g/100g in triticale flakes; 19.7g/100g in hull-less oat flakes and 17.5g/100g in hull-less barley flakes. **Conclusions, discussion and/or practical application:** The

highest fiber content was in hull-less oat and hull-less barley flakes. The results indicate that flakes made from hull-less oats and hull-less barley have low glycemic and insulin response. Further clinical studies are planned to determine glycemic and insulin index of flakes made from different varieties of whole grains, including germinated flakes for more relevant evaluation of glycemic properties of different varieties of wholegrain flakes influencing course of metabolic syndrome.

COMPETING INTERESTS: This research received financial support from the Norwegian Financial Mechanism 2009-2014 under Project Innovative approach to hull-less spring cereals and triticale use from human health perspective (NFI/R/2014/011).

P-303: LEADERSHIP IN DIETETICS

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The need to be an agent of change in nutrition and dietetics is increasingly apparent in this century as dietitians negotiate our place in the medical and popular cultures, inspire and assist clients to make health decision changes in the epidemic of chronic disease, and articulate our knowledge and skills to be included in the discourse of global food supply and access. In light of "Vision 2020", a document created by Dietitians of Canada that laid out a vision for leadership within the profession, it is important that dietitians reflect on how and if we are on track with attaining this vision. This panel of four presenters will consider the opportunities and challenges for dietetics in Canada in meeting its goals for sustained cultural impact. The first panelist will present data from Canadian dietitians who have been recognized as leaders within the profession and who provided oral histories in which they addressed questions about the preparedness of dietitians to serve as leaders. The second panelist will explore dietitians' leadership in enhancing practice through effective counseling skills in order to assist clients in health change. The last two panelists will present a review of educational supports in place to foster leadership skills within the profession, and an examination of the term "leadership" from the perspective of current practitioners. Time will be left at the end of the presentations for discussion about the present state and future of leadership within the dietetic profession.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-304: DIETITIANS AS ADVOCATES FOR EVIDENCE USE IN NUTRITION POLICYMAKING

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Introduction: Nutrition is a major influence on changing global patterns of disease. Stakeholders in public health nutrition policy despair that the growing body of evidence for addressing nutrition related non-communicable diseases is not informing government policy. Dietitians are well-placed to advance a new paradigm in nutrition policymaking, one where broadly based evidence is systematically considered. **Methods:** This policy case study applied recent insights from evidence-informed policy to examine factors influencing policy making on food marketing to New Zealand Children. Data were collected by qualitative interviews with fifty-six policy influential individuals. Thematic analysis identified structural and process barriers and enablers to evidence being systematically considered. The findings on advocacy for evidence use were looked at in light of the Dietitians Board New Zealand entry-level registration competencies. **Results:** Advocacy for evidence use occurs in three areas. In meta policy, (the policy about policymaking) influential individuals and organisations are capable of shifting the formal and informal rules determining how evidence is considered. Secondly in the policymaking process area, advocates influence the deliberateness with which evidence is used. Thirdly the wider nutrition policy community can influence policymaking when they coordinate their advocacy activities. Dietitians are strategically placed to use their research and advocacy competencies in advancing the use of evidence in nutrition policymaking. New graduates require a deeper understanding of policymaking processes, including where evidence informed advocacy may be most influential. **Conclusions, discussion and/or practical application:** Dietitians can be advocates for the use of evidence. There is a need to advance the role of Dietitians in new inter-connected policy environments. For Dietitians to be recognised in policy debates as influential trustworthy experts there is a need to augment registration competencies in communication and research with key political science concepts.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-305: PREVALENCE AND MANAGEMENT OF ENTERAL NUTRITION INTOLERANCE IN THE NON-ICU SETTING IN CANADA

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Introduction: Enteral nutrition intolerance (ENI) may impact nutrition delivery and quality of life (QOL), affecting patients, caregivers and healthcare resources. While there is a small, but growing body of ENI literature in the intensive care (ICU) setting, there is a dearth of research on ENI in health care settings outside the ICU. Objective: To investigate the prevalence and management of ENI in non-ICU settings. **Methods:** An on-line survey was administered to registered dietitians (RDs) working in long-term care (LTC), home care (HC), and acute care (AC) settings across Canada. Statistical Analysis: One way Anova with Tukeys for continuous variables, Chi-square for categorical. SPSS v 21 significance $p < 0.05$. **Results:** 240 RDs completed the survey, reporting on 5611 tube fed patients managed in the preceding three months. 54% of patients in AC and 66% in HC receiving EN experienced one or more gastrointestinal (GI) symptoms, GI symptoms were less common in LTC (35%). Diarrhea was most often experienced by patients in AC (27%) compared to HC (20%) and LTC (15%) [$p=0.001$]. GI symptoms were most common in patients residing in HC (66%), and with short-bowel syndrome and pancreatitis. Methods used to assess GI symptoms were found to differ between health care settings. Medication and reduction of tube feeding volume were the most common method used to manage GI symptoms. Common treatment for constipation reported by RDs working in AC was the use of medications (80%) whereas in HC (93%) and LTC (84%) management consisted of choosing suitable feeding formulas. **Conclusions, discussion and/or practical application:** Prevalence and management of ENI differs between health care settings. ENI was common among tube fed patients in LTC, HC and AC settings, likely impacting QOL and health care resources. More research is recommended to validate these findings and to develop clinical practice guidelines for the management of ENI in non-ICU patients.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-306: BIOMARKERS IN CVDS PREVENTION THROUGH NUTRITION AND PHYSICAL ACTIVITY

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Introduction: To understand how individually dosed and programmed physical activity and moderate hyper-protein diet induces physiological cardiac growth using biomarker of myocyte proliferation is innovative approach in CVD prevention. **Objectives and target population:** The main objective of our project is to support multidisciplinary research team that will use innovative and scientific approach to increase knowledge on the validation the roles of biomarkers, microRNAs (focused on miR-17-3p) in exercise and specific diet-induced cardiomyocyte proliferation. **Previous theories and investigations:** Given the limited regenerative capacity of cardiac hypertrophy, it's unclear whether this results in prevention of CVDs. The roles of MicroRNAs in cardiac response to physical activity and nutrition are unknown. The clinical relevance of the circulating MicroRNAs (miR-17-3p) is confirmed with the fact that it's increased during physical activity in patients with heart diseases. **Intervention(s):** The specific circulating biomarker MicroRNAs (miR-17-3p) responses is identified during individually dosed, programmed physical activity and moderate hyper-protein diet in patients with heart failure. In this controlled clinical trials is included 73 subjects during the period of 3 months. **Evaluation:** Numerous experimental studies have confirmed that factors responsible for physiological hypertrophy may be antagonist to development of pathological cardiomyopathy. Regular individually dosed, programmed physical activity and specific diet induces physiological cardiac growth including an increases in markers of myocyte proliferation. **Results:** The project includes a systematic exploration and validation of biomarkers to obtain a good coverage of the specific diet and physical activity in patients with initial phase of heart disease (for example high normal or moderate arterial hypertension) exploring myocardial effects using biomarker MicroRNAs (miR-17-3p) and biomarkers of food intake. **Conclusions of authors and discussion:** Understanding how individually dosed and programmed physical activity and specific diet have positive effects on cardiac growth may help to identify innovative therapeutically concept to prevent the CVDs as consequences of pathological stress. MicroRNAs (MiRNAs) are central regulators of gene expression and their deregulation can results in CVDs.

COMPETING INTERESTS: The authors of this document confirms there is no conflict of interests.

P-307: DIETITIANS AND CHEFS 'VEG UP'Pip Duncan^{1,*}¹Consultant Dietitian, Food Advisory Services.* Contact: pip@foodadvisory.co.nz

Introduction: Evidence of the protective effect of vegetables on health is well documented. Dietitians are food and nutrition scientists and traditionally chefs are food artists often with little formal nutrition training. Vegetables.co.nz, a promotion organisation funded by commercial growers, identified that Chefs needed a greater understanding of the benefits of vegetables and to better promote these by creating tasty dishes using seasonal vegetables. Chefs work in a wide spectrum of settings from education to aged care and programmes were developed to use over this continuum. To encourage innovation in incorporating fresh vegetables into dishes, five annual competitions have been established. They also served as a mechanism for upskilling competitors on the use of vegetables. **Methods:** The range of competitions had criteria developed for entry included the compulsory use of fresh vegetables. The competitions ranged from students at Secondary school, tertiary training level, restaurant chefs and chefs working in aged care. Training was carried out before competitions to upskill competitors in the creative use of vegetables and to increase their understanding of the associated health benefits. Specific resources were developed. The impact of the competitions and training were evaluated by post competition questionnaires. **Results:** The evaluation showed chefs after tutorial and the competition have increased understanding of how to use seasonal vegetables and are more prepared to experiment with different combinations. They reported an increased understanding of the health benefits of vegetables. They had introduced new ways with vegetables, included a wider range on menus and a higher proportion of vegetables on plates. **Conclusions:** This study illustrates the value of competitions as a successful method of teaching chefs about the use of seasonal vegetables and their health benefits resulting in an increased proportion of vegetables utilized in hospitality and food service.

COMPETING INTERESTS: The author of this document confirms there is no conflict of interests.

P-308: HONING, ADDING VALUE AND PROMOTING: A NOVEL STAKEHOLDER ENGAGEMENT PROCESS TO ASSESS THE APPROPRIATENESS OF PEDIATRIC HEALTHY LIFESTYLE PRINT RESOURCESTanis Mihalynuk^{1,*}, Barb Leslie¹, Lori Smart¹, Stephanie Suski¹¹HealthLinkBC.* Contact: tanisvye1@yahoo.com

Introduction: HealthLinkBC provides free nursing, pharmacy, and dietitian information, counselling and services to British Columbians via a telehealth delivery model. Dietitian Services recently added a provincial healthy eating and physical activity pediatric program. This program is designed to support child and teen clients alongside their families to achieve and maintain healthy weights and enhanced quality of life. The program is offered by registered dietitians and qualified exercise professionals. Client phone counselling sessions are complemented with healthy lifestyle print resources. We wished to establish a novel stakeholder engagement (SE) process to assess the ability of these resources to meet client needs. **Project objectives, theories and target population:** The project objectives were three-fold: 1) Conduct a small scale, iterative SE process (n=10-12) to assess the appropriateness of program print resources from the lenses of understandability, action-ability and cultural and personal sensitivity (people first); 2) Share results with program team and stakeholder participants; and 3) Inform future engagement processes and activities while building relationships with local and provincial stakeholders. The IAP2 engagement framework and Plan-Do-Study-Act (PDSA) cycle informed the project development, implementation and evaluation components. **Project methods, evaluation and results:** We chose the consultative level to engage stakeholders. Purposive sampling allowed for potential gender-based and rural perspectives. To date, anonymous survey feedback on key nutrition (n=3) and physical activity (n=3) resources has been received by mail by 10 participants (n=60 surveys) representing health and non-health professional perspectives. Preliminary survey results suggest that the resources are meeting the target pediatric population's needs. **Conclusions:** We further detail and discuss a novel SE process aimed at serving multiple objectives over and above assessing the appropriateness of program print resources. Our next steps include further survey data analysis, and follow up

audio-interviews and process evaluations with all SE participants to confirm and enrich project findings and impact.

COMPETING INTERESTS: The authors of this document confirm that there are no conflicts of interest.

P-309: PHYSICOCHEMICAL AND ANTIOXIDANT ASSESSMENT OF DIETARY SWEET BLUEBERRY (*VACCINIUM CORYMBOSUM* L)

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Introduction: Blueberries have suitable features to make dietary sweets and important polyphenol concentration with antioxidant activity. The purpose of this study was to characterize the physicochemical composition and antioxidant capacity of compact sweet blueberry (CSB). **Methods:** CSB was formulated with 59% fruit, 24.9% water, 0.5% pectin, 0.4% citric acid, 0.1% potassium sorbate, 0.1% sucralose, 15% inulin. Soluble solids (SS) (Milwaukee MA871 refractometer), pH, moisture, pectin (P) (Carré and Haynes), carbohydrates (CH) (Feling-Cause-Bonans), proteins (Kjeldal), inulin (HPLC), sensory analysis (SA) (Composite Score Test), CIELAB color (L*, a*, b*) (Coleman Parmer colorimeter), texture: hardness (H), fracture force (FF), adhesion (A) and strain (S) (QTS Brookfield texturometer), total polyphenols (TP) (Folin Ciocalteu colorimetry) and antioxidant capacity (AC) (ABTS radical cation test) were determined and compared with fruit and commercial pattern. Statistical analysis by Student's T-test. **Results:** Blueberry and CSB pH, SS and moisture were 4 and 3.4; 14.2 and 30 °B; 66 and 84%, respectively. Calcium pectate value in fruits was 0.38g/100g, therefore low methoxyl pectin was added. The CH and inulin contents were 31 and 18%. SA of the CSB was 86/100. The L* 22.26, a* 25.62 and b* 23.76 parameters achieved a low luminosity product and color intensity in the range of red. Texture values of CSB were: 52g/s (H), -17.1g/s (FF), 0 (A) and 36g/s (S). The TP contents were 4822 and 911 mgEGA/100g and the AC were 751 and 550 mgEAA/100g in blueberry and CSB, with significant statistical differences (P<0.05). **Conclusions, discussion and/or practical application:** CSB showed a CH reduction of 45%, more luminous color (less blue) less toughness and deformation compared with commercial pattern. The prebiotic content was 7.2g/40g (portion). TP and AC values of CSB decreased 80 and 27% in relation to fruits. Blueberries and CSB have good antioxidant capacity.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-310: EVALUATION OF CHOLESTEROL-LOWERING EFFECT OF LOW-FAT MOZZARELLA CHEESE, MADE FROM GOAT'S MILK, WITH ADDED PHYTOSTEROLS

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Introduction: Phytosterol intake is associated with the prevention of NCDs. Skim mozzarella cheese made from milk of goat is an alternative to incorporate bioactive compounds since this raw material is of great production in Northwest Argentina (NWA). **Objectives and target population:** To evaluate cholesterol-lowering effect of low-fat mozzarella cheese made from goat's milk (GMC) added with phytosterols, *in vivo*. **Previous theories and investigations:** Previous studies evaluated the effectiveness of a cholesterol-lowering yogurt, where 32 people of both sexes with LDL cholesterol >120mg/dL were included. Patients consumed a 130mL container with 2g of phytosterols for 3 weeks. At the end of the treatment, a reduction in total cholesterol (235±34 to 219±35mg/dL), a significant decrease (P<0.01) compared to baseline LDL (157±30 to 140±34mg/dL observed) and LDL/HDL ratio (3.2±1.0 to 3.0±1.2), without significant alteration in HDL (48±15 to 53±29mg/dL). **Intervention(s):** An animal

experimental model with 20 Wistar rats will be used. Animals will be divided in two groups: one fed with normal diet, other supplemented with phytosterol mozzarella cheese 3% and a control group for a period of three weeks. The animals will be placed in cages and maintained in Faculty of Health Sciences, under humid conditions ($60\pm 10\%$), light (artificial light from 6am to 6pm) and temperature (21 ± 10 °C) controlled. **Evaluation:** Blood samples will be extracted by cutting tail for biochemical determinations by colorimetric enzymatic method at the beginning and end (3 weeks). ANOVA and Duncan test will be used ($P < 0.05$) for statistical analysis. **Results:** It is expected to assess the effect of phytosterols incorporated into a matrix such as innovative GMC positive impact on blood cholesterol. **Conclusions of authors and discussion:** The results will provide a cheese with properties that respond to public health policies and the demand for increasingly interested in acquiring consumer health products also will feature an alternative for regional economies NWA.

COMPETING INTERESTS: Financing: Research Project No. 2071. Research Council of the National University of Salta – Argentina.

P-311: TASTE AND SEE: A FEASIBILITY STUDY OF A CHURCH-BASED, HEALTHY, INTUITIVE EATING PROGRAMME – POSITIVE PRELIMINARY RESULTS

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Introduction: Obesity treatment remains a high priority globally. Evidence suggests holistic approaches, which include a religious element, are promising. Much is US research, but recent evidence suggests UK need among Christians. **Objective:** To conduct a mixed-methods pre-post feasibility study of a 12 week faith-based, healthy, intuitive-eating programme, within a UK church. **Methods:** 18 participants with BMI > 25kg/m² took part. Ethical approval was granted by Coventry University Ethics committee. Physical, psychological and spiritual outcomes were measured at baseline, 12 weeks and will also be measured at 6 months. Results were analysed using intention to treat (ITT) analysis; baseline observation carried forward (BOCF) was used to input missing data. Qualitative data was collected with semi-structured interviews – results from thematic analysis will be available for the conference. **Preliminary Results at 12 weeks:** 17 out of 18 participants completed the intervention. Small, but significant improvements were found in weight ((mean difference [95% confidence interval (CI)] -1.57kg [-2.85, -0.28]), Quality of Life Visual Analogue Scale (11.72 [3.89, 19.55]), mental well-being (6.72 [4.08, 9.36]), depression (-3.06 [-4.89, -1.22]), anxiety (-4.11 [-6.06, -2.16]) and intuitive-eating scores (13.06 [6.96, 19.15]). Some scores on The Three Factors Eating Questionnaire (TFEQ) were significantly worse (restrained-eating (19.14 [9.99, 28.28]); emotional eating (11.42 [1.01, 21.82])). Measures of spiritual well-being (4.78 [-1.08, 10.63]) and religious love (0.39 [-0.64, 1.41]) showed a non-significant improvement. **Conclusions, discussion and/or practical application:** Preliminary results support a mainly positive association with outcomes of the intervention. However uncertainty exists due to the small sample size and wide confidence intervals. A larger cluster-randomised controlled trial is planned. If weight can be reduced by a small amount and mental health improve in the obese population, the public health impact could be substantial. Using churches enables religious and spiritual health to be addressed and also uses existing social structures and a voluntary workforce that are potentially sustainable and cost effective.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-544: NUTRITIONAL COMPOSITION OF COMMON VEGETARIAN FOOD PORTIONS

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Introduction: A vegan diet can meet nutritional requirements, if it is well planned. In this sense, vegans should be advised to choose alternatives to animal products and to select the appropriate respective serving size of them. The nutritional value of traditional plant foods portions is well known, however, the vegetarian market offers other products whose chemical composition is less known, as the same are not widely consumed by the population. It is necessary to know both, the nutrient content of portions of these foods, and the bioavailability of these nutrients in plant food diets. This work aims to refine the

available information about nutritional contribution to the diet of the main common vegan foods portions. In addition, some points about the bioavailability of the most relevant nutrients are discussed, and alternatives proposed to improve nutrient utilization. **Methods:** Composition data of common vegan foods per 100g were searched from food composition database, and serving size nutrient composition was calculated. Nutritional data were compared to European Dietary Reference Intakes (DRI) and bioavailability of the most important nutrients was discussed. **Results:** This work shows information about the nutritional composition per food portion of different vegan foods divided into several food group or sub-group: dairy analogs, seeds, nut-seed spreads, legumes, meat analogs, vegetable oils, sea vegetables and miscellaneous (wheat germ and miso). After comparison to DRI, this work shows too, the compliance of the adult requirements per food portion. **Conclusions:** This information could be useful to improve dietary advice and food choices for a healthy vegetarian diet and contribute to improve dietetic practice with vegetarians.

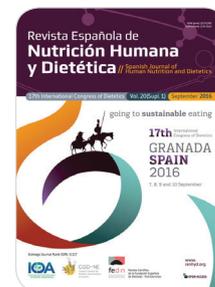
COMPETING INTERESTS: The authors can confirm there is no conflict of interests.



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MASS CATERING

P-312: DEVELOPMENT A SOFT MEAT FOR ELDERLY –APPLICATION OF A MEAT SOFTENER–

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Introduction: A meat softener that uses enzymes to decompose meat was developed to meet the needs of the elderly. We applied the meat softener to meat to extend protein sources for the elderly. The meat softener was tested for usage in quantity applications. Next, it was used in the preparation of sweet stewed pork in a nursing home to examine whether it had any effect on eating rates. **Methods:** Different concentrations of the meat softener (0% as control, 0.5%, 1.0%, 1.5%) were added to the pork for 60 minutes. Afterwards, it was cooked following an ordinary recipe. 22 subjects participated in sensory-evaluation tests. Physical measurements were also used. The results of the sensory test and texture measurements were analyzed to evaluate usage concentration. Finally a survey was conducted to analyze eating rates in a nursing home in T City. **Results:** Pork with concentrations of 1.0% and 1.5% of meat softener was significantly softer compared to control. The results of the sensory test showed that 1.0% was best for softness and taste. Finally, sweet stewed pork was served with a concentration of 1.0% meat softener, the eating rate of rose from 86.2% to 90.5%. Eating rates for side dishes, such as rice and vegetables also increased. **Conclusions, discussion and/or practical application:** Usage of meat softener indicated that it might be possible to raise eating rates and enhance intake of protein-rich food. We need to examine application in other meat recipes to develop appropriate and softness and texture for the elderly.

COMPETING INTERESTS: No conflict of interests. This research was got permission by ethic committee of University of Kochi.

P-313: MUNICIPAL DIFFERENCES DECISIVE FOR PROVISION OF FOOD AND MEALS IN SWEDISH ELDERCARE

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Introduction: In Sweden, provision of food and meals to older people is a welfare service within eldercare, grounded on national frame laws but in practice affected by high local autonomy. The aim of this study was to explore municipality-based steering, organization and practice of the provision of food and meals within Swedish eldercare in terms of trends and local uniformity or differences. To our knowledge, no prior studies have investigated this. **Methods:** A national study on Swedish municipalities (n=290) based on a repeated questionnaire conducted in 2006 and 2013/14. Municipalities were divided into groups based on population density: rural, urban, and city. The response rate was 80% in 2006 and 56% in 2013/14. **Results:** Overall, provision of food and meals in Swedish eldercare is dominated by a traditional organization still relying on the public food service organization as the main provider. Conventional food technology is still practiced, but with increased use of private food service organizations and changing practice of food technology led by city municipalities. Large discrepancies in modes of provision were found between rural and city municipalities. City municipalities had progressed further in terms of private food service organization (p<0.001), reduced use of cook-serve (p=0.039) in favour for chilled food technology systems (p=0.022), and extensive practice of menu choices (p<0.001). **Conclusions, discussion and/or practical application:** Different conditions in municipalities seem to be decisive for the provision of food and meals, with benchmarking devices and New Public Management as incentives for steering and efficiency appearing to be more achievable for city municipalities.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-314: ANALYSES OF INCIDENTS OF INSTITUTIONAL FOOD SERVICE PRACTICE MANAGEMENT FOR TWO YEARS IN THE KITCHEN OF A GENERAL HOSPITAL, CHUBU REGION, JAPAN

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Introduction: This study aimed to assess the incidence of institutional food service practice management errors in the kitchen of a general hospital, Chubu region, Japan. Clarifying the cause of incidents of institutional food service operation can reduce institutional food service practice management errors. **Methods:** Data were collected from incident reports over the course of two years, between October 1, 2011 and November 30, 2013. One hundred nine reports of incidents whose locations were the kitchen were analyzed, for example, incident dates, incident times, workloads, incident contents, incident causes. The frequency of incidents for months, for each third of month, for day of week, for time of day, for workload levels of staff member, and for types of incidents were analyzed using Chi-square test following Ryan multiple comparison. **Results:** The incidents were more likely to occur during the 11:00 to 12:59 time blocks (49 reports), or when staffs were busy (64 reports) or tired (40 reports). Breakdown of incident contents were "foreign contamination (44 reports)", "serving incorrect contents (36 reports)" and other (29 reports). **Conclusions, discussion and/or practical application:** 59% of staff in incident reports indicated that they were extremely busy or busy. This shows that over half of the incidents occurred when staffs were busy. This indicates that incidents are more likely to occur when the workload is high. It may be possible to reduce the number of incidents by identifying and ameliorating the causes of this busyness. To prevent incidents, building a system that allows for changes to be made to the number of meals to be served and the content of those meals in an accurate and prompt fashion.

COMPETING INTERESTS: This study was supported by Kinjo Gakuin University-Parent Teacher Association Research Grant.

P-316: PREVENT, ANTICIPATE AND AVOID, TREAT (PAAT). A MODEL FOR MANAGING MALNUTRITION IN CARE HOMES IN SOUTH EASTERN TRUST AREA

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Introduction: Malnutrition is increasing and associated with aging and chronic diseases which are not static states but produce changing patterns of clinical and nutritional needs. BAPEN surveys in hospitals demonstrated malnutrition rates for patients admitted from care homes rising from 35% to 61% (2007-2011). **Objectives and Target population:** The objective was to test a new model (PAAT) of care to provide safe, cost effective and sustainable nutritional care to care home residents. Dietitians, Nurses and Dietetic Support Workers (DSW) work together to manage Nutritional Care Plans (NCP). **Previous theories and Investigations:** Historically dietitians discharge patients 6 months following assessment. A2012/2013 project demonstrated minimal or no review of NCPs of patients not under dietetic care. Our local prescribing committee identified increasing costs of Oral Nutrition Supplements (ONS). **Intervention:** Capacity to oversee NCPs of all residents is achieved by implementing a desk top review process of a nutritional dataset (Virtual Ward Round, VWR) collated by nursing staff monthly. DSW reviews stable patients with dietitian concentrating on more complex cases. The DSW contributes to 50% of the assessment process and with nursing staff takes responsibility for 80% of reviews. **Results, Evaluation and discussion:** We identified unmet need with a threefold increase in dietetic caseload. Waiting times have reduced for new assessments by 35 days and for reviews by 56 days with a 10 fold increase in cases assessed per session. Inappropriate supplements are stopped/changed sooner with identified potential savings of £83K per annum. Monitoring trends enables early identification of clinical change (25%) to anticipate and avoid the development of increased medical/pharmaceutical need, preventable inpatient admissions, e.g.: dysphagia related chest infection. **Conclusion of authors:** Using the VWR the PAAT model demonstrates safe, efficient, cost effective management of malnutrition for all care home residents with changing nutritional and clinical needs.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-317: DRAWING UP INSTRUCTIONS FOR THE DISHES PREPARED IN A CENTRALISED KITCHEN

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Introduction: The central kitchen of the municipality of Vitoria-Gasteiz prepares about 2000 meals daily (breakfasts, mid-morning snacks, lunches, teas and evening meals). The lunches and evening meals are distributed to the town's geriatric residences, to centres for social rehabilitation and delivered to the homes of older people. The kitchen adheres to a plan for quality management which requires the introduction of detailed instructions for all the dishes it prepares to inform the ultimate consumer of their nutritional and allergenic content. **Aims:** to design and develop the instruction sheets for all the dishes prepared in the central kitchen. **Methods:** The instructions for each dish were drawn up and its name and list of ingredients were recorded together with the process used and suggestions for making it, the equipment required, the size of the portions served for each type of centre, the nutritional content, and information on allergenic components, to which was added a photograph of the completed dish. **Results:** For the calculation of the portions, 115 first courses, 106 second courses and 86 blended (turmix) dishes, classified by groups of ingredients and/or types of dishes. Four distinct portions for the recipients of each dish were recorded: very dependent users, dependent users, centres for social rehabilitation and home deliveries for the elderly. **Conclusions, discussion and/or practical application:** The instructions for the dishes are a basic tool for the kitchen staff and nutritionists, as well as transmitting information to the ultimate consumer. The drawing-up of these instruction sheets is extremely difficult, and therefore requires the combined efforts of dietician-nutritionists and cooks for its full development. The work is unfinished, as it still needs some instructions for festive dishes and blended foods. Furthermore we are adding to the instruction sheets allergy information on more than 500 raw materials.

COMPETING INTERESTS: The authors of the document can confirm there is no conflict of interest.

P-460: NUTRIENT ANALYSIS OF SCHOOL LUNCHES CONSUMED IN THE US AND IN INDIA

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Introduction: More than 31 million children eat National School Lunch Program (NSLP) meals each school day in the United States (US). The School Lunch Program (SLP) in India is a large program feeding millions of children in public schools. There are also many private schools in India where lunch is provided to students. Private Indian school lunches have yet to be analyzed or compared to school lunches in the US. **Methods:** Data was collected among lunches served and consumed among children in grades 2 through 5 with the approximate age range from 7 to 10 years of age. Digital photographs were taken before and after meals were consumed in four elementary schools in the US and one private elementary school in Chennai, India to determine nutritional content of the meals consumed. **Results:** Analysis of the US and India meals revealed significant differences between the content in calories and all nutrients. Examples of differences included calories: 445 (US) and 270 (India); fat: 13.6g (US) and 6.7g (India); protein: 21.2g (US) and 6.2g (India); carbohydrate 80.8g (US) and 46.2g (India); calcium 373mg (US) and 112mg (India); sodium 844mg (US) and 491mg (India). **Conclusions, discussion and/or practical application:** US meals consumed were higher in all categories analyzed except sodium. Consumption of school lunches analyzed in India contained about 60% of the calories of lunches consumed in the US. The Food and Agriculture Organization of the United Nations recommends children 7 to 10 years old consume 27g of protein daily. Students in the Indian school consumed less than one third of their recommended daily protein intake at lunch (6.2grams/27grams = 23%). More investigations at private and public India schools would provide comprehensive information concerning calorie and nutrient intake at lunch meals among Indian elementary students.

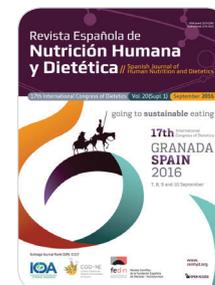
COMPETING INTERESTS: The authors of the document can confirm there is no conflict of interest.



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NEW FOODS AND FOOD TECHNOLOGY

P-318: FERMENTABLE OLIGOSACCHARIDE, DISACCHARIDE, MONOSACCHARIDE AND POLYOL (FODMAP) CONTENT OF FOODS COMMONLY CONSUMED BY ETHNIC MINORITY GROUPS IN THE UNITED KINGDOM

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Introduction: Dietary restriction of fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAPs) is an effective management approach for functional bowel disorders, such as irritable bowel syndrome (IBS). However, its application is limited by the paucity of food composition data available for ethnic minority groups. The aims of this study were: (i) to identify foods commonly consumed by ethnic minority groups in the UK for whom FODMAP composition was unknown; and (ii) to measure the FODMAP content of these foods. **Methods:** Foods for analysis were identified from an online survey of 110 dietitians who had received training in the low FODMAP diet at King's College London. The dietitians were asked to rank a list of 48 foods based on how important measuring their FODMAP content would be to clinical practice using a 5-scale rating system (1, essential; 2, very important; 3, of interest; 4, low importance; 5, not important). The top 20 ranked foods then underwent FODMAP analysis using validated techniques. In brief, total fructans were quantified using enzymic hydrolysis and spectrophotometry based on the AOAC 999.03 method using the Megazyme fructan HK assay kit and galacto-oligosaccharides, lactose, free fructose, sorbitol and mannitol were quantified using high-performance liquid chromatography with evaporative light scattering detectors. **Results:** Of the 20 foods analysed, five were identified as significant dietary sources of at least one FODMAP. Fructans and galacto-oligosaccharides were the major FODMAPs in these foods, including chana dal (0.13g/100g; 0.36g/100g), fenugreek seeds (1.11g/100g; 1.27g/100g), guava (0.41g/100g; not detected), karela (not detected; 1.12g/100g), and tamarind (2.35g/100g; 0.02g/100g). The remaining 15 foods did not contain significant quantities of any FODMAP and therefore can be included during the restriction phase of the low FODMAP diet. **Conclusions:** Broadening the availability of FODMAP composition data will increase the cultural sensitivity of low FODMAP dietary advice therefore promoting equality of healthcare in IBS.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-319: FUNCTIONAL FOODS: KNOWLEDGE OF CONSUMERS AND FACTORS INFLUENCING CONSUMPTION

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Introduction: Functional foods (AF) contain active bio components in measurable concentrations capable of exerting a positive effect on health beyond its ability to nurture and are consumed as part of the diet. Currently the media promote the consumption of this type of food but do not have very clear if consumers scientifically know when, how and to consume. This study aimed to characterize the use of AF by identifying the reasons why consumers choose them and those who influence their consumption. **Methods:** Descriptive, observational cross-sectional study of randomly selected consumers (n=96), who attended supermarkets and dietary Capital Salta (Argentina), who underwent a semi-structured questionnaire. **Results:** Consumers of functional foods are found in the age group of 35-40 years, mainly female (82%). Regarding the definition of AF, 95% related to the health benefits, highlighting its role in improving digestion and prevent disease. Inability to explain the scientific basis was observed, because their answers were due to advertising. As for time consuming leading AF, 30% do so from childhood and in smaller percentages for several years. Regarding those who influence buying them, only 8% were influenced by a professional nutritionist, while advertising comprised 54% by which acquired them. Highlights that only 16% of consumers read labels (labeled nutritional). **Conclusions, discussion and/or practical application:** A general knowledge of the reasons for purchase and consume AF is observed. It is recommended to raise local strategies to provide correct, complete and professional information.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-320: ACCEPTABILITY AND PREFERENCE OF LOW-FAT MOZZARELLA CHEESE, MADE FROM GOAT'S MILK, WITH ADDED PHYTOSTEROLS

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Introduction: Goat Mozzarella Cheese is an alternative matrix to the addition of phytosterols, bioactive component especially involved in lowering blood cholesterol. Objective: To evaluate the acceptability and preference of Standard Goat Mozzarella Cheese (MCS) and added with phytosterols to 1g% (MCP1) and 3g% (MCP3). **Methods:** Pasteurized goat's milk was added with CaCl (0.02g%), starters cultures *Streptococcus thermophilus* (StM7) (0.010%) and *Lactobacillus helveticus* (LHB02) (0.015%) at 37 °C for 30 minutes to pH 6.32, then heated at 43 °C to the addition of phytosterols (MCP1 and MCP3). Chymosin 100% (0.003g%) was added, stood for 25 minutes until the clot was firm, glossy and surface homogeneous. Curd was cut and partially drained. The samples were mixed and proceeded to spinning when reached pH 5.3, rounded and plunged into brine (20% w/v NaCl, 30 minutes) at 4 °C to cool the dough. Acceptability was evaluated with a 100 consumer panel and nine-point hedonic scale ranging from "Liked it very much" to "Disliked it very much" and preference with test ranking. Data were analyzed by Infostat Software, and Newell and MacFarlane Tables. **Results:** There were no significant differences (P> 0.05%) between the samples MCS, MCP1 and MCP3 to Global Acceptability (7.05; 6.67; 6.81) and attributes of Color (7.42, 7.38, 7.25), Texture (6.69, 6.89, 6.70) Taste (6.46, 5.86, 6.30) and Flavor (6.69, 6.65, 6.84). With regard to preference, there were also no significant differences for MCS (191), MCP1 (209) and MCP3 (200). **Conclusions, discussion and/or practical application:** Acceptability and preference of added phytosterol products unchanged compared to standard sample.

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P-321: MICROENCAPSULATION OF CHIA OIL TO FORTIFY GOAT CHEESE

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Introduction: Chia oil (CHO) contains α -linolenic (FAAL) fatty acid and its consumption is related to the prevention of chronic non transmissible diseases. Goat cheese is produced in Northern Argentina. **Aim:** To microencapsulate chia oil to fortify goat cheese with FAAL. **Theory and previous research:** Previous studies characterized the CHO and determined its high content of FAAL. Since it tends to oxidize the microencapsulation (ME) is recommended as a strategy and the widely used technique is spray drying and lyophilization in lesser degree. Several authors reported that CHO has positive effects on blood levels of cholesterol and triglyceride (TG). **Interventions:** experimental study. CHO will be characterized in its FA profile and optimize its ME through spray drying and lyophilization with arabic gum and brea as wall material. Then, a goat cheese will be fortified with the microencapsulated. **Evaluation:** Goat cheese fortified with MAC will be evaluated on quality and nutritional characteristics, textured, sensory and storage stability. The effect on the TG levels will be assessed in Wistar rats. ANOVA and Duncan test will be used ($p < 0.05$). This work will be performed in Food Laboratory of INIQUI - CONICET and Food Laboratory of Health Faculty Nacional University of Salta, Argentina. **Results:** This work will enable to design a food with health claims using regional ingredients of northern Argentina as a potential product to diversify local production. It will allow getting results on the effects of the AGAL on triglyceride levels. **Conclusions:** Results allow us to have valuable information for the development and optimization of a healthy product like goat cheese rich in omega 3, which has effects on triglyceride levels, tending to respond to public health policies and today's consumers demands.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-322: TEXTURE PROFILE ANALYSIS (TPA) AND COLOR IN LOWFAT MOZZARELLA CHEESE, MADE FROM GOAT'S MILK, WITH ADDED PHYTOSTEROLS

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Introduction: Phytosterols added to Goat Mozzarella Cheese could modify both the texture by the contribution of fat and color because of its slightly yellow pigmentation. Objective: To evaluate the texture profile and color on Standard Goat Mozzarella Cheese (MCS) and with added phytosterols to 1g% (MCP1) and 3g% (MCP3). **Methods:** The characteristics of texture were analyzed by QTS-Brookfield equipment, with 500N load cell, flat piston speed of 30mm min⁻¹, and 50% compression to allow deformation without breaking samples. Data were collected through Pro v2.0 software. Color was determined by Coleman Parmer colorimeter using the CIELAB parameters (L*, a*, b*). **Results:** There were no significant differences ($P > 0.05\%$) between the samples MCS, MCP1 and MCP3 for the parameters of Elasticity (6.65a, 7.08a, 6.67a) and cohesiveness (0.71a, 0.69a, 0.64a). Gumminess was higher in MCS (2547,53a) and decreased with increasing concentration of phytosterols, with values 2062,72b for MCP1 and 1309,50c for MCP3; this could be due to the increasing presence of fat acts as a lubricant to the alignment of the protein fibers during spinning and stretching, resulting in a less gummy product. This would, at the same time impact in highest values of chewiness in MCS (16949,66a) and MCP1 (14609,33a) compared to MCP3 (8776,95b); from hardest on MCS (3119,00a), moderately hard MCP1 (2534,33a, b) and less hard on MCP3 (1662,66b). With regard to color there were no significant differences between MCS, MCP1 and MCP3 (L* 78.7; 79.4; 79.53; a* 5.44; 5.72; 7.28; and b* 24.61; 24.94; 24.95; respectively). **Conclusions, discussion and/or practical application:** Phytosterols added to low-fat mozzarella cheese, made from goat's milk, results in less gummy and hard products, requiring lower chewiness.

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P-323: THE NUTRIENT COMPOSITION OF NON-TOXIC PUFFERFISH LIVER OILKazue Onuki^{1,*}, Aya Mutoh², Yuki Sakakura¹, Ryo Ioroi³, Tamao Noguchi⁴¹Ibaraki Christian University. ²Waseda University. ³Tokyo Healthcare University.⁴Graduate School, Tokyo Healthcare University.* Contact: k.onuki@icc.ac.jp

Introduction: Goal of this study is revival of Japanese traditional food, “pufferfish liver” with safety, deliciousness and nutritional function. From the current study, it is found that the liver obtained from non-toxic pufferfish reared contains 60-70% of the lipid whose fatty acid consists of rich polyunsaturated ones, especially functional DHA (about 12%) and IPA (about 5%). It is expected that the pufferfish liver with the rich functional components is effectively available not only as food but also functional supplement oil. **Methods:** First of all, the livers of the pufferfish reared were examined according to the Japanese official method for tetrodotoxin (TTX). Next, the functional supplement oil extracted from them was submitted to the analyses of proximate component, vitamin E (α -tocopherol), cholesterol, fatty acid composition according to the AOAC method. **Results:** Pufferfish livers used were found to be non-toxic. The obtained oil contains 99.9% of the lipid whose fatty acid consists of rich functional polyunsaturated fatty acid such as DHA (about 14%), DPA (about 5%) and IPA (about 7%), and 18.8mg% of vitamin E and 1005mg% of cholesterol. The oil obtained by the present extraction method contained richer functional components than those of the raw with significant difference ($p < 0.01$). **Conclusions, discussion and/or practical application:** It is expected that non-toxic pufferfish liver is efficiently utilized as food as well as functional supplement oil because it can play a role to take efficiently to the inside of the body after ingestion.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-324: GOAT MILK POWDER PRODUCTION WITH ADDITION OF DHAFernando Villalva^{1,*}, Enzo Goncalvez de Oliveira¹, Noelia Paz², Margarita Armada³, Adriana Ramón⁴¹Instituto de Investigaciones para la Industria Química (INIQUI) – Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Facultad de Ciencias de la Salud, Universidad Nacional de Salta. ²Instituto de Investigaciones para la Industria Química (INIQUI) – Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).³Facultad de Ingeniería, Universidad Nacional de Salta. ⁴Facultad de Ciencias de la Salud, Universidad Nacional de Salta.* Contact: ferchuvillal@gmail.com

Introduction: The addition of DHA in milk powder that would be innovative and bring health benefits to a raw material the industry is growing. **Objectives and target population:** The objective of this project is to develop new technological techniques for the production of powder goat milk with added DHA microencapsulated, in order to contribute to the prevention of chronic diseases. **Previous theories and investigations:** In previous research about powder goat milk it was obtained by spray drying and its physico-chemical properties were analysed. In another study, EPA + DHA of fish oil was microencapsulated with the objective to enrich fruit juice. Furthermore, researchers, in other investigation, microencapsulated oil flaxseed and added in a bakery product. **Intervention(s):** An experimental study will be conducted. Powder goat milk will be obtained by spray drying, DHA oil source will be microencapsulated using Brea gum as wall material and will be added at the product. **Evaluation:** Colour, aw, apparent and compacted density, Carr and Hausner index, solubility, wettability and dispersibility, macronutrients, phosphorus, calcium and sodium, fatty acid profile by gas chromatography, pH, TBA, iodine index, saponification, acidity, peroxides index, microbiology and sensory evaluation will be evaluated. Product Stability (Methodology cutoff) will be determined. This investigation will be performed at the Food Laboratory (INIQUI – CONICET) and Food Laboratory (*Facultad de Ciencias de la Salud, Universidad Nacional de Salta, Argentina*). The results will be analysed by ANOVA and Duncan test. **Results:** This project will provide a powder dairy product added with DHA as part of a social commitment in the development of foods with health claims that help improve the quality people’s life. **Conclusions of authors and discussion:** The implementation of this project will provide valuable information for the development and optimization industrial healthy products that respond to the current public health policies, with the objective to satisfy the needs of the food industry and actual consumers.

COMPETING INTERESTS: The authors of this communication declare haven’t any conflict of interest.

P-325: NUTRITIONAL VALUE OF FUNCTIONAL ICE CREAM FORMULATED WITH INULIN

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Introduction: Inulin is used as an ingredient in many alimentary products (for example ice creams, yogurt), his technology properties such as the substitution of fats or sugar, foam stabilization and increased dietary fiber. Formulate dietetic ice creams mango (MI), peach (PI), blueberry (BI) and chocolate taste (ChI), analyze their nutritional value and acceptability.

Methods: The products were formulated with skimmed milk powder (13%), dried egg albumin (8%), inulin (10%), sucralose (0,02%), according the flavour for MI: mango dietetic jam (40%), yellow dye; PI: dietetic canned peaches (15%), commercial peach pulp (5%), artificial peach essence, yellow and red dye; BI: blueberries scalded (40%), and CI: unsweetened cocoa (10%). Elaboration process consisted in mix of ingredients, pasteurization (63±2 °C; 30 min), cooling (4±1 °C), maturation (4±1 °C; 2hs.), churning and freezing in an ice cream machine (-6±2 °C; 50min), packing and storage (-22±2 °C; 12hs.). Were analysed: moisture, protein, fat, carbohydrates, inulin (according to AOAC). The product was sensorily evaluated with hedonic scale or semi-trained panel using a pared test with a commercial patron. Results: All ice creams were presented soft texture, colour, taste and aroma. The content of humidity, fat and inulin in g% ranged from 68,13 (BI) a 77,3 (MI); 0,12 (MI y PI) a 0,6 (ChI) y 9,8 (BI) a 10 (ChI). The protein percentages were 1,39g% (MI); 7,14g% (PI); 8,4g% (BI) y 11,6g% (ChI). The products obtained an overrun value greater than 67%, Caloric value less than 75kcal/100g and an acceptability of the 86%. **Conclusions, discussion and/or practical application:** Products provides among 60/65% y 87/89% of calories and fats less than a traditional ice cream, with high content of dietary fiber and suitable nutritional and organoleptic characteristics.

COMPETING INTERESTS: The authors of this communication declare haven't any conflict of interest.

P-326: ANTIOXIDANT ACTIVITY AND BIOACTIVE COMPOSITION OF TURKISH COFFEE BREWS VARIED DEPENDING ON MILK/SUGAR ADDITION

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Introduction: Health benefits of coffee are generally based on the antioxidant capacity of its bioactive components. However, bioactive composition of the coffee brews varies depending on the preparation method and addition of other ingredients such as milk or sugar. The composition and antioxidant activity of Turkish coffee, commonly consumed in eastern European and western Asian region, were limited studied. This study aimed to determine antioxidant capacity, and total polyphenols, total flavonoids, chlorogenic acid derivatives and caffeine content of Turkish coffee, comparing with instant coffee brews, and to assess the effect of milk and/or sugar addition on the content of polyphenols and antioxidant capacity. **Methods:** Turkish coffee samples were prepared as plain, with sugar, with milk, and with milk+sugar. Instant coffee and coffee mixture samples were prepared according to preparation recommendation of the manufacturer. Thirty coffee samples were analysed in total. Antioxidant capacity of coffee samples was evaluated by three different assays: ABTS (2,2-azino-bis (3-ethylbenz- thiazoline-6-sulfonic acid)); FRAP (ferric-reducing antioxidant power); DPPH (1,1-Diphenyl-2-picryl-hydrazyl) assays. The content of total phenols and flavonoids was determined spectrophotometrically and the content of chlorogenic acid derivates and caffeine using the high performance liquid chromatography. **Results:** Traditional plain Turkish coffee showed the similar values in content of total phenols (119.5±10.42mg gallic acid equivalent/g), total flavonoids (45.6±32.48mg quercetin equivalent/g), chlorogenic acid (398.4±211.60mg/g), caffeine (50.8±4.59mg/g) and antioxidant capacity (%86.9±3.82, 0.689±0.02mmol Troloks/g, 0.341±0.05mmol quercetin equivalent/g) with instant coffee brews (DPPH, TEAC, FRAP, respectively). The addition of milk or sugar significantly decreased antioxidant capacity and

amount of bioactive components in Turkish coffee as well as instant coffee brews. The antioxidant capacity of coffee brews was in compliance with the total phenol content and content of chlorogenic acid derivatives. **Conclusions, discussion and/or practical application:** Traditionally prepared plain Turkish coffee is a favourable alternative to instant coffee brews in terms of bioactive components and antioxidant capacity.

COMPETING INTERESTS: The researchers of this document can confirm there is no conflict of interests.

P-327: TECHNICAL AND SENSORY PROPERTIES OF THICKENER PRODUCTS FOR PATIENTS WITH DYSPHAGIA

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Introduction: Modifying consistency of liquid foods is a solution for the safe feeding of patients with dysphagia. The addition of thickeners in liquids has devastating effects on the sensory quality of the product leading to patients' rejection to food with the consequent risk of dehydration and undernutrition. However, few studies have address the sensory quality and acceptability of thickened liquids and have provide information on how to improve patients satisfaction. The aim of this study was to make an evaluation of the physico-chemical, nutritional and sensory properties of the neutral thickeners that are available in Spain to hydrate and modify liquid consistency for patients with dysphagia. **Materials:** Commercial neutral thickeners available in the Spanish market were studied considering: main ingredients, viscosity/consistency, physical properties (colour, appearance/transparency and dissolution capacity) and nutritional composition using different food matrix (water, milk, soy-beverage, almond-beverage, fruit juice, soup and chamomile infusion). Sensory properties related to texture and acceptability of each product was evaluated for 25 patients with dysphagia (diagnosed >1yr). **Results:** Main differences between samples were due to differences in the dosification, main ingredient with thickener activity, nutritional composition and physical properties. Viscosity differences were small for water but were significantly different for the rest of food matrix depending on the consistency level. Significant differences were also found in texture and acceptability between thickeners being those with gums preferred. **Conclusions:** Clear differences were found in terms of viscosity, physical, nutritional and sensory characteristics of thickeners according to the main ingredient. Products made by gums have better properties, especially from the sensory point of view. Therefore, those results reflect the need that food companies develop new thickener products more acceptable that enhance the adherence to dysphagia dietary treatment, but also to the Spanish national health system to fund those thickener with better acceptance.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-328: MONITORING RESULTS FOR THE RRS, RRS2 AND LLS FROM PROCESSED SOY PRODUCT DISTRIBUTED AT MATSUMOTO-CITY AND ITS SUBURBS

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Introduction: We had reported monitoring results of RRS from soft soybean curds that were distributed at Matsumoto-city and its suburbs. However the results of other processed soybean products that were distributed there were unknown. In addition, the other GM soybean, RRS2 and LLS, had been detectable from Nov. 2012 in Japan. So we have monitored processed soybean products that were distributed Matsumoto-city from Nov. 2012 to Oct. 2015. **Methods:** 125 samples of kinugoshi-tofu, 26 samples of momen-dofu, 66 samples of soy milks, 53 samples of deep-fried tofu, 51 samples of fried tofu, 44 samples of toasted soybean flour, 30 samples of freeze-dried tofu, 18 samples of gan-modoki, 8 samples of nama-yuba and 6 samples of yuba were analyzed standard curve methods of realtime PCR. **Results:** 14 samples of kinugoshi-tofu, 55 samples of soy milks, 50 samples of deep-fried tofu, 29 samples of fried tofu, 8 samples of toasted soybean flour, 27 samples of freeze-dried tofu, 15 samples gan-modoki and 2 samples of nama-yuba were RRS positive. 7 samples of kinugoshi-tofu, 1 samples of momen-dofu, 16 samples of soybean milks, 48 samples of deep-fried tofu, 3 samples of fried tofu, 5 sample of toasted soybean flour,

11 samples of freeze-dried tofu, 11 samples of gan-modoki and 2 samples of nama-yuba were RRS2 positive. 3 samples of soy milks, 20 samples of deep-fried tofu, 3 samples of fried tofu and 3 samples of gan-modoki were LLS positive. **Conclusions:** The differences of GMO positive rate between soybean products were observed. Differences of processed manufacture, especially processed temperature, lead the differences of degradation of DNA and had an effect on genetically modified soybean positive rate. The numbers of RRS2 and LLS positive samples were less than RRS positive samples because RRS2 and LLS were developed after RRS was developed, and the crop acreage of RRS2 and LLS were smaller than that of RRS.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-330: IMPROVEMENT OF FOAMS IN FOODS BY GLYCATION OF BETA-LACTOGLOBULIN IN ACID ENVIROMENT

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Introduction: Controlled Maillard reaction improves quality attributes of many foods. To study its influence on the foaming properties of whey proteins, we analysed the foaming-activity-index (FAI) and the foam-stability-index (FSI) in foaming solutions obtained from conjugated beta-lactoglobulin-glucose (B-LG-GLU) and conjugated beta-lactoglobulin-lactose (B-LG-LAC). **Methods:** Mixtures of B-LG and reducing sugar, in molar ratio 1:100, were dissolved at pH 5.0; 6.0 and 7.0 (as acidity of most processed foods lies in this range), lyophilised and glycosylated during 80h at 50 °C and 65% RH, then, dissolved again to reach the protein concentration of the original solution. B-LG, without reducing sugar, which underwent the same process, was taken as control sample. The characteristic colour was measured by turbidimetry at 420nm; free amino groups were estimated by the OPA colorimetric method; hydrodynamic size of the conjugates was studied by molecular exclusion chromatography (HPLC); particle size was analysed by laser diffraction; and protein denaturation was estimated by fluorescence extinction with acrylamide. Different samples of B-LG, treated as working protocol, were diluted to 0.2% (W/V) in phosphate buffer (pH 6.8). Foams were obtained by bubbling nitrogen at constant flow rate. Conductivity, foam volume and foaming time were recorded, and from them, FAI and FSI were calculated. **Results:** The colour were developed faster for B-LG-GLU (9% of free amino groups) than for B-LG-LAC (28% of free amino groups); HPLC showed the appearance of low molecular weight dimers, trimers and oligomers, observed in higher proportion for B-LG-LAC; bimodal aggregates were found with smaller mean diameters for the B-LG-GLU conjugates and it was observed little loss of structure in comparison with unconjugated B-LG. No significant differences were observed for FAI, but FSI showed better values for conjugates obtained at pH 6.0. **Conclusions:** These results encourage the use of milk protein glycosylation for additives that improve the quality of food foams.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-331: HIGH STEARIC SUNFLOWER OIL MUFFINS

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Introduction: Cardiovascular diseases are responsible of 30% of deaths that occur each year in the country, and claim the lives of an average of 12 people every five minutes in Argentina. Stearic acid is considered by the World Health Organization as the only saturated fat that does not affect cholesterol levels in the bloodstream and brings ideal conditions for the industry. The objective of this work is to identify the variation in lipid profile of a preparation made with high stearic sunflower oil and another made with butter and the degree of acceptance thereof in FASTA students of the University of Mar Del Plata, in 2015. **Materials and Methods:** The research work consists of two stages corresponding to one cuasiexperimental production muffins made with high stearic sunflower oil. And the second is descriptive of cross-cohort product acceptability in a student

sample consisting of 120 students for self-administered survey. **Results:** The general perception of the sample is 51% stearic 'I like very much' and 38.8% 'I like' and only 10% answered 'I do not like nor dislike me'. In the muffin made with lard values were 28.6%, 23.6% and 34% respectively. The taste and hardness were the two organoleptic characteristics yielded greater discrepancy between samples. 85% would enter the muffin made with high stearic sunflower oil in your diet, to change eating habits. **Conclusion:** Because cardiovascular disease is one of the most important causes of disability and premature death in our country and around the world, is recommended to change eating habits, especially the consumption of fats and oils. The addition of new products such as high stearic sunflower oil, could contribute to this.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-516: *LISTERIA MONOCYTOGENES* RISK PERCEPTION AND FUTURE INCORPORATION OF HIGH PRESSURE TECHNIQUES OF RAW-CURED PRODUCTS MANUFACTURES

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Introduction: The aim of this study is an update of the inactivation of *Listeria monocytogenes* in raw-cured meat products by using High Pressure techniques (HPP). As it is widely known, *Listeria monocytogenes* is getting more and more important due to the increase of raw products that are incoming in our country from Asiatic countries and also because the increase demanding new ways of freshly-made healthy fast-food. For these reason, food industries requires new techniques for bacteria inactivation with minimum effect on sensorial and quality food characteristics / with minimal losses in food quality. **Methods:** A questionnaire was sent to high number of food companies all over Spain so as to seek out information of the real perception of risk of this pathogen, and their implication in new techniques for its inactivation. The information received was analysed and build up the SWOT (Strengths, Weaknesses, Opportunities y Threats). **Results and Conclusions:** The outstanding is that most of food companies are proud of incorporating new techniques as HPP, for the inactivation of this pathogen but they are limited by the cost of it. Also they perceive a high risk from raw products.

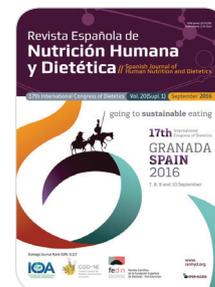
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POSTER COMMUNICATIONS



NUTRITION EDUCATION

P-332: NEW APPROACH OF DIETARY INTAKE: "PHOTOGRAPHIC DIETETIC REGISTRATION (RDF)"

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Introduction: One of the problems that nutrition faces is the difficulty in establishing what an individual eats. He intake log is a useful resource for the estimation of the same, but is included only valid if so exact everything ingested. The error causes are the personal concept of serving and overestimation / underestimation of intake. **Methods:** Consecutively they selected 20 obese patients evaluated in our unit. They made an assessment of intake by 2 types of records, written and photographic and the results compared. Items analyzed: energy, macronutrients and micronutrients, proper distribution, culinary confection, dessert and beverage. Statistical Analysis with SPSS® 20. **Results:** Data from 20 patients who provided 2 records requested were evaluated. Conventional recording: Dish-right distribution 80%. Clothing culinary detail-is 10%. Dessert-detailing is 55%. Drink-detailed 35%. Energía provided by the plate (kcal) 264.2±154.46. HCO (g) 28±22.8. Fiber (g) 4±3.05. Proteins (g) 18.57±11.8. Fat (g) 7.57±7.23. Photographic record: Distribution plate-correct 10%. Clothing culinary detail-is 95%. Postrese 100% detail. Drink-detailing is 95%. Energy provided by the plate (kcal) 409.1±151.1. HCO (g) 43.4±21.9. Fiber (g) 5.85±4.18. Proteins (g) 26.14±15.24. Fat (g) 13.71±9.15. Regarding the distribution plate, culinary preparation, dessert and drink presence of greater accuracy when ingested detail and evaluate what is detected. Register Photographic detected significantly more energy 144±33kcal, more 7.5±5.6g protein, more fat 6.1±3.5g, more carbohydrates and fiber 1.8±0.7g. **Conclusions, discussion and/or practical application:** The use of photographic record allows us to have more reliable data, detect errors and omissions in the registration and that the patient feel involved, allowing better food reeducation. They are necessary future interventions to evaluate long-term results.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-333: CRITICAL FOOD LITERACY COMPETENCIES FOR YOUTH

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Introduction: The global shift to diets high in ultra-processed foods has seen a concurrent decline in time spent on domestic food-related activities and a “deskilling” with respect to food and nutrition. Consequently, many youth are lacking the food literacy (knowledge, skills and critical perspectives) necessary to minimize their risk of obesity and chronic diseases, in the context of a complex food system. The specific dimensions of these knowledge, skills and dispositions, however, are unknown. This study identified critical food literacy competencies required by youth to empower them to live healthy lives as they transition to independent adulthood. **Methods:** This study employed a Delphi methodology to achieve consensus statements on critical food literacy competencies within a theoretical framework encompassing cognitive, psychomotor and affective dimensions. A panel of 41 experts including dietitians, home economics/social studies/physical education teachers, and senior nutrition and culinary arts students participated in in-depth interviews. Results were thematically analyzed and incorporated into two subsequent surveys completed by panel members. Survey results were analyzed for means and Kendall’s coefficient of concordance was used to assess rater agreement. A panel sub-group further delineated results into competency statements. **Results:** Within the themes of “confidence and empowerment”, “joy and meaning” and “sustainable and equitable food systems”, 18 broad competency areas were identified such as “having basic nutrition knowledge”, “having food preparation skills” and “having knowledge of food cultures and traditions”. Within the broad competencies, 62 specific competencies were identified including “being able to read/follow a recipe”, “understanding energy balance” and “valuing sharing food with others”. These were assembled into a Food Literacy Framework. **Conclusion:** Results can be used to support food and nutrition education in community settings as well as the formal school system through home economics, social studies and health curricula. Results can also be used to advocate for resources to support food literacy education programs.

COMPETING INTERESTS: The authors of this document can confirm there are no conflicts of interest.

P-334: EVALUATION OF A NUTRITION COUNSELING WORKPLACE WELLNESS PROGRAM

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Introduction: Workplace wellness programs in the university setting have the potential to improve health, increase job satisfaction, and decrease healthcare cost. However, there is a lack of published evaluation research exploring program impact and participant satisfaction. The overall aim of this study is to measure client satisfaction with Drexel University’s health promotion program, “Dragon Nutrition”. **Objectives:** The primary objective of this study is to measure the perceived benefits of a university supported nutrition-counseling program. The secondary objective is to collect preliminary data on the impact of nutrition counseling with a registered dietitian (RD). **Methods:** A cross-sectional study design will be used to implement an impact evaluation of “Dragon Nutrition”. A convenience sample of Drexel University employees (faculty and staff) who have received nutrition counseling will be recruited to complete a web-based, 22-question survey (Qualtrix online survey software). Outcome variables will be reported using a 5-point Likert scale, ranging from “strongly disagree” to “strongly agree”. The questions will pertain to participants and perceptions of the program and whether working with a RD has impacted their ability to meet their personalized nutrition goals. **Result/Conclusions:** De-identified survey data will be statistically analyzed using SPSS software. Participants will identify personal barriers to improved nutrition behaviors and reflect on level of behavior change. Data obtained will be interpreted to ignite the discussion of workplace wellness models in urban university settings. In conclusion, the impact of offering nutrition counseling as a benefit to employees should be further explored as it can potentially improve structuring of health-related behaviors.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-335: EVALUATION OF SALT REDUCTION EDUCATION FOR HIGH SCHOOL STUDENTS IN NIIGATA PREFECTURE

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Introduction: Niigata Prefecture Dietetic Association has conducted "Smart Diet Campaign" since 2005 to promote nutrition education for adolescents based on health promotion policy of Japan. As a part of the campaign, desired dietary knowledge, dietary attitude and behavior to reducing salt were taught to high school students in "Niigata salt reduction renaissance movement" of the prefecture. The changes in recognition of salt reduction is evaluated by comparing their recognition before and after the instruction. **Methods:** The teaching procedure is as follows. Teaching materials were made in March, 2014. A home economics class focusing on salt reduction was conducted at ten model prefectural high schools between July and November, 2014. The effects of the class was evaluated by giving them a questionnaire asking about adequate salt intake, measures to reduce salt, the importance of salt reduction. The students themselves filled in the questionnaire both before and after the instruction. **Results:** The survey results showed significant changes: (1) The rate of students reporting shortage of salt decreased to 3.5% from 19.4% and the rate of students reporting excessive salt intake decreased to 6.8% from 60% after the classes; (2) The rate of students always checking the content of sodium on food before purchasing increased to 1.6% from 37.8%; and (3) The rate of students considering salt reduction important increased 92.5% from 50.2%. The salt reduction education to high school students improved attitude to salt reduction in all survey items. **Conclusions, discussion and/or practical application:** This suggests that an awareness of salt reduction can be changed for the better by giving salt reduction education to high school students in collaboration with health programs in community and school. The education was given in 2015 and changes over time are now investigated.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-336: RESULT OF THE SALT EDUCATION FOR THE STUDENT TRAINING

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Introduction: Dieticians always work hard to reduce quantity of salt in the meal for lifestyle-related disease measures. However, the salt intakes per day exceed 10 grams now in Japan. In Dietary Reference Intakes for Japanese 2015, Female are less than 7g per day and Male are less than 8g per day are well. Therefore this study decided to perform salt density education for a student to be a dietician. **Methods:** The junior to be a dietician received salt education for the first time. The number of students was 138 female. Age is 20.60±0.34yrs old. The student made miso soup. The miso soup measured salt density using a salt densimeter (SS-31A:SEKISUI). We performed salt density education for a student afterwards. We taught making of less than 1.0% of miso soup to students. Furthermore, we made questionnaire survey about "intake frequency of the miso soup", "a kind of the miso to use", "use or nonuse of the soup stock" for a student. **Results:** Before salt education, 46 students made miso soup which was salt density more than 1.0%. But after salt education, only 12 students made miso soup which was salt density more than 1.0%. Three months later, the student came to be able to make miso soup having less than 1.0% of salt density anytime. It is statistically significantly lowered (Willcoxon: $p < 0.01$). **Conclusions, discussion and/or practical application:** After education of salt density, students could make the miso soup less than 1.0% to salt density. The salt density education using the salt densimeter is effective. It will be effective to perform sodium restriction education using a salt densimeter for the general people. We bring a salt densimeter at home-visit of hypertensive patients and want to try the education of sodium restriction in future.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-337: REVIEW OF EVALUATION INDEX FOR NUTRITION EDUCATION – CASE STUDY ON ATTITUDE AND BEHAVIOR OF SCHOOL LUNCH OFFICIALS REGARDING UTILIZATION OF LOCAL PRODUCE

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Introduction: This study was conducted in January 2010 to identify influential factors for utilization of local produce in school lunch services and factor-correlations in terms of employment types and item types and to review the evaluation index for nutrition education. **Methods:** The research participants were 56 school lunch providers, 91 school principals, and 23 managers of cafeterias. Questionnaire for the research were about how much effect to use local foods, the consciousness, behavior, and the relationship with school children by participants. Data statistical analysis was done by PASW statistics 18. **Results:** The study revealed that school lunch providers had high awareness and behavioral motivation for using local ingredients. Different job holders showed varied responses. Cafeteria managers were concerned about managerial aspects. The principals expressed high opinion on educational or administrative advantages of using local ingredients but showed low awareness on problems related to using local produce to cook for entire student body. Correlation between questionnaire items revealed that there was a strong positive relation between items emphasizing advantages of using local produce and the usage of local produce in school lunch services. **Conclusions, discussion and/or practical application:** The results showed that using local produce for providing school lunches could induce changes in behaviors, such as frequenting local produce markets, and it is considered to become a good evaluation index for developing nutrition education.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-338: DEVELOPMENT OF THE PERSONAL HEALTH MANAGEMENT CHART FOR THE NUTRITION EDUCATION FOR TOP AMATEUR SOCCER PLAYERS

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Introduction: In order that athletes aim to improve competitiveness while maintaining the health, it's important for them to intake proper nutrition. In the field of nutrition education to athletes, it's necessary for each player to discuss with dietician, based on their own physical and dietary intake status, and to set goal for their improvement. In this study we attempt to develop the functional personal health management chart as the item for nutrition education. **Methods:** For twenty-three male belonging to the top amateur soccer team, physical status and physical activity measurement, blood test, and the survey of dietary intakes including the intake of snacks, water and supplements was carried out. In addition, it was also investigated food consciousness and the level of the required nutritional knowledge for athletes of each player by using a questionnaire. **Results:** The personal health management chart adopted a format that can confirm the change with time based on the results of the assessment of each player. Concerning diet, it was to be able to compare the current situation by setting the appropriate range for each subject based on the dietary goal of energy, nutrient and food groups recommended by Japan Sports Association and the concept of Dietary Reference Intakes for Japanese. Furthermore, we represented the results classified the subjects with knowledge level on nutrition for athletes, and it was used as an index in selecting a nutritional education method of each subject. By integrating these results, it has become possible to describe the improvement goals for each subject in the chart. **Conclusions, discussion and/or practical application:** The personal health management chart we created this time is so functional we've never seen. In future, we want to complete the chart that is available in the field of nutrition education of all sports, with carrying out the nutrition education using this chart and improving it repeatedly.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-339: UNIVERSAL PREVENTION PROGRAM FOR DISORDERED EATING BEHAVIORS AND SEDENTARY LIFESTYLE IN MEXICAN ADOLESCENTS

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Introduction: In Mexico, several studies and surveys carried out in adolescents have reported an important increase of disordered eating behaviors (DEB), increasing the probability of developing eating disorders. In addition, Mexican adolescents perform less moderate and vigorous physical activity than desirable. **Objectives and target population:** The aim of this study is to assess the effectiveness of a universal prevention program for DEB and sedentary lifestyle in females and males Mexican high school students. Additionally, the physical activity frequency and duration will be increased in the sample. **Methods:** A quasi-experimental study design with repeated measures (pretest-posttest-6 months follow-up) was carried out in a sample of 623 adolescents (291 females, 332 males) with a mean age of 16,01 (SD=1,01). To evaluate DEB, the Brief Questionnaire for Risky Eating Behaviors (BQREB) was applied with females. For males, the Drive for Muscularity Scale (DMS) was used. For both, the International Physical Activity Questionnaire (IPAQ) was administered. **Results:** Through repeated measured ANOVA'S, females achieved a statistically significant quadratic decrease in the average score of DEB (F=41,70 , df=1, p=0,000). In males a statistically significant linear decrease was identified (F=4,837, df=1, p=0,029). In physical activity minutes performed by week, only males showed a quadratic significant increase (F=21,25, df=1, p=0,000) over the time. When the subjects were classified according to the physical activity level, both males and females reached important increments in high level of physical activity. **Conclusions of authors and discussion:** In general, the findings confirm the effectiveness of the prevention program. Working alongside with cognitive dissonance theory strategies and psycho-educational tools, females achieved a significant reduction in DEB; in males, the drive for muscularity (DM), an important factor associated with muscle dysmorphia, achieved a significant decrease. Finally, the program increased the physical activity frequency and duration in the sample through time.

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P-341: TOGETHER: HEALTHY FOR YOU, HEALTHY FOR TWO

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Introduction: Together is an EU-funded pilot project to design and test educational materials that promotes healthy nutritional habits and life style to pregnant and breastfeeding women. **Objectives and target population:** Pregnant and breastfeeding mothers are more sensitive to change their habits to improve not only their own health but the health of their child, as well. This pilot project is focus especially on mother from vulnerable groups of population who tend to have worse access to proper information about healthy nutrition, fresh food or physical activities. **Intervention(s):** Five European countries with different socio-cultural background attend the project: United Kingdom(Manchester), Denmark(Odense and Kolding), Czech Republic(Prague), Bulgaria(Varna) and Spain(Murcia). The Local promoting group, consisted of mid-wives, dietitians, obstetricians, social workers, nurses, educators and civic organisations, prepared action plans and educational materials specific to each city. Since November 2015 till June 2016 can mothers choose individual or group nutritional counseling, healthy shopping or cooking with dietitians, and try different types of physical activities, and learn healthy habits, get new information about healthy nutrition of adults and children. **Evaluation:** As Together is a pilot project, it was monitored and evaluated throughout. A zero-measurement was carried out before the intervention (8-9/2015) and a post-evaluation will be carried out at the end of the activities (6-7/2016). **Results:** Only preliminary data available now, as the zero-measurement just finished. In the term of ICD 2016 we will have results of both – zero- and posttest, and of every single activity held in each city, to present the good practice and impact of multidisciplinary education in the field of healthy nutrition and life style provided to

pregnant and postnatal mothers. **Conclusions of authors and discussion:** The final aim is to improve the health of the mother and her child and the conclusions could influence health policymakers and local officials, to create lasting and sustainable change, as well.

COMPETING INTERESTS: Together is EU Funded pilot project (The contract number: SANCO2013/C4/025-SI2.692.792).

P-342: GROUP INTERVENTION PROGRAM IN PATIENTS WITH OBESITY (PROGRAM IGOBE). TEMPORARY ASSESSMENT OF FOOD HABITS

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Introduction: Knowing the dietary habits of a patient with obesity is a determining factor for the success of the administered dietary recommendations. **Methods:** We selected 82 consecutive patients with obesity. It has become a global assessment (clinical, anthropometric, biochemical and habits) before surgery. This consisted of 6 weekly sessions and group on healthy lifestyles with reassessment at 6 months. The employee habits questionnaire has been developed Castro, Bellido, Pertega *et al.* It consists of 37 items grouped into eight subgroups final item valuation opinion of the diet. The answers are coded by assigning a value from 1 to 5. A higher score in each subgroup it relates to healthier eating. It has made a statistical analysis of the data using SPSS 20® program. **Results:** Data from 77 patients who completed the study period (15 males) were evaluated, age 49.1±13.75yrs with a BMI of 40.73±6.9 kg/m² and waist circumference of 116±20cm. After six months, BMI 38.04±9.51kg/m² and waist circumference 108.6±22.39cm. Habits Questionnaire (middle initial/final): sugar(14/15), food healthy(31/33), physical activity(7/9), calories(13/16), eat well(7/8), food type(16/16) knowledge and control(14/16), alcohol(7/7) and personal assessment: 15.9% good/good 33%. Weight loss 6.8±1.87kg (P<0.001), BMI decrease of 2.68±6,94kg/m² (p<0.005) and decreased waist circumference of 7.3±2.3cm. (p<0.002). **Conclusions, discussion and/or practical application:** Anthropometric parameters are insufficient to assess weight control interventions. The Most patients did not have healthy eating habits at baseline, which the interventions have improved. This change of habits has resulted in weight loss and reduced perimeter waist. New interventions to evaluate long-term outcomes are needed.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-343: BREAKFAST INTAKE ENLIGHTENMENT TO THE PRIMARY SCHOOLCHILD BY THE EVENT OF BREAD MAKING

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Introduction: The ratio that did not eat breakfast in primary schoolchildren in Japan in 2010 was 3.6%. The ratio that did not eat breakfast was 6.7% in junior high students. It is known that the scholastic ability of a student eating breakfast is better than the student who does not eat breakfast. It is important that we let a primary schoolchild and a junior high student be interested in a meal. It is necessary to perform a food education event, and to teach importance of the breakfast for a primary schoolchild. In addition, it is necessary to have students be interested in cooking. **Methods:** We performed an event made with bread for 19 primary schoolchildren (3 boys, 16 girls) from 6 years old to 12 years old. 19 primary schoolchildren brought an apron and a towel and experienced the making of 90-minute bread. After having eaten bread, we performed survey for 19 primary schoolchildren. **Results:** The primary schoolchild cooked bread very happily. The primary schoolchild answered it that all the members wanted to participate in a next event. When the making of bread was fun, all the members answered. Students wanted to cook a cake, a cookie, bread, upon on the next time. We were very sorry that there was the primary schoolchild who did not eat breakfast. The person who ate breakfast every day was 18 students. 12 students ate bread for breakfast. 5 people

ate rice as breakfast. 1 student did not eat breakfast. **Conclusions, discussion and/or practical application:** We was very sorry that there was the primary schoolchild who did not eat breakfast. The families where breakfast is bread increase in Japan to understand it from a questionnaire result. It will be necessary to teach how to make side dishes to eat on bread together in future.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-344: EVALUATION OF THE SHOKUIKU (FOOD EDUCATION) PROGRAM FOR GRADE SCHOOL STUDENT: KNOWLEDGE, ATTITUDE AND BEHAVIORAL CHANGE WITH RESPECT TO VEGETABLE

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Introduction: Establishing a desirable eating habit in childhood is important, and food education in schools are drawing attention. In Japan, the daily consumption target of vegetable is 350g/day, however; many of the generations do not meet the target. In addition, among the top 15 disliked food items, 8 are vegetables. **Objectives and target population:** Show the program's effectiveness from changes in the student's knowledge, attitude and behavioral change. Target population are 49 students at 4th grade (valid response 88.7%). **Previous theories and investigations:** Applied Piaget's theory of cognitive development by having students explore on its own making the program as a participating-type learning. Also, techniques such as social learning theory, self-monitoring and operant conditioning. Conducted survey from children and their parents regarding knowledge, attitude and behavioral change regarding vegetable and eating habits. Surveys conducted before, during and after the program. **Intervention(s):** Conduct the "Become the Vegetable Explorer" twice in a year. Carried the program from May to October in 2015. Investigation involved knowledge, attitude and behavior regarding Japanese food, chopstick usage and food habit by conductive survey of the parents and their children prior, during and after the program. Goals for the first learning was to become familiar with seasonal vegetable, attention to disfavored vegetable, and become motivated to eat. Gone through acquiring skills to understand the roles that vegetables in each season take part in human body. Goals for the second learning is to recognize suitable amount of self-food consumption, awareness of cook using seasonal vegetable, and growth of desire to eat vegetable. **Evaluation:** Comparative design of before and after. Used SPSS Ver.21 for statistical analysis. **Results:** Observed the following among children after the program: a) desire to have vegetable cooking: 79.6%; b) had seasonal vegetable with awareness: 67.3%; c) more occasion to eat vegetable cooking: 36.7%; d) are able to eat disliked vegetable: 34.7%. **Conclusions of authors and discussion:** The program suggests not only to raises the desire to have vegetable food but also leads to behavioral change to actually have vegetable cooking.

COMPETING INTERESTS: This research was carried out by university research expense and elementary school material expense.

P-345: DEVELOPMENT AND EVALUATION OF THE SHOKUIKU PROGRAM FOR CHILDREN BASED ON LOCAL FOOD INGREDIENTS AS TEACHING MATERIAL NO 1: LEARNER'S KNOWLEDGE, ATTITUDE AND BEHAVIORAL CHANGE

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Introduction: The Basic Law of Shokuiku (food education) was established in Japan, putting efforts into shokuiku such as increasing people's experience in harvesting, nationwide. **Objectives and target population:** Develop the shokuiku program using food ingredient from five different area in Japan, show its effectiveness upon the changes of the learner's knowledge, attitude and behavior. Target populations are grade school students and their parents with total of 171 (number of valid response/valid response 78.4%). Previous theories and investigations: Based on the PDCA cycle, applied social learning theory in behavioral science. **Intervention(s):** The program name is "Become the Vegetable (Fruit, Fish) Explorer". Carried out the shokuiku program twice for each area, investigating before and after carrying out the program from June, 2014 to March, 2015.

Investigations cover conductive survey on knowledge, attitude and behavior regarding food ingredients, and food frequency questionnaire. The following is an example of the Asparagus program. The learning objective is the understanding of the asparagus producer's thoughts, hardship and producer-to-table path (food chain), appreciation and value of the food, and eat actually. During the first carry out of the program, we visited the local grade school and the plastic greenhouse growing asparagus. Gone through harvesting while listening to the producer, and learned how the product gets into the market. In the second carry out, had asparagus sauté at school lunch. **Evaluation:** Comparative design of before and after. Used SPSS Ver.21 for statistical analysis. **Results:** Observed the following after the program: a) gratitude towards the producer with positive response increased from 69.7% to 82.6%; b) actual consumption of vegetable increased from 197.7g/day to 243.7g/day ($p<0.05$); c) more than 2/3 of those showed increase in number of food type and amount eaten. **Conclusions of authors and discussion:** The program not only has the effectiveness of gaining knowledge but also gaining consumption positively.

COMPETING INTERESTS: This was made through the Food Chain Shokuiku Promotive Project of 2014 promoted by the Ministry of Agriculture, Forestry and Fisheries. The food education activity part of the project was entrusted by the Board of General Incorporated Foundations of Farming and Development.

P-346: THE DEVELOPMENT AND EVALUATION OF THE SHOKUIKU PROGRAM FOR CHILD USING LOCAL FOOD INGREDIENTS AS TEACHING MATERIAL NO 2: CHANGES OF THE PRODUCER'S CONSCIOUSNESS TOWARDS WORK AND PRODUCTS BY PARTICIPATION IN THE SHOKUIKU PROGRAM

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Introduction: The Basic Law of Shokuiku (food education) was established in Japan, putting efforts into shokuiku such as increasing people's experience in harvesting, nationwide. **Objectives and target population:** Develop the shokuiku program for children using food ingredients from five different area in Japan. By having the producer be part of the program development, show changes in the producer's consciousness towards products and work being done. Target population are 10 (9 valid responses) producers who are producing food ingredients in local area. **Previous theories and investigations:** For an effective shokuiku program, applying techniques such as theory of behavioral science and behavioral change based on PDCACycle (the shokuiku management cycle) is important. Thus in this shokuiku program, applied the social learning theory (Bandura) of behavioral science. **Intervention(s):** Held three project promotion meeting, and carried out the program twice within June, 2014 to March, 2015. Investigations involved interview of the producer's aim regarding production, process, distribution service, and inspiration towards his/her work, what to convey to consumers. To have the program make the most of local capabilities such as bringing agricultural experiences to local people and promoting Chisan-Chisho (farmers market), held three promotive project meeting and developed the program with local food producers. Two of those meetings were involved in program development and created teaching materials for each area containing of local food ingredients and cooking. **Evaluation:** Comparative design of before and after. **Results:** Observed the following after the program carry out and the meetings: a) nine producers responded they have something to convey to consumer, and 1 showed a change; b) eight producers responded they felt changes of inspiration towards their work, and 2 showed change. **Conclusions of authors and discussion:** A one-time carry out of the shokuiku program did not change the consciousness, however; by carrying a second continuous program, we believe the program motivated the producer's feelings towards their products and work.

COMPETING INTERESTS: This was made through the Food Chain Shokuiku Promotive Project of 2014 promoted by the Ministry of Agriculture, Forestry and Fisheries. The food education activity part of the project was entrusted by the Board of General Incorporated Foundations of Farming and Development.



P-347: A STUDY ON THE RELATIONS BETWEEN FOOTBALL PLAYERS' MUSCULAR SPASMS, MINERAL INTAKE AND WATER SUPPLEMENT

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Introduction: The interest in Japanese sports nutrition is rising increasingly for the 2020 Olympic Games. However it's not sufficient that nutritional support contributes to players' performance enhancement. Therefore, we analyzed the relationship in which football players' muscular spasms depend on the amounts of nutrient intake and water supplement. **Methods:** The subjects were 14 Japanese male football players. Their ages were 20-29 (BMI: 23.2±1.2kg/m²). We investigated both meal assessment by BDHQ (brief-type self-administered diet history questionnaire) and a simple question vote in October, 2014. We assumed that the differences between the weight before and after training/game should be the same with a required amount of water supplement. There were two groups: Group A (7 players) was "I had a linear convulsive" or "I had it sometimes", Group B (7 players) was "I didn't have it". These gave official approval of the difference in the means which were 2 groups without correspondence. SPSS was used for statistical analysis. **Results:** There were significant differences among the intake of potassium (A=908±152, B=1452±366mg/1000kcal, (p=0.030)), manganese (A=1.69±0.66, B=1.44±0.11mg/1000kcal, (p=0.031)), vitamin C (A=42±6, B=69±28mg/1000kcal, (p=0.009)), potatoes (A=10±7, B=21±14g/1000kcal, (p=0.010)), fruit (A=61±15, B=102±59g/1000kcal, (p=0.041)) and taste drinks (A=243±274, B=163±70mL/1000kcal, (p=0.005)). There was no difference in water supplement. **Conclusions:** Muscular spasms, and the relationship between mineral intake, potatoes, and fruit absorption were observed. The supplied water amount was impartial

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-348: INFLUENCE OF URBAN GARDENS IN FOOD, PHYSICAL ACTIVITY AND EMOTIONS OF ELDERLY

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Introduction: Urban gardens are used for growing plots aimed at recovering urban spaces, environmental education and the creation of social spaces. In Spain its surface has increased by 15 over the last 7 years. The elderly population is one of the most sensitive to suffer nutritional imbalance, leading to increased morbidity and mortality rates, as well as cognitive impairment, stroke and decreased appetite, physical activity, oral health problems and mood disorder. There are no studies that compare the influence of urban gardens at the lifestyle of gardeners. **Methods:** Surveys were designed with 12 questions on social and cultural factors, lifestyle, culture and impact on the habits of the garden. They were polled to 55 gardeners in rural and city areas from Seville and were explained by a nutritionist. Data were analyzed with SPSS for Windows. **Results:** Mostly of surveyed increased vegetable consumption after cultivate their own gardens. Everyone agreed the increase of vegetables rich food, including some had not tried before, preferring to consume their own vegetables because of the satisfaction of grow it themselves and due to its tastier flavor. Half of the respondents showed a greater concern for eating healthier working from their own garden, in rural areas. It is noteworthy that more than half were physically active only when they went to the garden. **Conclusions, discussion and/or practical application:** Urban garden work goes beyond a place of distraction, mainly in rural areas. It represents a social work, since for many of them, is the only place to talk to other people, feeling part of a community, bringing joy and physical and mental wellbeing. The social horticulture is a therapeutic and effective way of social care that promotes wellness in the elderly with social, mental and physical problems. Moreover it promotes an active and healthy life, so that urban gardens improve the healthy lifestyle in terms of physical, nutritional, social and emotionally.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-350: A NUTRITIONAL EDUCATION PROGRAM DEVELOPMENT FOR SAHARAWI WOMEN

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Introduction: Among the Saharawi refugee population abounds a high prevalence of obesity, hypercholesterolemia, diabetes and hypertension. This situation is further worsened by the diet that is greatly conditioned by the food aid they receive. The Nutrition Team of the Association of Friends of the Saharawi Arab Democratic Republic, constituted, among others, by dietitian-nutritionists, works on the improvement of the nourishing habits and nutritional status of Saharawi refugees located at the Tinduf encampments. This program serves as the continuation of one started in 2012 to devise a healthy diet Guide for the Saharawi population. **Objective:** To devise a nutritional education plan for Saharawi women via the development of a nutrition Guide, and further instructions through workshops accomplished in the refugee encampments themselves. **Methods:** The work team carried out a bibliography review of the four diseases with higher prevalence among the Saharawi refugee population (obesity, hypercholesterolemia, diabetes and hypertension). After that, several meetings were necessary to reach a consensus, unify criteria and sketch the guide. It was then registered as International Standard Book Number and it will finally become the working material to be used in nutritional instruction that will be taught at the encampments. **Results:** Development of a nutritional guide on diet-related diseases that includes the main features of each pathology, nutritional advice, menus and recipes, as well as several preventive measures regarding the diseases. There is also a workbook for the women that will teach each one of the pathologies, which will include the key theoretical data of the nutrition guide. **Conclusions:** The devising and afterward teaching of this nutritional guide at the encampments, with the subsequent inputs of the Saharawi women, represents the creation of a nutritional education network for the population that will contribute to spread of the knowledge of healthy diet to help fighting these diseases.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-351: DEVELOPING DIETETIC STANDARDS OF CARE IN CARDIAC REHABILITATION

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Introduction: To fulfill the demand of having a clear view on the work of dietitians in cardiac rehabilitation, a consensus opinion was formulated by three societies. Our paper describes the development procedure. **Objectives and target population:** Our aims were to consolidate cardiac rehabilitation accross Hungary, to standardize and improve the quality of dietetic care and to establish a common dietary approach among team members. We targeted our paper to all healthcare professionals. Previous theories and investigations: It was included into several guidelines worldwide that the dietitian is an essential stakeholder of the cardiac rehabilitation. Despite of this, previously no guidelines existed in Hungary about the role of dietitians and organization of diagnosis-related groups for education and the timeframe required for dietary counseling during cardiac rehabilitation treatment. **Intervention(s):** Following a systematic literature review, the first draft was written by dietitians. This was the topic of a cardiac rehabilitation biannual conference roundtable where all stakeholders could contribute to it. The outcomes were built into the second draft which was commented by cardiac rehabilitation specialist medical doctors as well as dietitians. The final draft was written by implementing the comments received and it was then circulated and approved in the boards of the Hungarian Dietetic Association as well as two medical societies. **Evaluation:** We planned to review our consensus in every 5yrs to incorporate new developments. **Results:** We provided not only organizational details, but also educational programme templates for three disease-related groups, because the majority of the patients could be classified into one of these groups. We also included innovative approaches as cooking sessions and grocery tours. We felt important to establish key messages that needed to be delivered to patients indifferent of the circumstances. **Conclusions of authors and discussion:** The work done by dietitians was the first time approved in boards of medical societies. The extensive consultation procedure made this

paper a consensus acceptable for not only the Hungarian Dietetic Association, but also to The Hungarian Society of Cardiac Rehabilitation and the Cardiac Rehabilitation and Prevention workgroup of Hungarian Society of Cardiology. Our future vision is that cardiac patients will receive the same nutritional key messages all over Hungary.

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P-352: GOING TO SUSTAINABLE EATING: A VENUE FOR NUTRITION EDUCATION

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Introduction: Is “going to sustainable eating” the KEY to opening our hearts and mind and a venue for nutrition education? Can we finally realize that it is our moral obligation to initiate this if we have not done so already? As nutrition educators and going to sustainable eating, we need to take the leadership to provide the information that people can understand and apply. What about our “own concept of nutrition education” and the “professional self” as decision-makers and agents of change? Will this be our legacy in this millennium, or is it a paradox? **Methods:** Two completed ICD presentation papers were reviewed. Detailed methodologies including the selection criteria and the use of validated measurement tools were specified in each of the studies. **Results:** Both studies showed that for the public, our “own concept of nutrition education” and the “professional self” can play an important role in the maintenance of optimal health and prevention of disease. For the institutionalized population, the dietitians-nutritionists need to strategize and individualize their approach, to collaborate, if needed. Going to sustainable eating is a healthful eating/lifestyle change, and is a venue for nutrition education. **Conclusion:** Everyone is on the bandwagon - climate change, disease/hunger eradication, food/nutrition security/sustainability, malnutrition, poverty, and terrorism. I believe access to food is a basic human need and a fundamental right. Going to sustainable eating starts with a simple meal plan from produce picked from our backyard garden or meat and dairy from a neighbor/nearby protein source. In the process, step-by-step through “show and tell”, a basic nutrition education lesson plan is developed. Dietitians-Nutritionists need to become leaders in providing nutrition information and must be decision-makers and agents of change. We have “inherent qualities” unique only for us. Do we take the challenge? If not us then who? **Implications:** If we have not done so already, the 17th ICD’s “Going to Sustainable Eating” and this review will show that there is a venue and a need to be “change agents” in nutrition education.

COMPETING INTERESTS: The author confirms that there is no conflict of interest –financial or other relationships– in the preparation of this document.

P-353: THE EFFECTS OF THE SHOKUIKU PROGRAM UPON GRADE SCHOOL STUDENT USING WASHOKU (JAPANESE CUISINE) AS TEACHING MATERIAL “BECOME THE MASTER OF WASHOKU” PROGRAM CASE STUDY

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Introduction: Washoku was added to the UNESCO’s Intangible Cultural Heritage in 2013, and its numerous importance has been recognize. **Objectives and target population:** Show the relation between the improvements in attitude of the children’s willingness to practice the goodness of washoku in food habits, manners of the actual eating habits. Target population 51 students from local grade school. **Previous theories and investigations:** Applied teaching materials and learning methods based on Piaget’s theory of cognitive development, also theory of self-efficacy and modeling. Investigation covered conductive survey prior to, during and after the program with questions containing knowledge, attitude and behavior regarding washoku, chopstick usage and eating habits. **Intervention(s):** The program name is “Become the Master of Washoku”. The program was conducted in March, 2015. Investigation involved knowledge, attitude and behavior regarding Japanese food, chopstick usage and food habit by conductive survey of the parents and their children prior, during and after the program. Learning goal is to understand the meaning of washoku and its goodness, table setting, willingness to take practice into eating habits and improvements of “I can do it” attitude. Understand the goodness of Washoku (from historical, cultural and dietetic perspective).

Practice of correct table setting and chopstick usage. Having lunch where its ingredients are combination of fish and vegetable. At the end, review and set goals. **Evaluation:** Comparative design of before and after. Used SPSS Ver.21 for statistical analysis. **Results:** During the program, 97.8% were able to do correct table setting and hold chopstick correctly, 95.6% of the child responded they will be careful of eating manners at home. After the program, 97.8% had discussions with their family such as the goodness of washoku and the program, 91.3% became careful when eating. Comparison between children that felt they will be more careful with those that will not, showed 95.5% higher. **Conclusions of authors and discussion:** There are Japanese whom are not aware of the goodness, such as washoku or correct table setting, we believe it is essential to go through these type of programs.

COMPETING INTERESTS: This research was carried out by university research expense and elementary school material expense.

P-354: IMPROVEMENT OF VITAMIN DAILY INTAKE AFTER COMPLETING AN OPTIONAL SUBJECT ENTITLED "SPORTS MEDICINE"

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Introduction: Sports medicine (3ECTS) is an optional subject in the fifth semester of the bachelor's degree programme in Medicine (University of Cadiz, Spain). A couple of theoretical and practical lectures are devoted to the effect of oxidative damage on health and sports performance as well as to an update on antioxidant consumption. Therefore, the current study was designed to compare antioxidant daily intake 3-months after completing this subject. **Methods:** A total of 32 male college students (20.3±1.1yrs) at the School of Medicine volunteered for this study. Sixteen of them were randomly chosen from those registered at sports medicine as an optional subject (experimental group). The control group included 16 students that chosen another optional subject. A trained nutritionist, who did not know the optional subject performed by students, assessed the dietary intake of tocopherol and ascorbate using a Food Frequency Questionnaire. This protocol was approved by an institutional Ethics Committee. **Results:** When compared to baseline, students the completed Sports Medicine as an optional subject, showed significantly increased daily intake of both α -tocopherol (11.3±1.7 vs. 10.1±1.5mg/d; p=0.041) and ascorbate (88.5±25.7 vs. 79.8±22.1mg/d; p=0.039). On the contrary, no changes were found in the control group. **Conclusions, discussion and/or practical application:** As was hypothesized, the completion of sports medicine as an optional subject increased daily intake of antioxidant vitamins. Future studies focused on dietary modification and/or supplementation on this population group are required.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-355: CANADA'S NUTRITION MONTH CAMPAIGN ENGAGES DIETITIANS AND REACHES MILLIONS WITH EVIDENCE-BASED HEALTHY EATING INFORMATION

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Introduction: Dietitians of Canada has led the annual Nutrition Month (March) public communications campaign for more than 30 years. **Objectives and target audience:** The campaign objective is to promote dietitians as the most trusted source of nutrition information. The target audience is adults, in particular, those involved in the food decisions for the family. **Previous theories and investigations:** We apply a social marketing framework. **Intervention(s):** Each year the campaign team chooses a theme based on input from members and identified gaps in public knowledge and eating challenges. Several months in advance of the campaign members are equipped with resources to help them plan and deliver the campaign in their workplaces and communities, including a resource manual, fact sheets, a tweet sheet, and ready-to-use power point presentation. Member committees are established across the country to support implementation at the local level. The media

strategy includes equipping media spokespersons in all major Canadian cities to deliver the campaign messages. **Evaluation and Results:** The campaign evaluation includes an online member satisfaction survey, media monitoring and a review of website analytics. For the 2015 campaign there were 232 media stories with a media reach of 54 million. The social media campaign generated more than 25,000 tweets with an overall organic reach of 84 million. Members agreed that the campaign enhanced the visibility of dietitians with 85% responding. Website visits peak during the January to March period. A 90 second video was created to capture the main elements and success of the 2015 campaign. The video is available at <https://www.youtube.com/watch?v=qU7YTi7Glyo>. **Conclusions of authors and discussion:** The primary challenges in delivering the campaign are: generating a unique theme that will appeal to members and engage the public and the media, and soliciting sufficient sponsorship support to completely fund the campaign elements.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-356: A COMPARISON OF CHEMOTHERAPY AND RADIOTHERAPY CANCER PATIENTS BASED ON SELF-REPORTED USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE

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Introduction: Researches have reported that the use of complementary and alternative medicine (CAM) can improve the quality of life in cancer patients. The purpose of the study was to determine the use of CAM in cancer patients receiving radiotherapy and chemotherapy. Additionally, the results of self-reported survey were compared. **Methods:** One-hundred and thirty-two (66 of the patients receiving radiotherapy and 66 chemotherapy) patients were completed the questionnaire including socio-demographic data, cancer types, anthropometric measurement (size and weight), and use of CAM. Body mass index (BMI) was calculated for each patient. Data were analyzed using Statistical Package for Social Sciences Software. **Results:** Forty-one percent of patients were suffering from hormone-related (ovarian, endometrial, breast and prostate), 25.9% gastrointestinal (colon, stomach, pancreas, gall bladder, esophagus, liver and rectum), 15.9% lung, 6.8% head-neck, 3% urinary bladder, 2.3% soft tissue-bone, 2.3% lymphoma, and 3% brain cancers. Patients were ranged from underweight (BMI<30) according to their body mass indexes. Forty-five percent were classified as underweight, and 16.7% as obese. Twenty percent of patients receiving radiotherapy (n=13) and 51% patients receiving chemotherapy (n=34) reported the use of CAM. Circa 30 different kind of herbal and other biological ingestibles were expressed. The most used herbal CAM was nigella sativa (n=6; n=9) whereas other biological ingestible was honey (n=8; n=24) in radio- and chemotherapy patients respectively. Interestingly, patients from both groups apply nigella and honey together. **Conclusions:** Patients with different types of cancer reported their use of CAM. Related diseases and worse prognostic factors were found in both groups. A nutritional counseling about the use of CAM is necessary for cancer patients.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-357: DEVELOPMENT OF A TRAINING CONCEPT FOR SENSORY EXPERIMENTS AND NUTRITIONAL EDUCATION IN THE KINDERGARTEN

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Introduction: Children's food preferences are strongly associated with their consumption patterns. The most important determinant of a child's liking for a particular food is the extent to which it is familiar. It is proposed that the earlier and broader the experience with food, the healthier the child's diet is. In this study, the pedagogical staff in kindergarten plays an important role on early education of children. To improve the possibility of nutritional and sensory education, a suitable concept for the kindergarten was developed. **Methods/Results:** Experts in the field of nutrition, psychology and pedagogy developed a specific-training for the pedagogical personnel, as well as cards with experiments in the field of sensory and nutrition. The experimental note cards and their contents were then categorized (e.g., tactile perception with cereals). The evaluation study started in the fall of 2015 with establishing a focus group (pedagogical staff only), as a qualitative method. Furthermore, 30 kindergarten teachers participated in the first two training courses in October 2015. Participants are asked to test the experiments and materials in their daily kindergarten routine. This ongoing online evaluation questionnaire will bring results regarding usability, design, content, acceptance by children and overall impression. Results, descriptive statistics as well as group comparisons (gender, age, kindergarten group size), will be available in summer 2016. In the spring of 2016 the second focus group will have a final meeting. **Conclusions:** Based on the qualitative and quantitative results of the evaluation the training and the materials will be revised and edited. The concept should assist the early education of kindergarten children in the field of sensory and nutrition. However, the training is already implemented as a tool for Continued Professional Development.

COMPETING INTERESTS: The authors can confirm that there is no conflict of interests.

P-517: KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING A HEALTHY DIET, BOTH BEFORE AND AFTER THE NUTRITION AND FEEDING EDUCATION PROPOSAL IMPLEMENTATION USING INFORMATION AND COMMUNICATIONS TECHNOLOGY

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Introduction: Nutrition Education has an unquestionable value in preventing and promoting health. Specifically, it's an essential teaching and learning tool for visually disabled people. These individuals are vulnerable to suffer from malnutrition in early years, so with this tool's help in health education, it would be possible to reduce these negative effects. Additionally, including ICT achieves a didactic-pedagogic strategy and a multisensory stimulus in Nutrition Education. **Methods:** Descriptive, non-experimental, longitudinal study at two points in time and a mixed study, with a quantitative and a qualitative component. It was done with a sample of 12 students. Their knowledge of healthy eating and attitudes to food and food practices evaluated through surveys with closed multiple choice questions and open-ended questionnaire addressed to parents or guardians responsible for the children's practices. The surveys were taken place before and after the educational and nutritional intervention and consisted of 7 workshops. The follow up/post test was conducted one month after the intervention ended. **Results:** With regards to knowledge before the intervention, 50% had a "Poor" knowledge and the other half (50%) having "Average" knowledge. After the intervention, just a 25% had "Average" knowledge and the other 75% had "Good" knowledge. When it comes to attitudes, food preferences have improved in general. There are increased healthy choices for breakfast cereals, for lunch or dinner cereals, sodas, condiments and sweets. With regards to the adoption of nutritional recommendations, there were found to be positive changes related to fruits and vegetables, meat and water. Changes in food practices were not found, except in water consumption, where in the previous qualitative test some changes were reported. **Conclusions:** The most important and positive changes have been seen in improved knowledge of healthy diet. Fewer changes have been seen in attitudes with almost none of them in food practices.

COMPETING INTERESTS: The author can confirm that there is no conflict of interests.

P-518: OUTCOMES LOGIC MODEL AND DIFFUSION THEORY – A STRUCTURED APPROACH TO DEVELOPING A NUTRITION CURRICULUM FOR MEDICAL STUDENTS

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Introduction: The lack of nutrition training in undergraduate medical programmes is one of the largest contributing factors to the dearth of nutrition knowledge and skills amongst medical students and residents. **Objectives and target population:** Our project team aims to design an integrated nutrition education program at a Singapore university to equip medical students with basic nutrition knowledge and increase their awareness on the importance of nutrition. **Previous theories and investigations:** The outcomes logic model has been shown to be an effective framework in ensuring project success. This model involves examining the critical assumptions and issues in program design. **Intervention(s):** We adopted the logic model as our main framework for the program planning and evaluation. Recognising the influential role of peers and other medical professionals, we also based our nutrition education program planning on the diffusion of innovations theory where physician or peer nutrition advocates will be enrolled to spread the idea of adopting positive attitudes towards promoting nutrition. **Evaluation:** We plan to evaluate the nutritional knowledge, skills and attitudes of the medical students as the short term outcomes of our program. **Results:** The first phase of the program will be introduced to the third year medical students during fall semester of 2016. **Conclusions of authors and discussion:** The outcomes logic model and diffusion theory provide a programmatic approach in designing a structured nutrition educational intervention to increase medical students' nutritional knowledge and facilitate their adoption of positive attitudes towards advocating nutrition.

COMPETING INTERESTS: The authors can confirm that there is no conflict of interests.

P-519: SUSTAINABLE NUTRITION TRAINING FOR FOODSERVICE STAFF: ON-LINE, ON-TIME, ON-BUDGET

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Nutrition training was identified a high priority in the 2008 Queensland Health (QH) foodservice staff training needs survey, with over 80% of foodservice staff identifying the need for training in general nutrition and patient diets. Accessing nutrition training across the organisation was a significant barrier to patients receiving optimal and accurate meals for their nutrition and dietary needs. Issues for facilities in providing training included - releasing staff to attend off site training requiring back-fill and travel costs; rural facilities having limited dietitian resources to do training in-house; there were no suitable training units relevant to the Queensland Health context. In 2010 QH Statewide Foodservices developed the content for three nutrition units from the Australian National Vocational Education training package in a power point format. These included: a) plan & evaluate meals and menus to meet dietary guidelines; b) plan & modify meals and menus according to nutrition care plans; c) plan meals & menus to meet cultural and religious needs. In partnership with a local Technical and Further Education College, the units were converted to an interactive online format and made available to QH foodservices staff for a corporate price. To date, approximately 500 staff have been trained in these nutrition units. Evaluation indicated that 84% agreed it assisted them to support patients achieve nutritional outcomes, 65% agreed it increased the safety and quality of the foodservice to patients with 40% agreeing fewer mistakes were being made in diets. Online training allowed supervisors to roster staff small chunks of time to complete the training at work, eliminating the need for staff back-fill and travel costs. This provided a cost effective option of only paying the enrolment fee. An additional advantage was that Statewide Foodservices staff provided organisational context support for staff completing training. The training continues to be offered twice a year.

COMPETING INTERESTS: The authors can confirm that there is no conflict of interests.

P-524: POSTPRANDIAL BLOOD GLUCOSE FLUCTUATIONS BY ADDITION OF VEGETABLES JUICE OR VEGETABLE SALAD

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Introduction: Blood glucose fluctuations by addition of vegetable juice or vegetable salad have been unclear. The aim was to assess the intake of vegetables for suppressing blood glucose increase in postprandial. **Methods:** The study participants consisted of 18 healthy middle and old age people. The basic meal considered it as Japanese noodles, and added vegetable juice (195g; 1pack) or vegetable salad (100g) to it. Each loading dose of the dietary fiber of vegetable juice and vegetable salad was 2g. The blood glucose level of up to fasting and postprandial 2 hours it was measured every 30 minutes. Measurements were using self-blood glucose measuring device. The postprandial blood glucose increase (Δ PBG) and the blood glucose area under curve (AUC) of each meal were calculated and compared. **Results:** Subjects were nine men and nine women. Mean age of all subjects was 67.6yrs. The mean value of Δ PBGs and AUC were not significantly different among the three meals. Means of AUC were basic meal 4,588(mg/dL·m), vegetable juice meal 4,704(mg/dL·m), and vegetable salad meal was 4,893 mg/dL·m), and the significant difference was between neither meal, but the minimum value and the maximum had the great difference. **Conclusions, discussion and/or practical application:** Even if vegetable juice or green salad was added, it didn't influence blood sugar rise restraint after meal. Because a fluctuation between the individual was big, a further study is necessary.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-525: INFLUENCE OF A VISIBLE COOKING PROCESS ON EXPANSION OF CHILDREN'S LEARNING

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Introduction: In Japan, disorder of the environmental for children's feeding is in question. Meanwhile, 'Basic Act for Feeding Education' has been enforced. And kinds of feeding education are promoted to make individuals skilled for healthy feeding behavior. Also in the fields of childcare and education, feeding educational activities are performed. However, quantitative studies on children's learning in such activities are rare. Therefore, this study on children's speech during such an activity was planned. Examples how children's learning expands would be examined in this study. **Methods:** In "the Delicious Room" of the Region Interchange Research Center of Shiraume Gakuen University, a cooking workshop has been performed from 2012. This workshop is for 5-year-old children. The students studying childcare and education develop it. About 30 children take part in each time of about 60 minutes. The children are separated to groups of 5-6 children each. The workshop continues 3 times for the same groups. Every time meal is made from rice, which is a very popular material for Japanese. Transparent glass pans are used for cooking. Among the 3 times, speech of 5 groups was recorded and analyzed. **Results:** The children's speech included many voices of discovery. The "discovery" speech increased time by time. Furthermore, the "discovery" speech was classified to active ones and passive ones. As a result, the active ones increased time by time. **Conclusions, discussion and/or practical application:** 3 possible reasons why a visible cooking process effects children's learning shall be suggested: a) watching the total cooking process with children's own eyes and feeling by themselves make children interested in cooking more and more; b) children get to feel what they can do. It lets children challenge something and be active; c) a visible cooking process encourages each child to tell one's own discovery. And sharing the discoveries with each other makes expansion of learning.

COMPETING INTERESTS: The author declares no conflict of interest associated with this manuscript. This study was funded by the Ministry of Health, Labor and Welfare, Japan.



P-540: FIBRE INTAKE IN PEDIATRIC PATIENTS AT THE OUTPATIENT CLINIC OF A PUBLIC CHILDREN'S HOSPITAL

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Introduction: The objective of this document was to establish the intake of energy and fibre of pediatric patients and compare the results to the Dietary Reference Intakes (DRI). The intake of dietary fibre is essential for children since its fermentation in the colon enables the development and maintenance of the intestinal flora; the prebiotic effect of the fibre is evaluated according to its ability to stimulate the proliferation of healthy bacteria (bifid bacteria) and limit the production of undesirable bacteria (Firmicutes, bacteroidetes). **Material and Methods:** It is a cross-sectional, descriptive and analytical study. Measuring Instruments and techniques: the data was collected through two 24 Hour Reminders (consecutive), the amount of energy and fibre was calculated by SARA (a system to analyse and record food). V1.2.22. Data of the medical history like age, weight and height was recorded. The body mass index (BMI) was calculated and the nutritional status was assessed according to the World Health Organization. Anthro Plus v1.0.4. The data was analysed with Microsoft Excel. **Results:** The Population under study, 25 children between 5 and 12 years old, an average of 8.5 years old, 21 patients presented normal weight with a BMI standard deviation (SD) of 0.08 ± 0.94 , whereas 4 of them were overweight with a standard deviation of 2.35. The average intake of calories was 1747.02 ± 238.78 and the average fibre was 18.8 ± 5.42 g. As regards the percentage of fibre recommended, 4 children (18.1%) reached the 100%; only 5 of the 21 patients who did not reach the percentage exceeded the 80%. According to the obtained data, very few children reach the recommended fibre daily intake, due to the limited intake of fibre providing food. **Conclusions:** The families who come to this Institution are poor and numerous, and this hinders the intake of adequate food. Most dietary habits are acquired in childhood, it is advisable to give nutrition education to individuals and families in order to improve children's low intake of fibre providing food and school children's intake of calories.

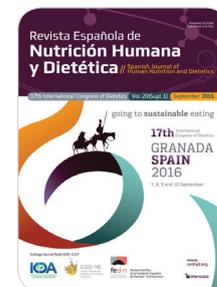
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PHYSICAL ACTIVITY AND SPORT

P-358: THE IMPROVEMENT OF DAILY NUTRITIONAL INTAKE OF PROFESSIONAL BASKETBALL PLAYERS DECREASES THEIR LEVEL OF FATIGUE DURING COMPETITIVE SEASON

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Introduction: Fatigue suffered during intermittent training by an athlete can be decreased by the intake of carbohydrates(CHO) and/or protein during exercise. Secondly, it is known that basketball players do not meet sport nutritional recommendations(NR). However, it is unknown whether the improvement of daily nutritional intake(NI) can decrease long term fatigue during competitive season. Hypothesis: Nutritional education can improve food pattern of basketball players, thus, it can reduce fatigue throughout competitive season. Objectives: to improve daily NI of professional basketball players regarding NR and evaluate the influence of this changes on long-term fatigue during competitive season. **Methods:** Two single-case design studies were conducted with two healthy professional basketball players belonging to ACB League. A long term nutritional intervention(LTNI) (3 months) was carried out in order to meet NR. Pre and post LTNI, NI was evaluated (7-day food record) and fatigue (before/after training; to get up/at bedtime) was recorded daily pre (1 month) and during (3 month) LTNI (1 to 10 scale). Statistics: NI and fatigue were analyzed by a comparison of mean (Wilcoxon test) between pre and post/during LTNI respectively. **Results:** Pre LTNI, CHO intake did not reach NR for any player (player 1: 3.3g/kg/Weight (W), player 2: 3.7g/kgW vs. 7-12g/kgW). Post LTNI, it was an improvement of CHO intake for both subjects (player 1: 3.5g/kgW, player 2: 5.1g/kgW; p<0.05). Pre LTNI protein intake was excessive for player 1 (1,8g/kgW vs. 1,4-1,7g/kg/W) and adequate for player 1 (1,4g/kgW). Post LTNI, protein intake decrease until recommendation for player 1 (1,6g/kgW) and remain constant for player 2. During LTNI, all variables regarding fatigue were decreased or attenuated for both players. **Conclusions:** Fatigue of two professional basketball players could be reduced through a long term nutritional intervention with focus in the improvement of daily CHO intake.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-359: LOWER PROTEIN INTAKE AFFECTS CHANGES IN BODY IRON STATUS AMONG JAPANESE FEMALE COLLEGE RHYTHMIC GYMNASTS

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Introduction: Our previous cross-sectional study found an association between lower protein intake and body iron status in gymnasts during pre-season weight loss periods. The present study aimed to assess how lower protein intake during the first year of college (baseline) affects body iron status two years later. **Methods:** Japanese elite female college rhythmic gymnasts (age, 18.4±0.5yrs at baseline) were recruited on a voluntary basis every August for nine years. Dietary intake, body weight(BW), body fat percentage (BF%), and hematological parameters were followed up for three years from the first year of college. **Results:** Twenty participants without iron deficiency at baseline were divided into two groups according to median protein intake: lower (L, less than 1.30g/kgBW, n=11) and higher (H, more than 1.30g/kgBW, n=9) groups consumed 1.08±0.16g/kgBW/day and 1.55±0.14g/kgBW/day of protein, respectively. No significant changes in protein intake were observed during the study period in both groups. At baseline, there were no significant differences between the two groups in BW, BF%, and hematological parameters, with the exception of serum ferritin. BW and BF% were significantly higher after one year and after two years compared to baseline in the L group. Hemoglobin (Hb), hematocrit, and serum ferritin levels were significantly lower in the L group than in the H group after one year and after two years, respectively. At the end of the study period, four participants in the L group and one participant in the H group had Hb levels less than 12g/dL. **Conclusions:** Lower protein intake at baseline might be related to the incidence of iron deficiency anemia two years later among elite female college rhythmic gymnasts.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-360: INTAKE OF A SINGLE HIGH PROTEIN MEAL INFLUENCES POSTPRANDIAL ENERGY METABOLISM

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Introduction: A recent study reported that high protein diets may prevent or alleviate obesity. The present study aimed to assess how eating a single high protein meal affects postprandial energy expenditure and energy metabolism. **Methods:** Eighteen healthy men participated in this cross-over design study, and were randomly assigned either to the high protein(HP) group or high carbohydrate(HC) group. All participants ate a HC dinner (785kcal, PFC ratio=10:30:60%) the day before the experiment. On the day of the experiment, participants arrived at our lab under overnight-fasted conditions, and ate either a HP (740kcal; PFC ratio=30:30:40%) or HC meal. Energy expenditure(EE), respiratory quotient(RQ) and blood glucose(BG) levels were compared between groups at the following eight time points: before eating, immediately after eating (0 min), and then 30min, 60min, 90min, 120min, 180min, and 240min after eating. Data were analyzed by repeated measures two-way ANOVA. Significant interactions were then analyzed by a post hoc Bonferroni significant different test. Incremental area under the curve (iAUC) was calculated and analyzed by the paired t-test or Wilcoxon's signed-rank sum test, with statistical significance set at p<0.05. **Results:** Significant group by time interactions were observed for EE, RQ, and BG. Although EE showed no significant group-dependent differences, RQ levels were significantly lower in the HP group than in the HC group

at 0min, 30 min and 120min, and BG levels were significantly lower in the HP group than in the HC group at 30min and 60min, respectively. The iAUC of RQ was significantly lower in the HP group. **Conclusions, discussion and/or practical application:** Relative to a HC meal, a HP meal attenuates postprandial increases in BG, and enhances postprandial fat utilization.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-361: SELF-REPORTED PHYSICAL ACTIVITY IN TURKISH CANCER PATIENTS UNDER CHEMOTHERAPY AND RADIOTHERAPY

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Introduction: As in all individuals, physical activity must be acquired in cancer patients for improving the quality of life. The aim of this study was to determine and compare physical activity habits in cancer patients receiving chemotherapy and radiotherapy.

Methods: One-hundred and thirty-two cancer patients (66 receiving chemotherapy and 66 receiving radiotherapy) completed the questionnaire which has the parameters of socio-demographic data, cancer types, anthropometric measurements (size and body weight) and physical activity habits. Physical activity was defined as >30 min brisk walking or equivalent once or more a week. The first question was "Do you make physical activity regularly?" and could be answered with "yes" or "no". The questions: "If you answer yes, which kind of activity do you prefer?", "How often do you do your activity?", "How long is your activity?", and "How long have you done your activity?" were offered multiple choice items. Body mass index (BMI) was calculated for each patient. Data were analyzed using Statistical Package for Social Sciences Software.

Results: The most of patients were suffering from hormone-related cancers. (ovarian, endometrial, breast and prostate). Patients were ranged from underweight (BMI<30) according to their body mass indexes. Forty-five percent were classified as underweight and 16.7% as obese. Thirty-two patients under chemotherapy, and twenty-two patients under radiotherapy reported that they have regular physical activity. Fifteen patients under chemotherapy and twenty patients under radiotherapy preferred brisk walking.

Conclusion: Patients with different cancer types reported their physical activity status. Disease-related and worse prognostic factors were found in both groups. During the survey, patients showed a high interest for more information or willingness to attend programs about the counseling of physical activities.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-362: ASSOCIATION BETWEEN WEIGHT AND MUSCLE STRENGTH AMONG ADOLESCENTS IN MALAYSIA, MIDDLE INCOME DEVELOPING COUNTRY: FINDINGS FROM THE MALAYSIAN HEALTH AND ADOLESCENTS LONGITUDINAL RESEARCH TEAM STUDY (THE MYHEART STUDY)

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Introduction: Muscle strength is used to investigate functional deficits in the elderly due to muscle loss, outcome of nutritional status and as a physical fitness reference standards. In the adult and elderly population, muscle strength was found to be a predictor of quality of life, functional disability, physical frailty and mortality. **Objectives and target population:** To describe muscle strength of the Malaysian adolescents and to determine the predictors of handgrip strength. Previous theories and investigations: Muscle strength was also associated with the risk factors of cardiovascular health in adolescents. Although a strong correlation between handgrip strength and total muscle strength were found among adolescents, further studies are required to investigate the association between muscle strength and body composition among adolescents. **Intervention(s):** None. **Evaluation:** A total of 933 public secondary students comprise from multi ethnic adolescents, aged 13 years old were

involved in this study. Data collection was performed from March to May 2012. Muscle strength was measured using calibrated hand dynamometer. Data were analysed using multiple linear regression. **Results:** Male adolescents had greater muscle strength compared to female adolescents 17.8 vs. 14.7kg. The strength of the right handgrip was greater in both males and females compared to the left handgrip with a difference of 1.39kg in male and 0.9kg in female adolescents. The measurement of hip was significantly higher in female compared to male adolescents by 4% but waist circumference was significantly greater in male compared to female by 3.7%. Weight and waist circumference were significant predictors for handgrip strength for both males and females. **Conclusions of authors and discussion:** Weight is one of the determinants of muscle strength for the multi-ethnic Malaysian adolescents. Handgrip strength should be included as a tool to monitor health status due to its feasibility especially in a limited resource country.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-363: ANTHROPOMETRIC CHARACTERISTICS OF YOUNG ELITE PORTUGUESE TRAMPOLINE GYMNASTS

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Introduction: Participation on sport represents an important factor to growth and development of youngsters. There is a concern about the influences of elite sports intensity and stress in their health. On artistic sports with weight control, particularly in gymnastics that starts in premature ages, have been described on athletes' a delay growth as low height, weight and skinfolds, and maturation. These parameters are regulated by genetic and environment factors including physical activity and nutrition. The purpose was to study anthropometric characteristics of young elite portuguese trampoline gymnasts. **Methods:** A total of 12 young elite trampoline gymnasts (8 boys; 4 girls) with 16.4 mean age were assessed about body height, weight, 6 skinfolds and 2 circumferences. Then BMI, Heath-Carter anthropometric somatotype and body fat mass were determined. The height, weight and BMI were interpreted according to reference curves and the relation with the physical activity was analyzed. **Results:** The trampoline gymnastics had an average weight of 59.1kg +/- 9.8; average height of 165cm +/- 9.0; an average BMI of 21.6kg/m² +/- 2.3; fat mass average 15.5% +/- 5.4; average 6 skinfolds 52.6mm +/- 19.3. The older gymnastics had a higher training volume ($r = -0,623$; $p = 0.05$). The training volume was associated with BMI ($r = 0.630$; $p = 0.05$) and the 6 skinfolds ($r = 0,676$; $p = 0.05$) and endomorph component ($r_s = 0.681$; $p = 0.05$). **Conclusions:** The portuguese trampoline gymnasts didn't have a delay on their growth and wasn't identified a negative influence of the exercise on their anthropometric measures. Instead, the exercise volume presents a positive correlation with BMI. On the literature we only found anthropometric results for gymnastic specialties as acrobatic and artistic. As we found trampoline gymnasts characteristics above acrobatic and artistic results, it seems that there is no commitment of the normal growth of this athletes.

COMPETING INTERESTS: The authors of this abstract can confirm there is no conflict of interests.

P-364: ASSESSMENT OF NUTRITIONAL STATUS OF REGULAR ADOLESCENT SWIMMERS (13-18 YEARS)

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Introduction: Physical activity and good nutrition plays a pivotal role in maintaining good nutritional status. Swimming is a low impact activity and a good workout which confers physical and mental health benefits. The study was undertaken with an aim to assess the nutritional status of regular swimmers and non-swimmers in the age group of 13-18yrs. **Methods:** Assessment

of somatic status and nutrient intake were the objectives. A sample consisting of 40 male and 40 female swimmers along with the control group consisting of 30 male and 30 female non-swimmers were selected. It was hypothesised that the nutrient intake and BMI of the swimmers will be different from the non-swimmers. **Results:** Majority of the swimmers were non-vegetarians following a 4 meal per day pattern. Vegetarianism was more prominent followed by ovo vegetarianism among non-swimmers with a 3 meal pattern. A habit of skipping meals was found in all the male subjects and evening snacks was the usual meal skipped. The mean nutrient intake in both swimmers and non-swimmers irrespective of gender was significantly lower than the RDA. The BMI of the swimmers was within the normal range, but was less compared to the non-swimmers. The mid arm circumference depicting the muscle mass was higher among the swimmers. **Conclusions:** The diets of all the subjects were deficient in carbohydrates, proteins, fat, calcium, iron, vitamin D and vitamin C, as they are not meeting the RDA, irrespective of their good nutritional knowledge depicting the gap between knowledge and practice. There was no significant difference between the groups pertaining to their nutrient intake. The mid arm circumference of the swimmers was more than the non-swimmers which may be due to their indulgence in swimming activity. **Limitations:** The sample size is limited.

COMPETING INTERESTS: The authors of this abstract can confirm there is no conflict of interests.

P-365: BEET JUICE SUPPLEMENTATION EFFECT IN SWIMMING PRACTITIONERS

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Introduction: Nitric oxide is involved in many cell processes, including vasodilation and physiological response during exercise. Its synthesis is regulated by L-arginine or at nitrate. The attainment of nitrate is through diet, present in vegetables such as beets. This study aims evaluate the effects of Beet juice supplementation in swimming practitioners. **Methods:** Cross-over trial with seven practicing swimming, both genders, Swimming team members at a university in southern Brazil. All athletes receiving placebo (gooseberry juice with insignificant nitrate content) for 7 days and after the intervention (beet juice with 8mmol nitrate) for 7 days. The subjects were submitted to measurement procedures systolic blood pressure(SBP) and diastolic(DBP), heart rate(HR), swim distance and time tests. The data collections were performed at baseline, after placebo, after the intervention and by the end of the study. General Linear Models and Bonferroni test used in the data analysis and adopted significance level was 5%. **Results:** Were evaluated seven individuals with a mean age of 40.71±16.08yrs. It was found that the SBP levels (p=0.712), DBP (p=0.776) and HR (p=0.197) were not significantly different in all evaluated times. Regarding of the distance covered by swimmers observed increase of approximately 80 meters (p=0.132). Time spent to complete the test was significantly lower after use of the intervention (p=0.019), compared to placebo. **Conclusions, discussion and/or practical application:** Supplementation with beet juice reduces of performance time in sample. However, this intervention did not cause significant differences in systolic and diastolic blood pressure, heart rate and distance traveled by practicing swimming.

COMPETING INTERESTS: The authors of this abstract can confirm there is no conflict of interests.

P-366: BODY COMPOSITION ASSESSMENT AND DIETARY HABITS OF INTERNATIONAL FIELD HOCKEY MALE ADULT PLAYERS

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Introduction: Field hockey is an outdoor team-based sports discipline with an important aerobic component as well as high intensities in anaerobic conditions. The objectives of the study are: 1) to analyse and compare body compositions of field hockey adult male players from different national teams (Spain, Holland and Germany) and between field positions and 2) to analyze their dietetic habits with a frequency questionnaire in order to identify differences in dietetic and nutritional patterns and correlations with body composition. **Methods:** A total of 51 field hockey male adult players from

Spain (n=18; 1.77±0.1cm; 74.2±6.8kg; 18.9±0.7yrs), Holland (n=15; 1.79±0.1cm; 71.6±5.9kg; 18.7±0.5yrs) and Germany (n=18; 1.80±0.1cm; 78.5±8.2kg; 19.1±0.9years) were measured by two ISAK accredited anthropometrists. A questionnaire of food consumption frequency with 19 items was provided to each player. **Results:** Players had a balanced mesomorphic somatotype mean (2.8-4.0-2.4). The German team had a higher adiposity that correlated with higher oil consumption (p=0.046) as well as more bone mass (p=0.02), due to their daily consumption of non-skimmed yogurts. All these results were only significant with respect to Holland players. Goalkeepers had the highest height (1.87±0.1m), weight (82.5±7.7kg) and humeral breadth (7.5±0.3cm). **Conclusions, discussion and/or practical application:** Hockey field players present an increased mesomorphy. A significantly positive correlation was detected with regard to oils and non-skimmed yogurt consumption with adiposity and bone mass in German players. Higher wingspan could result in an advantage for the goalkeeper, as the humeral breadth could indicate larger arm size compared to the other athletes. Finally, all the teams did not follow suitable dietetic and nutritional guidelines for their sport discipline.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-367: BODY COMPOSITION ASSESSMENT IN STUDENTS ENROLLED IN UNIVERSITY SPORTS PROGRAMS: COMPARISON BETWEEN ANTHROPOMETRY AND BIOIMPEDANCE ANALYSIS

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Introduction: A correct assessment of nutritional status including body composition(BC) analysis helps to improve the athlete's monitoring. To study the BC, simple, non-invasive and cost-efficient techniques are recommended. These include anthropometry and bioimpedance(BIA). **Objective:** To evaluate the concordance of predictive models for BC based on anthropometry with models based on bioimpedance on a group of students enrolled in University sports programs. **Methods:** Cross-sectional study of 22 students volunteers from the University of Valladolid (45.5% male). The physical activity level was estimated with the questionnaire GPAQ, and a comprehensive anthropometric study was performed. BC was analyzed by anthropometry and BIA. The differences based on gender were analyzed using the T-test or the Mann-Whitney-test. The agreement between the predictive models was analyzed using the intraclass correlation coefficient(ICC) and its 95% confidence interval, and with the Bland-Altman analysis. **Results:** In total, 72.7% of participants performed intense physical activity, and 13.6% (all women) light activity. No significant differences by gender in BMI were observed, but differences in body circumferences and thigh and calf skinfolds were found. Fat-mass-percentage was significantly lower in males than in females, whether estimated by BIA (Kyle's equation) and by anthropometry (Siri, Faulkner and Carter equations). Good agreement for estimating BC between anthropometry and BIA was observed when predictive models for the general population were used (CCI to estimate fat-free mass=0.99; 95%-CI:0.96-0.99). Anthropometric specific predictive models for athlete population were not appropriate in this sample. **Conclusions:** Female students were more sedentary than males. Males had significantly higher percentages of fat-free-mass and skeletal-muscle-mass and lower fat-mass-percentage than females. In this sample, predictive models for BC based on anthropometry and developed in the general population showed better accuracy than the specific for athletes. For the estimation of BC, it is necessary to use equations developed in populations with similar characteristics.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-368: BODY COMPOSITION IN BRAZILIAN JIU-JITSU ATHLETES IN PRE-COMPETITIVE PERIOD AND METHODS TO ACHIEVE THE DESIRED WEIGHT IN TWO ACADEMIES FROM SANTA FE

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Introduction: In combat sports, competitors show a high tendency to lose weight during the pre-competitive period, with the aim of classifying in a lower weight category than the usual so as to take advantage over the rival. To achieve the desired weight, athletes use different methods of rapid weight loss (RWL), going on a crash diet (short-term, low-carb, high-protein, low-water, low-calorie diet) during the week prior to the competence. **Methods:** A descriptive, longitudinal and observational study (3 months) was carried out. The sample included 18 and older male athletes (25) that practiced Brazilian Jiu-Jitsu in a competitive level. Body composition (5 components' method, Ross&Kerr) during both training and pre-competitive periods was evaluated according to the I.S.A.K. protocol, and athletes' weight was measured every two weeks. The strategies used to achieve the desired weight and their impact over the sport performance were surveyed. **Results:** An increase in average muscle mass (initial: 49.62±4.12%; final: 50.88±3.80%) and a reduction in fat mass (initial: 23.55±4.23%; final: 22.16±3.49%) were detected. 76% of the athletes usually reduced their weight before the competitions. The greatest weight losses were observed in the week prior to the competition. 50% of the athletes reduced their weight at the beginning of this week (average weight loss: 1.22±0.18kg). 23% reduced their weight by more than 2kg three days before the competition (average: 2.49±2.26kg). 72% employed RWL strategies during the study. The most frequently used being increased physical activity, food restriction and low-calorie diets. 60% showed symptoms possibly related to its use, the most frequently found being cramps, headaches and nausea. **Conclusions:** An increase in muscle mass and a reduction of fat mass was observed. Weight fluctuations and an exacerbation of the losses during the week before the competition were also noticed. The prevalence of use of RWL strategies was high.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-369: CHANGE IN BODY COMPOSITION OF OBESE PATIENTS AFTER A THERAPEUTIC REHABILITATIVE PROGRAMME

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Introduction: Obesity is a chronic, challenging, multifactorial disease. Lifestyle modifications are the cornerstone of obesity treatment. We performed an intensive therapeutic-rehabilitative programme, which has a duration of 12 days and takes place at the Bagni di Pisa Medical Spa Resort. The programme consists in a multidisciplinary team made up by physicians, dietitians, psychologists, physical therapist and a personal trainer. This team helps and motivates the participants to conduct lifestyle changes concerning food intake and physical activity. Specifically, dietitians provide a tailor-made nutritional programme; assist to patients daily lunch; coordinate a cooking class with the chef. Physical activity is performed in different locations: indoor (gym, swimming pool) and outdoor (walks on flat ground and uphill). The aim of the study was to evaluate the changes in body composition, measured through the use of bioelectrical impedance vector analysis (BIA), in a population of obese subjects before and after the programme. **Methods:** Anthropometric parameters, eating habits and physical activity were assessed. We analyzed data from 166 (133 female and 33 male) consecutive obese patients that took part to the programme (mean±SD age 53,6±14,3yrs; body weight 99,3±19,1kg and BMI 37,2±5,3kg/m²) and who had performed BIA at the beginning and at the end of the programme. **Results:** We observed a statistically significant mean weight loss (p<0.01) of about 2.4kg, resulting in significant reduction in BMI. Concerning body composition, as reasonably expected, we obtained a reduction in fat mass (FM), in fat free mass (FFM) and in the active cell mass (BCM) with greater percentage reduction of FM respect of the FFM. It was also calculated the ratio between BCM and body weight at the beginning and at the end of the programme and this ratio remained completely unchanged. **Conclusions, discussion and/or practical application:** These results indicate that

the therapeutic-rehabilitative programme at Bagni di Pisa San Giuliano Terme is able to determine, in the obese patients, a significant and correct weight loss. The use of BIA can be useful also in the short term to motivate obese patients to maintain lifestyle modifications.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-370: CORRELATION OF FITNESS LEVELS, DIETARY PATTERN AND ACADEMIC GRADES OF PRIVATE AND GOVERNMENT SCHOOL GOING CHILDREN FROM MUMBAI CITY ENGAGED IN ACTIVE SPORTS

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Introduction: Dietary and life style pattern has a bearing on the body composition, fitness levels and academic performance of school going children. The present study is an attempt to correlate the fitness levels of school going children (11-13yrs) involved in active sports with the dietary and lifestyle factors and their academic performance from Private and Government schools in Mumbai city. **Methods:** It was an observational cross sectional study of 200 school going children from Private and Government schools in Mumbai city, India. The inclusion criteria included a group 100 children into active sport of Football, in the age group of 11-13yrs, regularly attending the private and government school using purposive random sampling. A matched control of 100 children was also included in the study who were not engaged in active sports. The information was collected using a standardized pretested questionnaire for the general information, physical activity through a Fitness gram, dietary pattern for qualitative (Food Frequency questionnaire, diversity score) and quantitative information (24 hour, 2 day Dietary recall), life style related questions and academic scores. **Results:** The study reveals that a higher percentage of children into active sports reported higher fitness levels in both the schools. The children in active sports were meeting only 50 to 68 percent of the RDI for caloric intake, proteins and important micronutrients like vitamin A, B complex vitamins, zinc, etc. The meal pattern, snacking pattern of children in active sports was better as compared to the controls. Academic scores were found to have a positive correlation with Fitness levels, consumption of home made food, interaction with parents in both the groups. **Conclusions, discussion and/or practical application:** Incorporating regular physical activity, dietary diversification and healthy lifestyle are the prerequisites to higher fitness levels in school going children in active sports.

COMPETING INTERESTS: The authors of this document confirm there is no conflict of interests.

P-371: DIETARY INTAKE OVER A PERIOD OF TRAINING IN UNIVERSITY TRIATHLETES

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Introduction: Triathlon is a resistance and individual sport which is made from three different disciplines: swimming, cycling and running. There are very few studies of daily dietary intake in athletes, in triathlon were not found these references. The aim of the study is to describe and compare dietary intake in two groups of male university triathletes. **Methods:** This is a descriptive and comparative study about dietary intake in two groups of male university triathletes (24 males). Dietary record was performed using a 24-hour dietary recall for 3 days. Skilled triathletes (n=16, age 22.13±2.17), trained an average of 648±221min per week. Beginners Triathletes (n=8, age 25.41±7.47), trained an average of 467±175min per week. **Results:** The skilled group consumed 41.84±8.75kcal/kg, 2.21±0.56gProtein/kg, 5.54±1.56g carbohydrates(CH)/kg, 1.3±0.46gLipid/kg, 15.57±4.47% sugar. The beginners group had a consumption of 37.35±4.82kcal/kg, 1.66±0.27gProtein/kg, 5.29±1.05gCH/kg, 1.21±0.24gLipid/kg and a consumption of sugar 16.47%±4.83. Both groups had an adequate intake of micronutrients as recommended (IDR) to standard population. **Conclusions, discussion and/or practical application:** The triathletes that trained more had a higher intake of

kcal and protein per kilogram of weight, and less amount of sugar. Both groups have a similar consumption of CH, lipids and micronutrients. A dietary assessment is essential to detect inadequate dietary habits in this sport.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-372: DIFFERENCES IN BODY COMPOSITION IN UNIVERSITY TRIATHLETES BY SEX

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Introduction: Triathlon is a resistance and individual sport in which participants compete without stopping in three successive events, usually long-distance swimming, bicycling, and running. It has been found sex differences in the percentage of body fat and athletic performance. Women have a higher fat mass and more time in competition than man. The objective of the study is to compare anthropometric characteristics in university triathletes according to sex. **Methods:** Descriptive and comparative study about anthropometric differences between males and females university triathletes was carried on. 24 males and 11 females (aged 18-43) with one year of sporting experience, and an average of 558±223min per week of training were included in the study. Technical measurements were adopted from the International Society for the Advancement of Kinanthropometry (ISAK). An ISAK level I measurer took the needed measurements to calculate the wished dates. Body composition was calculated by the model of four components (fat mass, muscular mass, bone mass). **Results:** We found differences between sexes. Females were significantly shorter and fatter than males; also men had more muscular mass than women. The body fat percentage in men was 11.72±3.36%, skinfold sum was 80.35±23.77, percentage muscular mass were 45.78±3.05% and the predominant morfotype was mesomorph balanced (2.67-4.39-2.67). In women the percentage body fat was 13.29±2.46%, skinfold sum was 115.06±20.09, percentage muscular mass value was 39.04±2.60% and the morfotype was mesomorph-endomorph (3.65-3.67-2.52). **Conclusions, discussion and/or practical application:** Women have a higher BMI, percent body fat and less muscle mass than men. The results of male triathletes are in concordance with data found in the literature, however the female sample has a higher percentage of fat mass than in reviewed articles. The assessment of body composition is essential for sports nutritionists with the objective to improve the performance of athletes.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-373: DIET AND NUTRITION HABITS IN DISABLED ATHLETES WITH SPINAL CORD INJURY WHO PRACTICE ADAPTED CYCLING AND TRIATHLON

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Introduction: Nowadays, the number of people with spinal cord injury who practice cycling and adapted triathlon has increased. These athletes have a special nutritional requirement related to different complications, although there is not much scientific information about the diet and nutritional requirements of these athletes. The objective of this transversal study was to evaluate their daily food habits, dietary calories and macronutrients profile on the day before the competition. **Methods:** We evaluated 23 male Spanish athletes with paraplegia or tetraplegia that practice adapted cycling and triathlon, with an average age of 38yrs-old. The food habits and the diet during the day before the competition were analyzed. We assessed a food frequency questionnaire, a nutritional survey and habits with 24h recall record in order to compare dietary habits and intake with the recommendations for these athletes. **Results:** Daily calories intake on the day before the competition (2537,21±385.20kcal/day), diet macronutrient profile was (% daily energy intake): proteins (18.84±3.21), carbohydrates (53.44±7.65), lipids (14.20±5.46). We found a significant imbalance of the lipid profile; 74% presents high intake of saturated fatty acids. Dietary habits: 39% less than 5 intakes and 61% 4 or less per day, zero consumption of raw vegetables (39.1%), whole food (rice 82.6% and bread 69.5%). Hydration during race: 33% with water and 67% water with isotonic drink. Supplementation was used in 57% of athletes. **Conclusions, discussion and/or practical application:** According to the results, the food habits and supplementation were inadequate; they had an irregular distribution on the number of daily meals and uncoordinated

supplementation. There is a deficiency in the consumption of some basic foods adapted to improve the complications of this group. They need a special nutritional attention and education to improve their dietary habits, maintain optimal health and improve athletic performance. Therefore dietary interventions and specific clinic studies are necessary and regulate the nutritional requirements.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-374: HIGH-QUERCETIN DIET FOR 10 DAYS REDUCES THE LEVELS OF EXERCISE-INDUCED IL-6 AND FFA, BUT NOT D-ROMS AND BAP, AFTER AN ACUTE 60 MINUTE CYCLING EXERCISE

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Introduction: Beneficial effects of polyphenols on health outcomes have been reported, with inconsistent results regarding exercise-related outcomes. This study aimed to evaluate the effect of high-quercetin diet for 10 days on resting and post-exercise levels of biomarkers. **Methods:** Seventeen healthy volunteers with a mean \pm SD age of 20.8 \pm 1.5yrs, body mass index of 20.9 \pm 1.8kg/m², and VO₂max of 47.0 \pm 7.2 mL/min/kg participated in this crossover study. Participants consumed high-quercetin diet containing about 100mg of quercetin from onions (HQ group), or low-quercetin diet low in flavonoids (LQ group) for 10days. On exercise day, participants consumed breakfast (non-energy jelly with or without 100mg quercetin in onion dishes) after a 12-hour overnight fast. Blood samples were collected at 1.5h after breakfast, and immediately, 30min, and 60min after exercise, which was conducted at 75% of VO₂max for 60min. Derivatives of reactive oxygen metabolites (d-ROMs), biological antioxidant potential(BAP), interleukin-6(IL-6), and free fatty acid(FFA) were measured and corrected by levels of dehydration, and area under the curve(AUC) was calculated. All data were log-transformed and paired T-test was performed. **Results:** No significant differences were observed in resting levels of biomarkers except for FFA. IL-6 was only significantly attenuated in the HQ group at immediately and 60min after exercise. AUCs of IL-6 and FFA were significantly lower in the HQ group compared to the LQ group (IL-6[μ g/L]: HQ 299 \pm 125, LQ 360 \pm 152, p=0.024; FFA[μ Eq/L]: HQ 127 \pm 42, LQ 154 \pm 40, p=0.018). **Conclusions, discussion and/or practical application:** High-quercetin diet for 10 days reduces the levels of exercise-induced IL-6 and FFA, but not d-ROMs and BAP, after an acute 60min cycling exercise.

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P-375: KINANTHROPOMETRIC CHARACTERISTICS IN TEENAGERS BASKETBALL PLAYERS

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Introduction: Basketball is a sport with a high anthropometric heterogeneity depending of the playing position. Point guard is usually the lowest player but also the fastest. Shooting guard anthropometry is similar to the base lower, although faster and more agile than the others. Alero has an intermediate height between the indoor and outdoor players and it combines height and velocity. Center player has a physical role, he is the highest player and who has more muscle mass. The aim of this study is to describe the cineanthropometric profile of male cadet players from "Valencia Basket Club". **Methods:** A total of 20 male cadet basketball players were evaluated (15,35 \pm 0,59yrs-old). An anthropometrist level 1 took anthropometric measures according to the methodology of the International Society for the Advancement of Kinanthropometry(ISAK). Body composition was calculated according to the consensus of Kinanthropometry to the Spanish Group Kinanthropometry(GREC), somatotype with Heath-Carter's method. **Results:** Differences in values of weight, height, skinfold and body composition between the total sample and playing position have been observed. Lower values were obtained for the base position and higher ones for

the pivot. All parameters increase according the position: Base, Alero and Pivot. **Conclusions, discussion and/or practical application:** To know kinanthropometric basketball player profile may be beneficial to development specific training and nutrition plans. An optimal performance and a complete study of the evolution could be achieved.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-376: NUTRITIONAL ASSESSMENT IN ULTRA-TRAIL RUNNERS

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Introduction: Trail-running is a pedestrian race open to all, in a natural environment minimal possible paved or asphalt road. It is a sport consisting of uphill or up- and downhill races at moderate-to-high altitude. The terrain can vary and the race is ideally –but not necessarily– in self-sufficiency or semi self- sufficiency. We talk about ultra-trail running to races above 42km. Scientific data show an increase in participation but decrease in performance. Nutritional requirements are anticipated, but no nutritional data of mountain runners are available. There are few studies about nutrition, performance or health in trail runners. The objective of this study was evaluating daily food habits before a competition and personal, health and training data in a ultra-trail runners group. **Methods:** We evaluated 99 ultra trail runners (men: 91%; women: 9%, only 2 professional athletes) over 60 km and 110 km ultra races, average age: 40, average BMI: 23.2. We assessed social, sport and nutrition data, food frequency questionnaire and habits with 24h recall. We analyzed daily food habits and hydration, dietary calories, macro and micronutrients. **Results:** Relevant data: supplementation (63%), isotonic drink (82%), changed diet competition previous days (82%), nutritional planning (73%). Energy calories (2.393±632.4kcal/day), the diet macronutrient profile was (% of daily energy intake): carbohydrates (45±9.6), protein (16.6±4.1) and lipids (35.7±8.4). These athletes have an important deficit in energy intake (846,8±772kcal) and carbohydrates (3.81g/kg/day). We observed an unbalanced lipid profile; high intake of saturated fatty acid. **Conclusions, discussion and/or practical application:** According to the results the runners diet is not according of athletes nutritional needs. This could influence their health, performance and recovery in competitions. It needs a nutritional control by qualified sports dietitian. More studies are needed to create optimal nutrition and training recommendations for elite mountain runners

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-377: PHYSICAL ACTIVITY AND NUTRITIONAL STATUS IN NON-INSTITUTIONALIZED ELDERLY SUBJECTS

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Introduction: Aging is a multifactorial process that involves several changes, among which is body composition, with a notable increase in fat mass, decreased muscle and bone mass. The WHO advocates for nutrition and physical activity as factors of great influence on body composition of the elderly. The main objective of this study is to assess the relationship between the level of physical activity and different indicators of nutritional status in non-institutionalized elderly. **Methods:** A descriptive observational study was carried out in a sample of 60 non-institutionalized subjects over 75yrs. Physical activity was measured using the Minnesota Leisure-time Physical Activity Questionnaire; dietary intake was assessed using 24h recalls and body composition included anthropometric measures such as weight, height, cutaneous skinfolds, upper-arm perimeter, waist circumference and abdominal-sagittal-diameter. **Results:** The results indicate that the physical activity in METS was negatively correlated with waist circumference and abdominal sagittal diameter, and the % of body fat, whether classified as assets and not assets. Regarding body composition and dietary intake, weight and waist circumference correlated positively with ethanol intake, and the latter negatively with the protein intake. % body fat correlated positively with sugar intake. At higher levels of physical activity, smaller waist circumference and abdominal sagittal diameter in older people, being active those with lower % of body fat. Also, a higher intake of alcohol and sugar was associated to a higher weight, waist circumference in the elderly and body fat %. **Conclusions, discussion and/or practical application:** High levels of physical activity positively correlated with

higher levels of muscle mass and lower levels of fat mass, specially abdominal fat mass. An inadequate intake of ethanol and sugar causes unfavorable changes in body composition of these seniors. It is necessary to improve public health policies in order to emphasize nutrition education and physical activity in elderly subjects.

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P-378: PHYSICAL ACTIVITY AND SEDENTARY OF ALGERIAN ADOLESCENTS

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Introduction: Adolescence is a crucial period of biological change and developmental potential. Physical activity in adolescence may contribute to the development of healthy adult lifestyles. Several studies have shown a positive relation between the body mass index(BMI) and the physical activity. Moreover, the lifestyle of Arab adolescents has changed to be more sedentary, with long durations spent on viewing television, playing video games, and using the internet, as well as lack of physical activity. The aim of this study is to investigate the relation between BMI and PA of Algerian adolescents. **Methods:** Three hundred and fifty Algerian adolescents (165 boys and 185 girls) between 10 and 19 years old participated to this study. The adolescents completed PA and lifestyle questionnaires. They were 185 girls (52.9%) and 165 boys (47.1%) with 13.17±1.51yrs-old average age. **Results:** The average weight was 48.42±11.51 (range 25 to 92kg), and the average size was 1.59±0.11m (range 1.20 to 1.90cm). The Body Mass Index(BMI) was 19.03±3.77kg/m² (range 12.17-38.19). Obesity was more common in boys (2.42%) than girls (0.54%).The most of adolescents 85.10% (82.4% boys and 87.6% girls) go to school on foot. 29.1% of adolescents (31.5% boys and 27% girls) spend 1-2 hours per day on watching the television during the week and 28.3% (29.1% of boys and 28.1% of girls) spend on more than 5 hours a day during the weekend. **Conclusions, discussion and/or practical application:** The findings of this study showed that physical activity take an important place in Algerian adolescent. Sedentary is more important for boys than girls. No statistically significant linear trends in BMI and PA were found. The absence of a national database on the nutritional status of children needs the establishment of a monitoring program of their nutritional status to avoid any future complications in the adult age.

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P-379: SERUM ANTIOXIDANT DEFICIENCY IN ATHLETES WITH CHRONIC SPINAL CORD INJURY

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Introduction: Previous studies have found reduced antioxidant defense and increased oxidative stress in spinal cord injured(SCI) patients. However, there is no information regarding the situation of athletes with SCI despite it may influence both clinical outcomes and physical performance. Therefore, the current study was designed to ascertain serum levels of α -tocopherol and ascorbate in athletes with chronic SCI. **Methods:** A total of 22 male adults (11 athletes and 11 sedentary controls) with complete SCI at or below the 5th thoracic level (T5) volunteered for this study from the community. The rationale of this sampling was that the work capacity of individuals with spinal cord injury at or above the 4th thoracic level (T4) is limited by reductions in cardiac output and circulation to the exercising musculature. Blood samples were obtained from antecubital vein puncture and collected in heparinized tubes. The whole blood was centrifuged at 3000rpm for 20min in a clinical centrifuge. Serum ascorbate was analyzed by paired-ion, reversed-phase HPLC. Serum α -tocopherol was assessed by reversed-phase HPLC, using

a C18 column and a photodiode array detector. This protocol was approved by an institutional Ethics Committee. **Results:** When compared to controls, athletes with chronic SCI showed significantly reduced levels of both α -tocopherol (12.0 ± 2.9 vs. $13.8 \pm 2.9 \mu\text{mol/L}$; $p=0.038$) and ascorbate (56.3 ± 7.8 vs. $61.3 \pm 8.6 \mu\text{mol/L}$; $p=0.028$). **Conclusions, discussion and/or practical application:** As was hypothesized, athletes with chronic SCI showed antioxidant deficiency. Strengths of the current study included the homogeneous and large sample size. Further, the presence of a control group consisting of adults with chronic SCI may reduce the recruitment bias of healthy controls. Future studies focused on dietary modification and/or supplementation on this population group are required.

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P-520: AN ASSESSMENT OF LEISURE-TIME PHYSICAL ACTIVITY AMONG PUBLIC SECTOR EMPLOYEES IN THE MINISTRY OF HEALTH IN TRINIDAD AND TOBAGO

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Introduction: Physical inactivity is recognized as a risk factor for many chronic non-communicable diseases. According to the World Health Organization, World Health Report, at least 60% of the world's population does not meet the daily recommendation of physical activity. In Trinidad and Tobago, there is no research literature on the leisure-time physical activity levels of the country. In that context, this study assessed leisure time physical activity among public sector employees in the Ministry of Health. **Methods:** In this cross sectional study, participants were selected via a purposive-convenience sampling method. A 15-item self-administered questionnaire was used to collect information on demographics, activity at work, travel to and from different places, leisure time activity, and sedentary behaviour. Data were analyzed using SPSS version 21.0. Statistical significance was set at the 0.05 level. **Results:** A total of 108 individuals participated in the study. Most of the participants (42.6%) were of Afro-Trinidadian descent, in the "25-37" age group (45.4%), permanently employed (42.6%), had a sedentary occupation (63.9%), and had a general income range of less than \$10,000 per month (82.4%). The mean LTPA score was 34.89 ± 23.81 . Male respondents had a higher mean LTPA score than female respondents, 42.03 ± 24.49 and 30.72 ± 22.56 , respectively. A statistically significant difference was observed between the mean LTPA score and sex ($p=0.019$). There were no significant differences between LTPA and age group ($p=0.889$), job description ($p=0.227$) or general income range ($p=0.566$). **Conclusions, discussion and/or practical application:** Based on the results of the study, it can be said that less than half the sample population participated in LTPA "sometimes" during a typical 7-day week. The male employees in the population had higher LTPA scores, and therefore participated in more LTPA than their female colleagues at the Ministry of Health. Focus should therefore be placed on increasing participation in LTPA, particularly among the female population.

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P-522: EFFECTS OF ONE YEAR NUTRITION SUPPORT ON MALE LONG-DISTANCE RUNNERS

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Introduction: Training and acquisition of body composition fitted to the specific athletic characteristics are important to improve sports performance. Nutrition support is inescapable to increase knowledge for food to improve sports performance. Therefore, we conducted long term (one year) nutrition support and examined its effects. **Methods:** Investigation period was from August, 2014 to November, 2015. Targets were eleven N university male long-distance runners who were able to be continuously investigated for one year. Physical measurement and nutritive intake investigation were carried out before and after the investigation, and anemia inspection carried out six times (hemoglobin, ferritin, etc.) and nutrition support five times. **Results:** Physical measurement in 2015 showed the less tendencies in BMI ($p<0.06$), the significant decrease in the body fat percentage ($p<0.003$) and the less tendencies in Lean Body Mass (LBM) ($p<0.08$). The results were presented for increase of muscle mass. As for the nutrient intakes, the energy quantity ($p<0.01$), the protein ($p<0.04$) and the carbohydrate intake ($p<0.0005$) both per weight/1kg increased

significantly. Grains intakes increased significantly in the intakes from food groups. The average amount of hemoglobin rose by 1.0g/dL. Although the runners with anemia disappeared, ferritins (storage iron) decreased from 97ng/mL to 63ng/mL.

Conclusions, discussion and/or practical application: Nutrition support for one year guided the runners to the adequate training and the acquisition of body composition fitted to sport performance, which brought the winning of the first prize record at the long-distance relay preliminary race as the result. The effects of long-term nutrition support appeared as sports performance results and the acquisition of body composition. The prevention and improvement of anemia was seen among the runners, however, that was because of the effects of supplement usage such as iron preparation. Considering the decrease of ferritins, it is necessary to increase iron intakes from food and have further nutrition support.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-523: A QUALITATIVE STUDY: DIETITIANS SELF-REPORTED DETERMINANTS OF PRACTICE IN PROVIDING ADVICE ON PHYSICAL ACTIVITY AS PART OF A DIETETIC INTERVENTION FOR FRAIL OR MALNOURISHED OLDER ADULTS TO OVERCOME SARCOPENIA

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Introduction: The role of the dietitian covers a wide scope of practice. Role flexibility and extension is promoted to empower health care professionals to take on roles outside of their remit (Stanley and Borthwick 2013). Dietitians are seen as experts in the field of nutrition and not always as providers of advice on physical activity (PA). Dietitians would be ideally placed to provide advice on PA to complement nutritional counselling (Spidel *et al.*, 2004). For some dietitians this may be seen as an integral part of their role, however for others it may be seen as a more specialized field. With an aim to maintain functional health during the aging process, the decline in lean tissue is one of the most marked changes with aging, strongly associated with a decline in function (Rosenberg, 1997). This age related decline is termed 'Sarcopenia'; and is defined as low muscle mass in combination with low muscle strength or a decline in physical function (Cruz-Jentoft *et al.*, 2010). Evidence suggests that a combination of nutritional and exercise is more effective at combating sarcopenia than nutrition or exercise interventions alone (Malafarina *et al.*, 2013; Campbell, 2007; Robinson *et al.*, 2015; Liu *et al.*, 2009). **Objectives and target population:** This study will explore the determinants of practice (barriers and facilitators) as reported by dietitians to provide advice on physical activity alongside nutritional counselling to elderly frail patients to improve clinically important outcomes of strength and functional ability. **Previous theories and investigations:** Spidel *et al.* (2004) investigated dietitians self-reported perceptions and barriers on giving advice to patients on 'active living'. **Intervention(s):** Nominal Group Technique (Williams *et al.*, 2006) will be used within focus groups to collect data from community dietitians working in elderly care. **Evaluation:** Data will be analysed using thematic analysis. **Results:** TBC. **Conclusions of authors and discussion:** The findings from this study will help inform the development of a further trial intervention.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-538: PHYSICAL ACTIVITY, SEDENTARY TIME AND APPETITE REGULATION IN YOUNG ADULTS: THE ACTIBATE PILOT STUDY

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Introduction: We examined the association of objectively measured physical activity (PA) and sedentary time with appetite regulation in young adults. **Methods:** A total of 28 sedentary adults (age: 18-25yrs, body mass index: 25.2±5.7kg/m²) participated in the present cross-sectional study. PA and sedentary time were assessed with accelerometry over 7 days. Time spent at

moderate-vigorous PA (MVPA) was calculated. Appetite regulation was assessed by the following questionnaires: the Three Factors Eating Questionnaire (TFEQ), Binge Eating Scale (BES), and the Control of Eating Questionnaire (CoEQ). **Results:** Time spent at MVPA was negatively associated with the TFEQ emotional eating dimension ($r=-0.665$, $P=0.004$), whereas no association was observed for total PA or sedentary time with TFEQ (all $P>0.1$). Time spent at MVPA and total PA was positively associated with BES ($r=0.553$, $P=0.021$; $r=0.590$, $P=0.013$, respectively). There was a negative association of total PA with craving for sweet dimension from the CoEQ ($r=-0.523$, $P=0.031$); however, sedentary time was positively associated with craving for sweet ($r=0.605$, $P=0.010$), and with positive mood dimension from the CoEQ ($r=0.423$, $P=0.091$). **Conclusions:** These preliminary findings suggest that both PA and sedentary behaviour modulate appetite regulation in young adults. These findings need to be further studied in intervention studies as they could have key implications on understanding the effect of PA on energy intake and weight control. ClinicalTrials.gov (ID:NCT02365129).

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P-545: INTERVENTION IN PHYSICAL ACTIVITY AND HEALTHY NUTRITION IN CHILDREN FROM 3 TO 5 YEARS OF AGE, CHILE

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Introduction: A 49% of Children Belonging to Preschool Educational System in Chile present an Overweight an Obesity Nutritional State. **Objective:** To Evaluate the Effect of an Intervention in Physical Activities and Nutrition, in the Reduction of Overweight and Obesity of Children between 3 and 5 year of age, who attend a Nursery School. **Method:** Quasi experimental study, volunteer sign. It was worked with 45 children, both sex from 3 to 5 years of age from Chillan city, divided into two groups: 23 involved (ig) and 22 controlled (cg). The involved group received treatment during 5 months, consisting of workshops through the text: "how nice is to eat healthy" and 45 minutes of physical activity three times a week. All the children were measured in weight and size and the body mass index was calculated (BMI). The nutritional state was classified according to the health ministry rules of Chile, using nchs 1977 curves. **Results:** At the beginning the ig presented a 42% of overweight and obesity and by the end a 34% (8% less), on the other side the cg initially presented 21% and after 5 months, it increased to 58% (37% more). **Conclusions:** The interventions that include physical activities and healthy nutrition workshops reach good results in little children.

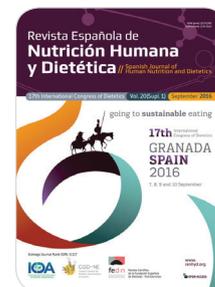
COMPETING INTERESTS: The authors of this communication declare not having any conflict of interest.



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RESEARCH ON BASIC AND APPLIED NUTRITION

P-380: MELANOCORTIN 4 RECEPTOR (MC4R) GEN VARIANTS ASSOCIATION STUDY WITH METABOLIC RISK FACTORS AT PEDIATRIC AGE

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Introduction: Melanocortin receptor 4 (MC4R) gene is located on chromosome 18q encoding a 322 amino acid protein. It is expressed primarily in the hypothalamic paraventricular nucleus and lateral hypothalamic area of the brain regions that are involved in appetite control. It has been linked to certain MC4R gene mutations with early onset obesity, postulating its role in the development of comorbidities. The main objective of this study is to determine the correlation between certain polymorphisms (single nucleotide polymorphisms -SNPs-) of the MC4R gene with metabolic risk factors such glucose and insulin basal levels and HOMA (Homeostasis Model Assessment). **Methods:** The study involved 180 children (80 controls and 100 obese) aged between 7 and 16 years followed at the pediatric gastroenterology and nutrition unit of the University Hospital Dr. Peset of Valencia. Biochemical blood parameters were determined in all participants for evaluating the metabolic risk. Three SNPs were genotyped and included for their direct link to obesity: rs17782313, rs10871777 and rs1773430, by DNA extraction, amplification and allelic discrimination by polymerase chain reaction. The statistical association study was performed by SNPstats program. **Results:** Relationship between the selected SNPs and carbohydrate metabolism was shown, fasting glucose increasing in 6.36mg/dL (p=0.03, recessive model), basal insulin 2.53μIU/mL (p=0.0089, additive model) and HOMA index 0.68 units increased (p=0.0037, additive model). In all the cases minor allele association has been found. **Conclusions, discussion and/or practical application:** The rs17782313, rs10871777 and rs1773430 variants of MC4R gene are associated with carbohydrate metabolism. Identification of SNPs is important in clinical practice, highlighting glucose metabolism disorders risk in obese subjects.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-381: EVALUATION OF NUTRITIONAL STATUS IN PATIENTS WITH CHRONIC LIVER DISEASE: A PILOT STUDY

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Introduction: Malnutrition is a common complication of the increasing number of patients suffering from chronic liver disease (cirrhosis; CLD) and is a leading cause of morbidity and mortality. Traditional tools used to evaluate nutritional status are not reliable in chronic liver disease due to limitations related to weight, which may be artificially increased by the presence of ascites, underestimating malnutrition. New strategies to assess nutritional status focussing on early malnutrition detection are an unmet clinical need. The aim of this ongoing pilot study is to describe the performance of different measures of nutrition including handgrip strength(HGS), mid-arm circumference(MAC) and subjective global assessment(SGA) in correlation to skeletal muscle index(SMI), an objective measure of skeletal muscle mass, among cirrhotic patients. **Methods:** In this ongoing prospective study, patients with and without CLD are recruited at Centre hospitalier de l'Université de Montréal (St-Luc Hospital) in Canada. We assess nutritional status via: HGS as measured in the dominant hand with a calibrated dynamometer, MAC, SGA and SMI, as measured by computed tomography scan at the level of the third lumbar vertebrae. We also assess recommended and achieved calorie and protein intake. Spearman correlation coefficient is used to assess correlation between different tools. **Results:** To date, we recruited 21 patients with and 6 patients without CLD. Preliminary results indicate that SMI tends to correlate with HGS in both groups. Our preliminary results also suggest that SMI varies according to sex and etiology of cirrhosis. **Conclusions, discussion and/or practical application:** The impact of age and sex of SMI needs further assessment. Objective measures of nutrition assessment in cirrhotics have the potential to reduce the dependence on subjective measures and allow accurate risk assessment. This may in turn lead to a change in clinical practice toward ensuring nutritional optimization in this high-risk population and attenuate CLD-related complications.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-382: FOOD CONTRIBUTORS TO CALCIUM INTAKE IN YOUNG ADULTS WITH THE LCT GENOTYPE PREDICTING LACTOSE INTOLERANCE

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Introduction: Dairy foods are rich in calcium, yet individuals with lactose intolerance(LI) often limit their intake of dairy products and might be at a higher risk of inadequate intakes of calcium. It is not known which foods contribute to calcium intake among individuals with LI. The objective of this study was to identify the major foods contributing to calcium intake in young adults with the LCT -13910C>T genotype predicting LI. **Methods:** Participants (n=715 Caucasians), aged 20-29-yrs, were from the Toronto Nutrigenomics and Health Study. Dairy intake was assessed using a one-month, 196-item food frequency questionnaire. Fasting blood samples were drawn for genotyping rs4988235 near the LCT gene. Analysis of covariance was used to compare dietary calcium intake between LCT -13910 C>T genotypes. Stepwise Regression was used to determine foods contributing to calcium intake. **Results:** 32% of participants had the CC genotype predicting LI. Compared to the dietary calcium intake of the TT genotype (1110±471mg/day), the CT genotype (1024±406mg/day, p=0.02), as well as the CC genotype (979±438mg/day, p=0.0002), consumed significantly lower dietary calcium intake. Stepwise regression indicated that skim milk predicts 45%, 23%, and 7% of calcium intake in the TT, CT, and CC genotype, respectively. Yoghurt predicts 5%, 21%, and 43% of calcium intake in the TT, CT, and CC genotype, respectively. **Conclusions:** Skim milk is the biggest contributor to dietary calcium intake in the TT genotype, whereas yoghurt, which is low in lactose, is the biggest contributor to calcium intake in the CC genotype. Those who had the CT genotype appear to have an intermediate phenotype.

COMPETING INTERESTS: A.E. holds shares in Nutrigenomix Inc.

P-383: OVERWEIGHT (OW) AND OBESE (O) ADOLESCENTS: PRELIMINARY STUDY OF ERYTHROCYTE DEFORMABILITY (ED), LIPID PROFILE (LP) AND MEMBRANE CHOLESTEROL (CHOLM)

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Introduction: The increase of the prevalence of overweight and obesity during childhood and adolescence has been displayed at last decades; moreover when obesity condition appears in the adolescence, the probability of persistence into adulthood is about 80%. These malnutrition states have been associated and recognized as risk factors for the development of microcirculation disorders since hemorheology alterations. **Objective:** The objective of this investigation is to analyze the ED, the LP, and the Cholm in adolescents classified according to the percentiles of BMI in normal weight (NW), overweight and obese. **Methods:** Blood samples were taken from 25 patients (males and females adolescents): 11 NW, 5 OW and 9 O. In each one was determined: ED: by filtration and calculation of the filtration index (FI) (%), blood cholesterol (Chol) (mg%), HDL-blood-cholesterol (HDL-Chol) (mg%), LDL-blood-cholesterol (LDL-Chol) (mg%), blood triglycerides (Tg) (mg%), by colorimetry; and Cholm (gr%), by extraction with solvents and colorimetry. **Statistical analysis:** Anova, results are expressed as means and standard deviation (SD), considering significant $p < 0.05$. **Results:** FI: $9.97 \pm 2.04^{**}$, 13.59 ± 5.24 and $15.68 \pm 7.24^{**}$, Cholm: $0.52 \pm 0.24^{**}$, $0.78 \pm 0.29^{**}$ and $1.16 \pm 0.76^{**}$ in NW, OW and O respectively. ****:** $p < 0.01$. The variables included in LP showed no significant differences between the groups. **Conclusions:** We conclude that the observed increase of the Cholm in O adolescents contributes to the decrease of the ED in this group. These findings are according with showed by other authors, who studied the same variables in adults. Therefore we propose that erythrocytes of O adolescents would have impairment for the adjustment to different conditions of blood flow, particularly at the microcirculation. We consider necessary to increase number of patients to continue this study.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-384: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, PARALLEL-GROUP, CLINICAL TRIAL TO ASSESS THE EFFECT OF *BIFIDOBACTERIUM LONGUM* BB536 INGESTION ON IMPROVEMENT OF BLOOD HEMOGLOBIN

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Introduction: Anemia is common among young women, and iron deficiency is one of the leading causes. The National Nutrition Survey in Japan revealed that anemia prevalence among young Japanese women is increasing; however, no nationwide preventive policy has been aimed at iron deficiency anemia. This study aimed to evaluate the efficacy of *Bifidobacterium longum* BB536 ingestion in improvement of hemoglobin (Hb) value in women. **Methods:** This was a randomized double-blind, placebo-controlled trial. Subjects were young women with more than 20 years old at the time of informed consent acquisition and with Hb levels less than 13g/dL. Key exclusion criteria include regular uses of supplements of iron or folic acid and so on. Subjects (n=36) were randomly assigned to placebo or *Bifidobacterium longum* BB536 (one hundred million CFU per day) for 8 weeks. **Results:** Subgroup analysis revealed that Hb values for subjects with baseline level of 12~12.9 g/dL increased significantly by taking BB536 for 8 weeks, but no significant change was observed for subjects with baseline level of less than 12g/dL. There was no significant change in the Hb values in the placebo group. **Conclusions:** *Bifidobacterium longum* BB536 ingestion may contribute to increase the hemoglobin value in the blood.

COMPETING INTERESTS: This study was put by the research fund of Morinaga Corp. into effect.

P-386: DEVELOPMENT OF A QUESTIONNAIRE FOR KNOWLEDGE ASSESSMENT OF PATIENTS REGARDING DISEASE RELATED MALNUTRITION AND HIGH-ENERGY AND -PROTEIN DIET

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Introduction: Knowledge transfer to patients has since long been a key issue in dietary intervention. In order to measure the effect of knowledge transfer during treatment, the level of patients' knowledge before and after intervention should be measured. However, to date a validated tool quantifying patients' knowledge of malnutrition, energy and proteins has not been available. The goal of this study was to develop a questionnaire which will form the basis of a validated measuring tool.

Methods: A draft questionnaire was developed, comprising issues on malnutrition and high-energy and -protein diet. The questionnaire was assessed in a two-round Delphi method in which eight experts had agreed to participate. The issues were evaluated using statements on relevance, comprehensibility, correctness of possible answers, general validity, content validity and design. The extent of expert agreement was determined using a content validity index(CVI), ranging from 0 to 1. Questions with a CVI score >0.80 were considered to be valid. **Results:** In the first round the 41-issue questionnaire was evaluated by six experts (75% response). They scored 19 issues to be relevant in dietary treatment of malnutrition (CVI=0.83-1). These 19 issues were reassessed in the second round by eight experts (100% response). Two issues were rated incomprehensible (CVI=0.75), on three items no consensus was reached for correctness of the answers (CVI=0.63-0.75). The statements that the questionnaire measures what it intends to and that it measures all relevant knowledge aspects of malnutrition scores, scored a CVI of 0.75. The statement that the questionnaire is not too strenuous and can be completed quickly and easily scores a CVI of 0.88.

Conclusions, discussion and/or practical application: A 12-issue questionnaire was developed to objectively assess patients' knowledge relevant to dietary treatment of malnutrition. A third Delphi round will be carried out to assess the content validity of the questionnaire.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-387: OBESE PATIENTS HEART GEOMETRY WITHOUT HYPERTENSION

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Introduction: Childhood overweight and obesity prevalence is increasing worldwide. There is wide evidence that obesity is a risk factor for cardiovascular morbidity and mortality. Moreover, studies in adolescents with hypertension have shown that there is a relationship between obesity and increased left ventricular mass(LVM) and therefore cardiac geometry.

Methods: Anthropometric, biochemical and echocardiography measurements were analyzed in 142 patients, 96 obese (mean age 11±2,8) and 42 controls (mean age 11,1±2,7). The function and left ventricular mass(LVM) was assessed by ultrasound and Doppler tissue convention. LVM was obtained according to the formula of Devereux was subsequently indexed by the height 2.7 (LVMI). Relative wall thickness (RWT) was calculated as the sum of the septal and posterior wall thickness and corrected for the left ventricular (LV) dimension in diastole. Cardiac geometry was subdivided on the basis of LVMI and RWT into: concentric hypertrophy (increased LVMI and increased RWT), eccentric hypertrophy (increased LVMI and normal RWT), concentric remodeling (normal LVMI and increased RWT), and normal geometry (normal LVMI and normal RWT). **Results:** Eccentric hypertrophy, the most common type of abnormal geometry, appeared in 13,4% of controls, compared with 41,3% of obese children (p<0.05). No other types of cardiac geometry significant changes were found. **Conclusions/Discussion/Clinic Application:** Hypertensive patients are characterized by an increase in systemic

vascular resistance. LVH being the most frequent geometric pattern of concentric hypertrophy. Recent studies identify eccentric LVH as the predominant form of hypertrophy in obese without hypertension.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-389: RELATIONSHIP OF LIPID PROFILE AND FERRITIN LEVELS IN YOUNG JAPANESE WOMEN WITH IRON DEFICIENCY WITHOUT ANEMIA

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Introduction: We aimed to evaluate whether serum ferritin is associated with serum lipid profiles in young women with iron deficiency without anemia (IDNA). **Methods:** Nonanemic (Hb \geq 12g/dL) female volunteers aged 18 to 22 years not taking mineral/vitamin supplements living in the metropolitan area of Tokyo, Japan from seventy-six respondents were classified into two groups, Normal (n=36) and IDNA (n=29) according to the following cutoff points for serum ferritin (sFer, ng/mL): Normal (sFer \geq 20), and IDNA (sFer $<$ 20). A sample of venous blood was obtained from the antecubital vein after a 10–12-h fast to measure hematological and biochemical parameters of iron status. Results were given as means \pm standard deviation. The groups were compared by Student's T-test. The correlation between HDL-C and sFer levels was assessed by Pearson correlation coefficients. Difference with P $<$ 0.05 was considered significant. **Results:** HDL-C level was significantly higher (P=0.007) in IDNA compared to Normal, whereas T-CHO (total cholesterol), TG, and LDL-C levels were not. The HDL-C/T-CHO ratio in Normal was higher than that in IDNA (2.9 and 2.5, respectively), although these ratios in both groups were within the reference range. No significant correlations were observed between sFer levels and HDL-C in both Normal and IDNA groups. **Conclusions, discussion and/or practical application:** These results suggest that high HDL-C level may be associated with iron deficiency without anemia. Further research is needed to elucidate the mechanisms and significance of these findings.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-390: FORTIFIED BREAKFAST CEREAL CONSUMED DAILY FOR 12WK LEADS TO A SIGNIFICANT IMPROVEMENT IN MICRONUTRIENT INTAKE AND MICRONUTRIENT STATUS IN ADOLESCENT GIRLS: A RANDOMISED CONTROLLED TRIAL

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Introduction: Poor micronutrient status is prevalent among adolescents across Europe and USA. This may be related to the decline in the consumption of breakfast by this group. The lack of randomised trials to examine hypotheses linking the regular consumption of breakfast with nutritional benefits precludes statements about cause and effect and is an obstacle to making specific dietary recommendations. A study was conducted to test the following hypothesis: compared with unfortified cereal with milk, the regular consumption of a fortified cereal with milk increases micronutrient intakes and improves markers of micronutrient status in adolescent girls. **Methods:** A randomised, double-blind, placebo-controlled intervention trial was conducted in girls recruited at ages 16-19y. Girls were randomised to receive 50g fortified or unfortified cereal, with 150mL semi-skimmed milk, daily, for 12wk, as a breakfast or as a supper. Dietary intake was estimated using a 4-d food diary and blood collected for the assessment of nutritional status. Statistical analysis was conducted on 71 girls who completed the study. **Results:** Consumption of fortified cereal with milk, either in the morning or the evening, elicited a significant increase in the intake of vitamins B-1, B-2, niacin, B-6, B-12, C, folate and iron and of vitamin D, compared with consumption of the unfortified cereal. Consumption of the fortified cereal also led to a significant improvement in biomarkers of status for vitamins B-2, B-12, folate and of iron, compared with girls receiving the unfortified cereal, and maintained vitamin D status, in contrast with the girls receiving the unfortified cereal. **Conclusions and application:** The regular consumption of fortified cereal with

milk elicited significant increases in micronutrient intake and improved biomarkers of micronutrient status, compared with unfortified cereal. The findings justify strategies to encourage the consumption of fortified cereal with milk by adolescents, either as a breakfast or a supper.

COMPETING INTERESTS: The research was supported by Kellogg's Marketing and Sales Company.

P-391: A RANDOMISED CONTROLLED TRIAL INVESTIGATING EFFECTS OF MEDITERRANEAN-STYLE DIET ON DEPRESSION, ANXIETY, STRESS, AND HEALTH-RELATED QUALITY OF LIFE IN PEOPLE WITH DEPRESSIVE SYMPTOMS: DIETARY CHANGES OVER 3 MONTHS

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Introduction: Poor dietary patterns have been identified as an independent risk factor for depression while healthy diets are protective. Traditional Mediterranean-style diets have been associated with reduced risk of cardiovascular disease which has a significant overlap with mental illness, including depression. However changing dietary behaviours presents unique challenges.

Methods: We conducted a randomised controlled trial to investigate whether dietary patterns can be improved in people with depressive symptoms and in turn whether healthier diet combined with fish oil supplementation can ameliorate symptoms. We recruited 164 people aged 18-65 with self-reported depressive symptoms to take part in a 6-month randomised controlled trial providing nutrition education, food hampers and cooking workshops based on Mediterranean-style dietary principles for 3 months and fish oil supplementation for 6 months. The control group attended social groups for 3 months. Participants completed mental health, quality of life and dietary questionnaires and provided blood and urine samples at baseline, 3 and 6 months. **Results:** In comparison to the control group (n=45) at 3 months the treatment group (n=59) had a higher Mediterranean diet score (p=0.005), consumed more vegetables (p=0.001), legumes (p=0.031) and fish (p=0.045), greater diversity of vegetables (p=0.001) and fruit (p=0.045) and less takeaway food (p=0.055), unhealthy snack food (p=0.051) and red meat/chicken (p=0.045). **Conclusions, discussion and/or practical application:** A 3-month dietary intervention with nutrition education, food hampers and cooking workshops improved dietary patterns of adults suffering depressive symptoms. Sustainability of these changes will be assessed at 6 months. Data are currently being analysed to investigate the effects of dietary changes and fish oil supplementation on mental health and quality of life.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-392: A TALE OF CONFUSION AND MISINFORMATION – THE EVALUATION OF PROTEIN SUPPLEMENTATION PRACTICES, KNOWLEDGE AND BELIEFS IN RECREATIONAL ADULT ATHLETES

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Introduction: There are clear recommendations relating to protein intake around resistance exercise to promote MPS. However, evidence-based information relating to protein intake and supplementation is plausibly limited to some athlete populations including those within recreational sporting clubs and gyms. **Methods:** 46 athletes completed a survey assessing protein supplementation practices, knowledge and beliefs. **Results:** 48% of athletes reported the regular use of protein supplements, with 91% consuming them immediately after resistance exercise. Of those taking protein supplements, the main reported reasons for their consumption were to aid recovery (54%), for weight gain/muscle gain (48%), improve strength (33%) and improve performance (31%). Most of the athletes reported that they were taking supplements based on their own decision (38%), coach's advice (38%) with fewer reporting taking them due to advice from a dietitian or nutritionist (10%). The athletes

reported that they purchased their protein supplements from their local health food store (26%), followed by at a pharmacy (22%), online (22%) and from a personal/team trainer (15%). 38% of athletes believed (agreed or strongly agreed) that their protein intake was insufficient without supplementation and 40% felt that discontinuing supplementation would impact their performance. **Conclusions, discussion and/or practical application:** This preliminary research highlights a range of causative factors influencing athlete intake practices and some athlete confusion regarding protein recommendations. It potentially provides a platform for further studies to assess athlete's protein supplement intake practices, knowledge and beliefs. These studies can potentially guide sports dietitians to effectively educate and market evidence-based messages regarding protein supplementation and dietary protein intake to athletes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-394: AWARENESS OF MICRONUTRIENTS OF SELECTED FILIPINO POPULATION GROUPS

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Introduction: Numerous intervention programs are currently being implemented to alleviate micronutrient deficiencies. Determining the extent of awareness of micronutrients by population groups may allow policy makers and policy implementers to identify at-risk groups and provide intervention programs to prevent and control micronutrient deficiencies. Objective: To assess awareness and knowledge of various population groups, aged 13-59 years old, on micronutrients, its deficiencies and clinical outcomes. **Methods:** The data was extracted from the 8th National Nutrition Survey in 2013 with a total of 80,064 respondents from 35,825 statistically selected households, comprising of 20,249 adolescents, 56,048 adults, 1,190 pregnant women and 2,576 lactating mothers. Data were obtained through a face-to-face interview. **Results:** Across the population, only 10% were aware of micronutrients. The highest awareness on micronutrients was noted among pregnant women (10.9%), followed by adults (9.3%) and lactating mothers (9.3%), and lowest among adolescents (8.6%). Among those who were aware of micronutrients, more than half (52.7%) has knowledge about micronutrient deficiencies. Respondents from urban setting have higher awareness (11.2%) compared to their rural counterparts (7.0%). Among those who were aware, vitamin A and iron were the most recognized micronutrients. Consequently, iron deficiency (37.8%) and vitamin A deficiency (35.0%) were the most identified micronutrient deficiencies. Greater awareness was seen among those who are in the higher wealth index and higher educational level. **Conclusions, discussion and/or practical application:** Awareness of micronutrients and its clinical outcomes is very low. Strengthening public health and nutrition campaigns which aim at informing at-risk groups should be done with coordinated efforts from government, private and non-government organizations. The use of quad media particularly social media is highly recommended to increase awareness.

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P-395: BIOACCESSIBILITY AND BIOAVAILABILITY OF BIOACTIVE COMPOUNDS PRESENT IN COFFEE SILVERSKIN EXTRACT

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Introduction: Health promoting effects associated to coffee silverskin extract(CSE) largely depend on the bioaccessibility and bioavailability of chlorogenic acid(CGA) and caffeine and it is evaluated in the present study. **Methods:** CSE was *in vitro* gastrointestinal digested mimicking human conditions. Bioaccessibility of CSE's compounds was assayed by analysis of proteins, total phenolic compounds(TPC), CGA, caffeine and antioxidant capacity after the *in vitro* digestion. CGA and caffeine *in vivo* bioavailability was evaluated using male Wistar rats (n=32) divided into four groups (n=8). A Control group received 1mL of sterile water; CSE group received CSE (128mg/kg body-weight equivalent to 0.88mg CGA/kg body-weight and 2.55mg caffeine/kg body-weight); CGA group received 1.5mg CGA/kg body-weight and caffeine group

received 5mg caffeine/kg body-weight. Doses were administered diluted in 1mL of water by gavage. Animals were housed singly in metabolic cages. Urine samples were serially collected for every 1 hour up to 6 h, then every 2 hours up to 10 h and then up to 24 h. CGA and caffeine and their major metabolites, hippuric acid and paraxanthine were determined in urine by UPLC-MS/MS analysis. **Results:** Bioaccessibility of TPC, CGA and caffeine decreased due to digestion in 39%, 80% and 25%, respectively. On the contrary, the overall antioxidant capacity of CSE remained in 82% (ABTS) and 74% (ORAC) after *in vitro* digestion suggesting the formation of novel antioxidant during the process. Results on bioavailability indicated caffeine was highly metabolized to paraxanthine after CSE intake while free CGA wasn't bioavailable. **Conclusions, discussion and/or practical application:** Our findings seem to indicate that CSE health effects might be linked to its antioxidant character or a synergic effect of different components present in CSE including caffeine and its metabolites, but cannot be ascribed to free CGA.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-396: DISORDERED EATING BEHAVIORS, SOCIOCULTURAL FACTORS AND MEAL TIMES COMPARISON BETWEEN MEXICAN AND CANADIAN FEMALE UNIVERSITY STUDENTS

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Introduction: The aim of this work was to compare the prevalence of disordered eating behaviors (DEB), sociocultural factors (SCF) and meal times between two samples of university students. In addition, the relationship of these factors with body mass index (BMI) and waist circumference (WC) was explored. **Method:** A cross-sectional descriptive and comparative study was carried out between two matched female samples from 18 to 25 years old ($X=20,17$, $SD=1,67$); one from *Universidad Autónoma del Estado de Hidalgo* (UAEH) in Mexico ($N=42$) and the other one from University of Moncton (UM) in Canada ($N=42$). Self-reported valid instruments were applied: the Associated Risk Factors to Eating Disorders and the Influence on the Aesthetic Model Questionnaire. Weight, height and WC of each participant were measured. **Results:** In Canadian students, binge eating (7,5% vs. 2,4% UAEH students) and emotional eating (9,5% vs. 2,4% UAEH students) were significantly more frequent ($p<0,05$) and influence of social models ($\chi^2=7,51$, $df=2$, $p<0,05$) were significantly higher among UM students, meanwhile influence of social situation was higher in Mexican students ($\chi^2=6,09$, $df=2$, $p<0,05$). With respect to meal times, Canadian students showed significantly higher values for breakfast ($\chi^2=13,2$, $df=4$, $p<0,01$). The highest percentages of DEB and SCF were obtained for the overweight and obese participants. WC was not a deciding factor for the prevalence of DEB; however, it was important to explain SCF and meal times in both samples. **Conclusions:** We confirmed a positive association between BMI, DEB and SCF. We also found that as BMI and WC increased, meal times decreased. These findings open the opportunity to bring the guidelines that can be used to design specific prevention programs.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-397: DOES THE NUTRIENT PROFILE OF SNACKS VARY ACCORDING TO THE TIME OF DAY OF CONSUMPTION?

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Introduction: Research suggests that energy intake from snacking eating occasions (EOs) has increased over time, however little is known about the nutrient profile of snacks consumed across the day. The aim of this study was to describe the nutrient profile of snacks consumed according to time of day of consumption. **Methods:** Dietary data from two 24-hour recalls collected during the 2011-12 Australian Nutrition and Physical Activity Survey ($n=2457$ men and $n=2890$ women, ≥ 19 years) were analysed. All EOs identified by respondents as "snacks" were analysed according to their time period of consumption (morning: 06:00-11:59, afternoon: 12:00-17:59 and evening/night: 18:00-23:59). Nutrient intakes per 1000kJ (density method) and as a

proportion of total nutrient intake were calculated for snacks consumed within each time period. The nutrient profiles of snacks were then compared across time periods using an F-test with Bonferroni correction. All results were weighted and adjusted for sample design effects. **Results:** Among both men and women, the nutrient profile of snacks varied according to the time of day of consumption. For example, snacks consumed in the morning were significantly lower in energy but had higher nutrient densities of protein, calcium, folate and sugars than snacks consumed later in the day ($P < 0.01$). The morning snack was also the highest contributor to total calcium and folate intakes and contained more fibre (men only) but less total fat (women only) and saturated fat (women only) per 1000kJ than snacks consumed in the afternoon or evening/night ($P < 0.01$). **Conclusions, discussion and/or practical application:** Findings from this study suggest that snacks consumed during the morning are more nutrient-dense and higher quality (i.e., higher in protein, calcium and folate) than those consumed later in the day. However, further research examining how snack food choices vary across the day is needed to inform health promotion messages that encourage healthy snacking behaviours.

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P-398: EFFECT OF GRADED LEVELS OF DIETARY IRON ON HEMATOLOGICAL PARAMETERS IN RATS

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Introduction: Iron deficiency is the most prevalent nutritional disease and is an important risk factor of brain degeneration including Alzheimer disease. Although the use of graded levels of dietary iron in determining iron bioavailability in anemic rats have a long history, knowledge on the relationship between graded levels of dietary iron and hematological parameters in animals with initially normal iron status is still limited. **Methods:** Thirty-six three-week-old male Wistar rats were equally and randomly divided into 6 groups, and fed for five weeks on graded levels of supplemental dietary ferric citrate from 0, 7, 14, 21, 35 and 49mg iron/kg. Hematological parameters using samples after overnight food withdrawal was measured. Data were analyzed by the Williams or Shirley-Williams multiple comparison test. P value less than 0.05 was considered significant. **Results:** Compared to dietary iron of 49mg/kg, red cell counts were significantly decreased when the dietary iron was 7mg/kg and less; hemoglobin, hematocrit, MCV, and MCH were significantly decreased when the dietary iron was 35mg/kg and less; platelet counts and reticulocyte ratio were significantly increased when the dietary iron was 21mg/kg and less. **Conclusions, discussion and/or practical application:** The hematological outcomes of dietary iron level of 35mg/kg were apparently different from those of 49mg/kg. Further investigations using higher dietary iron levels are required to elucidate the iron requirement based on ferric citrate for experimental rats.

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P-399: ESTABLISHMENT OF A DIRECT AMINO ACID OXIDATION METHOD FOR ESTIMATING THE TOLERABLE UPPER INTAKE PROTEIN LEVEL IN RATS

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Introduction: There is little scientific evidence related to the adverse effects of consuming very high protein diets. The direct amino acid oxidation(DAAO) method has been used to obtain the requirement for indispensable amino acids, as indicators of the adequacy of the respective amino acids. This study was conducted to establish a DAAO method for estimating the tolerable upper intake protein level in rats. **Methods:** Male Sprague-Dawley rats aged 3 weeks old were raised under controlled lighting conditions (lights on 20:00-08:00), and fed 5, 10, 20, 30, 40, and 60% casein experimental diets for four weeks to adapt to the protein intake levels. After adaptation, rats aged 7-8 weeks old were employed for the DAAO method experiment. After overnight fasting, the rats were fed each experimental diet at 1-hour intervals, each meal representing one-twelfth of their total

daily food intake. L-[1-13C]phenylalanine was used as a tracer for the 13C-labeled amino acid, mixed into the experimental diet at a constant ratio of 10% of the total phenylalanine contained in casein. Breath samples were taken every 1-hour and the 13CO₂ volume in expiration from 09:00 to 19:00 was measured using an infrared spectrometer. After the adaptation period, blood and urine samples were collected to measure urea nitrogen. **Results:** Breath 13CO₂ enrichment gradually increased after the initiation of the 13C-Phe intake. Plateau breath samples were collected during the period from 17:00 to 19:00 from rats fed all of the different protein intake levels. The 13CO₂ concentration in the breath at 19:00 increased along with the protein intake levels. Protein intake was positively correlated with blood and urinary urea nitrogen. **Conclusions, discussion and/or practical application:** These results suggested that the tolerable upper intake level of protein could be estimated using the DAAO method in rats.

COMPETING INTERESTS: The authors have no conflict of interest directly relevant to the content of this article.

P-400: *IN VITRO* TOXIC EFFECT OF THYMOL CARVACROL MIXTURE ON THE HUMAN GASTRIC ADENOCARCINOMA CELLS

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Introduction: In the food industry, packaging technology named “active food packaging” is being increasingly in the last years. Carvacrol and thymol are the major compounds of several species from the family Lamiaceae, and were applied in the food industry due to their flavour, antimicrobial and antioxidant features. In this context, to reach healthy and safe products have gained importance. Therefore, the aim of present work was to evaluate the thymol carvacrol mixture (T:C) *in vitro*. **Methods:** Human gastric adenocarcinoma (AGS) cells were incubated with the serial test dilutions of T:C mixture (1:10) for 24h. After incubation of cells cytotoxic, genotoxic and apoptotic effects were determined. Additionally, generation of reactive oxygen species (ROS) was also analyzed. Cytotoxicity was assessed based on ATP cell viability assay. Apoptosis induction was detected by acridine orange/ethidium bromid staining at below the half maximal growth inhibitory concentration level. Genotoxicity was assessed by alkaline single cell gel electrophoresis assay (comet assay). Intracellular accumulation of ROS was determined using the fluorescent probes 2',7'-dichloro-dihydrofluorescein-diacetate. **Results:** T:C mixture inhibited cell proliferation induced genotoxicity, apoptosis and ROS activities in a dose-dependent manner. There was a close negative relationship between cell viability and ROS level. **Conclusion:** In the present study, a significant decrease in the cell viability and DNA damage was observed after 24h exposure of T:C mixture on the human AGS cells. Dose-dependent cytotoxic, genotoxic and apoptotic activities of T:C mixture in AGS cells can probably be related to the generation of ROS, via its pro-oxidant activity. The results have great interest since this mixture can be used in active food packaging. Therefore, further studies are necessary to determine its toxicity *in vivo* and ensure its safety.

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P-401: RELIABILITY AND CRITERION VALIDITY OF SELF-MEASURED WAIST, HIP, AND NECK CIRCUMFERENCES TAKEN WITH A HOME-ASSEMBLED MEASURING TAPE AFTER VIEWING AN ONLINE INSTRUCTIONAL VIDEO

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Introduction: Body circumference measurements are cost-effective, non-invasive, useful markers for body fat distribution and disease risk. Including circumferences in self-report surveys could inform diet and physical activity intervention efforts. **Methods:** This study compared self-measurements of waist, hip, and neck circumferences taken by novice lay people at home with a homemade paper measuring tape after viewing a brief, online instructional video to measurements by trained technicians using research-grade equipment and standard procedures. At home, participants viewed the video, created

a homemade paper measuring tape from a downloaded file with scissors and tape, took all measurements in duplicate and entered them into an online survey. Subsequently, participants visited an anthropometrics lab where they measured themselves again, and trained-technicians measured participants in duplicate using standard equipment and procedures. Prior to data collection, technicians (n=9) trained to complete measurements accurately, achieving inter-observer reliability >0.96. **Results:** Participants (n=41) were aged 38.05±3.54SD years, 71% white, and 78% had a college degree. Technical error of measurements for self- and technician- duplicate measurements varied little (0.08 to 0.76 inches) and had very high reliability (>0.90). Intraclass Correlations (ICC) comparing self vs. technician were high (0.97, 0.97, and 0.72 for waist, hip, and neck). Comparison of self-measurements at home vs. lab revealed high test/re-test reliability (ICC≥0.84). Differences between participant self and technician measurements were small (0.52-, 0.20-, and 0.80-inches for waist, hip, and neck) with nearly all (>93%) differences within Bland-Altman limits of agreement and =10% exceeding the a priori clinically meaningful difference criterion. Participants highly rated the ease of making the tape measure (4.6±0.48SD on 5-point scale). **Conclusions, discussion and/or practical application:** This simple, inexpensive method for teaching individuals to take their own body circumferences resulted in reliable, accurate data. Collecting self-measured and self-reported circumference data is a feasible, inexpensive addition to research protocols and could improve patient self-monitoring of body fatness.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-402: SOURCES OF SODIUM AT MEAL AND NON-MEAL TIME EATING OCCASIONS IN AUSTRALIAN ADULTS: SECONDARY ANALYSIS OF THE AUSTRALIAN HEALTH SURVEY

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Introduction: High sodium intake contributes to high blood pressure and poor cardiovascular health. Food and beverages contributing to dietary sodium intake at individual eating occasions are not well reported. The purpose of this study is to assess the dietary intake and food sources of sodium at meal and non-meal eating occasions in Australian adults. **Methods:** The Australian Health Survey collected dietary information from Australian adults (aged 18 to 85 years) in 2011-12 using 24-hour dietary recall methodology. Males and females (n=7818, 52% female) were included in the analysis that had complete data for height and weight. Eating occasions were classified as Meal Time, which comprises Breakfast (includes breakfast and brunch), Lunch and Dinner and Non-meal time eating occasions. Discretionary sodium added to foods during preparation or at the table was not included. **Results:** Mixed dishes where cereal is the major ingredient contributed the greatest proportion of total daily sodium intake (14.6% of total daily sodium intake). The eating occasion contributing the greatest proportion sodium on the day of the survey was dinner (33% of total daily sodium intake), followed by lunch (31%), snacks (19%) and breakfast (16%). The highest sodium density was observed at lunch (379mg/MJ). The greatest source of sodium at non-meal times were cakes, muffins, scones and cake-type desserts. **Conclusions, discussion and/or practical application:** Reformulation of processed foods for reduction of sodium consumption in Australians remains an important objective, targeting food consumption at non-meal time eating occasions and typical foods consumed at this time may be a useful strategy in approaching reduction in individual dietary sodium intake.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-403: THE EFFECT OF ZINC DEFICIENCY AND DIET RESTRICTION FOR ERYTHROPOIETIN PRODUCTION IN RATS

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Introduction: Some patients with chronic kidney disease have iron- and erythropoietin-refractory anemia. We previously reported that zinc-deficient rats possessed decreased plasma erythropoietin concentration. Some physicians reported that zinc supplementation was effective in treating iron- and erythropoietin-refractory anemia. However, these mechanisms are not

clear. We aimed to investigate the physiological roles of zinc in erythropoietin production in kidney. **Methods:** Thirty 3-week-old male Sprague-Dawley rats were assigned into 3 dietary groups (n=10 each) and fed on dietary regimens for 4 weeks: control group (AIN-93G; Control), zinc-deficient group (4.5mgZn/kg; ZD) and pair-fed group (AIN-93G; PF). Kidney was separated into cortex and medulla for erythropoietin protein analysis and for RNA isolation. Quantitative real time RT-PCR using TaqMan probes was performed for mRNAs of erythropoietin. Statistical analysis was performed by PLSD. P value less than 0.05 was considered significant. **Results:** Kidney cortex erythropoietin concentration was decreased in ZD compared with PF. Kidney cortex erythropoietin concentration in PF was higher than that of Control, but the difference was not significant. No significant difference was observed in kidney medulla erythropoietin concentration. Erythropoietin mRNA levels in both kidney cortex and medulla were significantly different between ZD and PF. **Conclusions, discussion and/or practical application:** These results suggest that kidney erythropoietin expression and production is decreased by zinc deficiency.

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P-404: THE EFFECTS OF BREAKFAST AND BREAKFAST COMPOSITION ON COGNITION IN CHILDREN AND ADOLESCENTS: A SYSTEMATIC REVIEW

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Introduction: Breakfast has been suggested to positively affect learning in children. A systematic research review(SRR) of the evidence for the effects of breakfast on cognitive performance was conducted to establish the latest status. **Methods:** The SRR was conducted according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Human intervention studies examining the effects of breakfast on objectively measured cognitive performance in both children and adolescents, published between 1950-2014, were included in the review. A grading of the strength of evidence for each conclusion was made. **Results:** The search generated a total of 1351 articles. A total of 45 studies were included in the review. Most studies considered the acute effect of a single breakfast (n=34). The acute studies were either breakfast vs. no breakfast comparisons (n=24) and/or comparisons of breakfast type (n=15). The effects of chronic school breakfast program interventions were evaluated in 11 studies. The findings indicated that breakfast consumption has an acute (same-morning) beneficial effect on cognitive function compared to breakfast omission. Tasks requiring attention, executive function and memory were facilitated more reliably by breakfast consumption relative to fasting, with effects more apparent in undernourished children. The quality, consistency, quantity, and clinical impact of the evidence from acute studies comparing breakfast vs. no breakfast was graded as fair, however the generalisability of evidence was limited. Further studies are needed to establish the effect of breakfast composition and the long term effects of consuming breakfast on school children's cognitive performance. **Conclusions, discussion and/or practical application:** Breakfast consumption compared to breakfast skipping has a positive effect on cognitive function in children and adolescents. These effects could have wider impact for learning in the classroom and for educational achievement.

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P-405: THE RELATION BETWEEN DAIRY CONSUMPTION AND PLASMA CONCENTRATIONS OF BRANCHED-CHAIN AMINO ACIDS

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Introduction: Branched-chain amino acids(BCAAs) leucine, isoleucine and valine are important for tissue growth and repair. It is also indicated increased plasma BCAAs levels related to obesity, insulin resistance, and diabetes in large prospective and cross sectional human studies. Milk and dairy foods are source of high digestibility whey proteins rich in BCAAs. The aim of the present

study was therefore to assess the relationship between dairy consumption and fasting plasma BCAAs concentrations. **Methods:** A subgroup of 5429 healthy adult men (n=2094) and nonpregnant women (n=3335) aged between 18-64yrs was selected from Turkey National Nutrition and Health Survey (TNHS)-2010. Individuals were separated into quartiles of dairy consumption based on 24-hours dietary recall. Subsequently, fasting plasma BCAAs concentrations in dairy consumption quartiles were compared using complex samples general linear model by performing analysis of variance by using the package of SPSS. **Results:** Fasting plasma leucine (118.1µg/mL– 122.1µg/mL) and valine (206.5µg/mL–212.7µg/mL) concentrations were significantly greater in highest quartile than the lowest quartile. Fasting plasma isoleucine concentration was not significantly different between lowest (62.4µg/mL–63.8µg/mL) and highest quartiles. Total fasting plasma BCAAs concentrations (387.0µg/mL–398.6µg/mL) were significantly greater in highest quartile than the lowest quartile. **Conclusions, discussion and/or practical application:** These results suggest that the dietary dairy intake may increase plasma concentrations of leucine and valine but not isoleucine. These results however should be validated in further studies to see whether an increase in plasma concentration of BCAAs following dairy consumption, is related to any nutritional disorders such as obesity, insulin resistance, and diabetes.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-406: TOTAL FLUID INTAKE, AND FIRST MORNING URINE OSMOLALITY IN SPANISH ADOLESCENTS: THE HELENA STUDY

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Introduction: Little is known about the hydration status of the younger population groups. For this reason, the aim of this study is to describe the hydration status and to relate it with the condition of meeting or not the EFSA recommendations for total fluid intake in healthy adolescents. **Methods:** 194 adolescents aged 12.5-17.5yrs (99 males) from Zaragoza belonging to the cross-sectional "Healthy Lifestyle in Europe by Nutrition in Adolescence" (HELENA) study were included. First morning urine osmolality was determined by freezing point depression osmometer. A self-reported computer-based 24-hour dietary recall was applied the same day of the urine collection to assess the daily total water intake (total amount of water provided by fluids and foods). T-test was applied for the description of the sample and Pearson's χ^2 were used to examine the group associations. **Results:** TWI was similar between males and females (1977±692 and 1801±784mL/day, respectively). 71% of adolescents did not meet the European Food Safety Agency (EFSA) recommendations for average total water intake (TWI <2,500mL in males, and 2,000mL in females). 68% had high first morning urine osmolality values (>800mOsmol/kg/day). Females who meet EFSA recommendations for TWI significantly had lower osmolalities than those who don't (p<0.03). No differences were observed for males. **Conclusions, discussion and/or practical application:** In this sample of Spanish adolescents there was a high prevalence of inadequate TWI and high urine osmolality values which might indicate a poor hydration status. In females, there is a correspondence between those who had higher values of TWI and lower values of urine osmolalities.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-407: TOTAL PHENOLIC CONTENT DATA OF SPANISH FRUITS AVAILABLE IN THE LITERATURE

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Introduction: The total phenolic content (TPC) assay using the Folin-Ciocalteu (FC) reagent is one of the most commonly used routine screening methods to quantify the phenolic content of a plant extract. The TPC and the total antioxidant capacity (TAC) are estimated using database published in other countries. Spain, is a major producer of fruits but no food composition tables of TPC exist. **Objective:** To collect data on TPC content of marketed and cultivated fruits in Spain so as to develop a Spanish food composition database of TPC. **Method:** A literature search of TPC in Spanish fruits in Medline, EMBASE and Web of Science was conducted (until October 2015). Information was collected on: 1) Food: name and variety, food classification, preservation methods, sampling; 2) TPC: value, units and analytic methods; 3) Extraction procedure and phenolic compound of reference; 4) Publication: year and author. **Results:** The literature search retrieved 10 articles on TPC content in Spanish fruits. After data extraction, a database was developed including TPC data for 82 Spanish fruits of 28 different types. All values were transformed to mg GAE/100g FW to standardize units. The TPC values ranged between 10mg GAE/100g FW for pear and 263mg GAE/100g FW for pomegranate. Some fruits, such as plums, showed a great variability depending on the variety analyzed (e.g., Golden Japan variety 37mg GAE/100g FW and Songold variety 153mg GAE/100g FW). **Conclusions:** Spanish data on TPC are sufficient to assess dietary intake of TPC from fruits. Work is underway to systematically collect information on published data on TPC of other foods to complete our database. This Spanish TPC database will serve as a tool to estimate TPC in the Spanish diet.

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P-410: WHOLE GRAIN INTAKE OF AUSTRALIANS ESTIMATED FROM A CROSS SECTIONAL ANALYSIS OF DIETARY INTAKE DATA FROM THE 2011-13 AUSTRALIAN HEALTH SURVEY

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Introduction: The Australian Dietary Guidelines recommend Australians choose mostly whole grain and/or high fibre varieties within the grains (cereal) foods category. Specific whole grain recommendations supported by the Grains and Legumes Nutrition Council include a 48g/d whole grain Daily Target Intake for Australians aged nine years and above. The US and UK report estimates of national whole grain intake are low and declining. However, whole grain intake within the Australian population has not been extensively studied to date. This study aimed to determine national estimates of whole grain intake, compared to recommendations. It was hypothesised that whole grain intake will not meet recommendations. **Methods:** A recently updated whole grain database was applied to the most current population dietary intake data of Australians aged 2-85yrs, the 2011-2013 Australian Health Survey (AHS) (n=12,153). Single 24-hour dietary recall data was reviewed against age group, sex and relative to energy intake and whole grain recommendations. **Results:** At the time of the survey, the median daily whole grain intake was 21g/d for adults and 17g/d for children/adolescents, or 28g/10MJ/d and 23g/10MJ/d respectively after adjusting for energy intake. Thirty per cent of children/adolescents consumed no whole grains on the day of the survey and a similar percentage of adults were also non-consumers (29%). Whole grain intake was lowest in adolescents (14-18yrs). Of all participants aged ≥9yrs, 73% did not reach the Daily Target Intake. **Conclusions, discussion and/or practical application:** Whole grain intake in Australia is below recommendations in all age categories. Adolescents may need particular

focus to help increase whole grain consumption. The present study provides the first quantification of absolute whole grain intake from all food sources in a national sample of Australians.

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P-411: DIETARY FAT INTAKE IS ASSOCIATED WITH CELULAR SENESCENCE IN AN ELDERLY POPULATION WITH CARDIOVASCULAR DISEASE: CORDIOPREV STUDY

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Introduction: Accelerated telomere shortening is associated with aging and aging-related diseases. The lifestyles, and fundamentally the diet, are factors that may reduce the rate of telomere shortening, which leads to a decreased cellular senescence and an increased regenerative capacity of endothelium. Our aim was to study whether the quality and the quantity of the fat intake influences the telomeres length in elderly patients with established cardiovascular disease. **Methods:** A total of 310 patients from the CORDIOPREV clinical trial (NCT00924937), 65yrs or older, were included in our study. Information about dietary habits was obtained using a semiquantitative 146-items food frequency questionnaire. DNA was isolated from peripheral blood samples using "Salting Out" method. Relative telomeres length (RTL) was measured by real time PCR. We estimated the relative ratio of telomere repeat copy number(T) normalized against a single copy gene(S) for each sample and for the reference DNA sample. **Results:** Our findings showed that there is a significant difference between the RTL and the percentage of saturated fatty acids intake. Subjects with <8.09%kcal/day saturated fatty acids intake (Tertile 1) showed longer RTL compared to the other two groups (Tertile 2=8.10 to 9.64%kcal/day and Tertile 3 >9.65%kcal/day) (p <0.05). No significant differences between the RTL and the percentage of total fat intake, the percentage of monounsaturated fatty acids intake and the percentage of polyunsaturated fatty acids intake were observed. **Conclusions, discussion and/or practical application:** Our results suggested that the RTL could be associated with the quality of fat intake, as we showed that the quantity of fatty acids intake is directly related to the cellular senescence. These findings suggest that dietary habits are important factors and powerful tools that regulate the cellular senescence which lead to a healthy aging process.

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P-412: EXAMINING TRENDS IN MEAL PATTERNS BETWEEN 1995 AND 2011 USING TWO NATIONAL SURVEYS

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Introduction: While international research suggests that meal patterns of the population may be changing, possibly with adverse health consequences, little is known about the meal patterns of Australians. The aim of this study was to examine the changes in meal patterns of Australians between 1995 and 2011. **Methods:** Data from two nationally representative Australian surveys were used (1995 National Nutrition Survey, 10851 adults ≥19yrs, n=2986 children/adolescents 2-18yrs; 2011-2013 National Nutrition and Physical Activity Survey, 8964 adults ≥19yrs, 2783 children/adolescents 2-18yrs). Dietary intake was assessed via 24-hour recall and respondents and eating occasions(EOs) including meals and snacks were reported. Frequency of meals, snacks and all EOs, time between EOs and energy intake(EI) from meals, snacks and all EOs were compared between the two surveys using an F-test. All results were weighted, adjusted for sample design effects and presented as means and Taylor linearized standard errors. **Results:** Overall, there was little change in frequency of total EOs over time. Time between EOs decreased among women but not men between 1995 and 2011-12 (181 [1.15] vs. 171 [1.29], P<0.001) and among children

(164 [1.40] vs. 157 [1.47], $P=0.001$). The proportion of total EI from meals decreased in both children and adults between 3-7% ($P<0.001$) whereas the proportion of total EI from snacks increased between 3-7% ($P<0.001$). **Conclusions, discussion and/or practical application:** Overall, only small changes in meal patterns have occurred between 1995 and 2011 among children and adults. However, increases in the proportion of energy from snacks warrants further investigation. Future research will examine changes in nutrient profiles of meals and snacks over time.

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P-413: PHYSICOCHEMICAL PROPERTIES OF ROYAL JELLY PRODUCED IN ALGERIA

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Introduction: Royal jelly(RJ) is synthesized and secreted by the cephalic glands of the nurse bees. Its composition varies by geographical and climatic conditions in many countries. In our country, there is no standard for royal jelly quality or at least reliable methods for the determination of its functionality and quality. This study focuses on the determination of physicochemical properties of fresh royal jelly produced in north of Algeria (plain of Mitidja) of a bee race *Apis mellifera intermissa*. **Methods:** In this study, moisture, ash, lipids, proteins, sugars, polyphenols content, total acidity and pH were all determined by triplicate in pure royal jelly. **Results:** The results show that royal jelly contains water ($63.97\pm 0.5\%$), ash ($1.65\pm 0.14\%$), proteins ($14.05\pm 0.07\%$), carbohydrates ($8.9\pm 0.01\%$) and lipids ($3.40\pm 0.04\%$). Total polyphenolic content is $151\mu\text{g/g}\pm 0.05$. The pH and total acidity values are 3.78 ± 0.02 and $2.87\pm 0.05\text{mL}, 0,1\text{N NaOH/g}$, respectively. **Conclusions, discussion and/or practical application:** The result of this study indicated that physico-chemical composition of Algerian royal jelly is comparable with that of royal jelly samples produced in other countries.

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P-414: AGREEMENT BETWEEN ANTHROPOMETRY AND BIOIMPEDANCE

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Introduction: BMI is not an accurate index to determine adiposity. Although bioimpedance(BIA) is a more precise method to estimate body composition(BC), anthropometry is usually used in epidemiological studies because it is easier to take away and cheaper. The aim of this study was to compare both techniques to assess BC in a group of healthy subjects. **Methods:** Body composition of a hundred and thirty six healthy volunteers (BMI $17.21-34.87\text{kg/m}^2$, 21-65 y.) was measured by anthropometry and bioimpedance (hand-to-foot BIA, 50kHz) in this cross-sectional study. The agreement between anthropometry (Siri's formula) and BIA (Deurenberg, Kyle, and Sun equations) was studied by the intraclass correlation coefficient(CCI) and Bland-Altman graph. **Results:** The mean age of subjects was 42,9 (13,1) years. According to OMS cutoff points values for BMI, 69,85% of volunteers were normal weight (1,47% underweight and 28,68% overweight and obese). The agreement between BIA and anthropometry was CCI:0,922(CI95%:0,660-0,946) for Deurenberg equation; CCI:0,875(CI95%:0,820-0,909) for Kyle; and CCI:0,801(0,722-0,859) for Sun. Bland-Altman did not show any tendency, but all of them indicate that lower fat free mass percentages are usually given by anthropometry than BIA. **Conclusions:** BIA and anthropometry shows a good agreement for estimating body composition, with no matter what equation is used (Deurenberg, Kyle or Sun). As BIA is an expensive technique, anthropometry could be a good method to assess BC in epidemiological studies if it is conducted by a trained clinician.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-415: APPLICATION OF BIOIMPEDANCE ANALYSIS FOR ESTIMATING BODY COMPOSITION IN A GROUP OF UNIVERSITY STUDENTS: COMPARISON BETWEEN ATHLETES AND SEDENTARY SUBJECTS

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Introduction: In recent years there has been a change in lifestyle and diet among certain population groups, especially in young people, promoting a sedentary and a less healthy lifestyle. Physical activity plays an important role because it is highly associated with body composition (BC), which in turn has a major influence on health. The BC is an essential point in the assessment of nutritional status in both healthy and sick people, taking a major role in sports. Although there are several techniques for estimating BC, both conventional and vector bioimpedance analysis (i.e., BIA and BIVA) are widely used because of its simplicity and low-cost. **Objectives:** To compare body composition assessed by BIA and BIVA in a group of athletes and sedentary University students. **Methods:** Cross-sectional study conducted on 49 volunteer students from the University of Valladolid. The physical activity level was estimated with the questionnaire GPAQ. BIA and BIVA (hand-to-foot, 50 kHz), and anthropometric measurements (weight, height, BMI) were conducted according to standardized protocols. T-tests or Mann-Whitney-U-test were used for pairwise comparisons. In BIVA analysis, statistically significant differences between the mean vectors were determined with the Hotelling's T²-test for vector analysis. **Results:** No significant differences in BMI were observed between the different groups, neither in males nor in females. All athlete males had a moderate or intense physical activity level, but several athlete females showed a light physical activity level. BIA showed that sedentary women had a higher fat-mass percentage than the athletes (31.9% vs. 24.3%). This finding was not found in men. As expected, BIVA classified correctly the subjects depending on the sports practice, especially in females. **Conclusion:** The study suggests an association between the sports practice and the fat-mass percentage; however, it is not possible to establish a clear association, given the small sample size.

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P-416: APPLICATION OF BIOIMPEDANCE ANALYSIS IN A GROUP OF INSTITUTIONALIZED ELDERLY

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Introduction: Aging is associated with biopsychosocial changes that make the elderly a vulnerable group. Prevention, detection and treatment of malnutrition (MN) at an early stage help to improve the quality of life of older people. The nutritional assessment, including the body composition (BC) analysis is a basic tool for this purpose. **Objective:** To compare the body composition assessed by bioelectrical impedance analysis depending on the nutritional cataloging established with the body mass index (BMI) in a group of institutionalized elderly. **Methods:** Cross-sectional study in a sample of 38 institutionalized elderly. Nutritional assessment was performed following the standard protocol SENPE/SEGG. BC was estimated by conventional and vector bioelectrical impedance analysis (i.e., BIA and BIVA). Differences in BC were analyzed using T-test and ANOVA, or their corresponding nonparametric tests. To compare the BIVA between established subgroups according to nutritional cataloging Hotelling T²-test was used. Statistical significance was achieved at p < 0.05. **Results:** According to the BMI, the study sample had normal weight (average BMI: 26.4 kg/m²), although women had a higher BMI than men (28.9 vs. 25.5 kg/m²). However, according to the waist circumference values, abdominal obesity was detected in 60.7% of men and 80% of women. With conventional BIA high values of fat-mass (FM) and slightly depleted skeletal-muscle-mass (SMM) were observed (FM index Z-score: 0.56; SMM index Z-score: -0.43), which is compatible with a situation of sarcopenic obesity. Moreover, the results are consistent with BIVA: all individual impedance vectors were placed on the right of the major axis of the tolerance ellipses, thus reflecting body cell mass depletion in all subjects, regardless of BMI cataloging. **Conclusions:** BIVA detects changes in body compartments in institutionalized elderly that are not identified by the most widely used nutritional indicators in clinical practice, such as BMI, waist circumference and the estimates of body composition with BIA.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-417: FEASIBILITY OF COMMERCIAL MEAL REPLACEMENT PRODUCTS PRIOR TO ELECTIVE SURGERY IN OBESE PATIENTS: A SYSTEMATIC REVIEW

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Introduction: Increasing numbers of obese patients are presenting for elective surgical procedures. Preoperative weight loss interventions may assist to reduce physical barriers to surgery and related risks. Commercial meal replacement products offer a simplified, structured program that may enhance adherence and achieve rapid weight loss whilst maintaining nutritional adequacy. This systematic review aims to assess the feasibility and effectiveness of using meal replacements preoperatively to improve surgical outcomes for obese patients. **Methods:** PRISMA guidelines were used to guide the search and review processes. Electronic databases (PubMed, Medline, Cinahl, Cochrane Library) were searched for English language articles between January 1990 and March 2015 using a pre-defined protocol. Two reviewers used defined selection criteria and data extraction templates. Each study was assessed for limitations and risk of bias. **Results:** 15 studies (942 participants including 351 controls) were included, 13 studies (n=750) in bariatric patients. Adverse effects and dropout rates were minimal. Ten out of 14 studies achieved at least 5% weight loss. Six of six studies reporting on liver volume achieved at least 10% reduction. However, the endpoints for perioperative risks and outcomes were too varied to support a definitive risk benefit. **Conclusions, discussion and/or practical application:** Commercial meal replacements are feasible to implement and have minimal side effects for the facilitation of weight loss and liver shrinkage in free-living obese outpatients awaiting elective surgery. However, an actual reduction in surgical risk is unclear due to the lack of common surgical endpoints and the small number of studies conducted in non-bariatric surgery patients. Further research is required before these interventions can be generalised to a wider surgical population.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-418: THE EFFECT OF DIETARY SELENIUM ADICTION ON ANTIOXIDATIVE FACTORS IN EXPERIMENTAL RATS

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Introduction: Selenium(Se) is a trace mineral that is essential to good human and animal health mostly because of its antioxidant activity and the role in the balance of several hormones. Se is incorporated into proteins and various organoselenium compounds differing in their biological activity. Oilseed rape (*Brassica napus* L.) is an important crop for biofuel production and extracted meal from the seeds can be used in animal diets, where it can replace imported soybean meal. The project follows in complex selenium uptake and speciation in whole plant and seed of oilseed rape after Se biofortification. Subsequently, uptake and transformations of Se compounds in rat organism are monitored. Various biochemical and physiological properties of the animals were investigated to optimize Se uptake via the experimental diet. We used also combination of selenium with vitamin E in rat diets. **Methods:** Two different strains of Wistar and SHR rat were used as an experimental model. The content of selenium and selected heavy metals in liver of experimental animals was determined by atomic absorption spectrophotometry. The activities of selected selenoenzymes (glutathione peroxidase and thioredoxin reductase) and other antioxidative enzymes were measured spectrophotometrically in plasma, liver extracts and erythrocyte lysates of rats that were fed with the diet containing different portions of oilseed meal. **Results:** Catalase exhibited decreasing activity in erythrocytes, while increasing activity in plasma. Glutathione peroxidase showed decreasing activity in plasma. Thioredoxin reductase had increasing activity in plasma. Glutathione reductase exhibited increasing activity both in plasma and liver. Glutathione S-transferase showed the biggest differences among groups and its activity was increasing in plasma and even more in erythrocytes. **Conclusions, discussion and/or practical application:** The influence of genetic background on antioxidative activities would be discussed.

The selected antioxidative enzymes, first of all glutathione S-transferase, were affected by selenium and vitamin E added to the diet.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-419: FOLATE DEFICIENCY IS ASSOCIATED WITH METABOLIC DISTURBANCES IN SPONTANEOUSLY HYPERTENSIVE RATS

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Introduction: The role of folate deficiency and associated hyperhomocysteinemia in the pathogenesis of metabolic syndrome is not fully established. **Methods:** In the current studies, we analyzed the role of folate deficiency in pathogenesis of the metabolic syndrome in the spontaneously hypertensive rat (SHR) by using dietary and genetic approaches. Metabolic traits were assessed in SHR/Ola rats fed either folate deficient or control diet. **Results:** Compared to SHR fed a folate replete diet, SHR fed a folate deficient diet showed significantly reduced serum folate and urinary folate excretion together with a near 3 fold increase in plasma total homocysteine concentration, ectopic fat accumulation in liver and impaired glucose tolerance. In addition, low folate diet was accompanied by significantly reduced activity of antioxidant enzymes and increased concentrations of lipoperoxidation products in liver, renal cortex and heart. Using linkage analysis in BXH/HXB recombinant in bred strains, gene expression and sequencing studies, and *in vivo* functional transgenic rescue experiments, we found that in the SHR model, genetically determined reductions in renal expression of Fcbr1 (Folate receptor 1) gene may be contributing to decreased renal tubular reabsorption of folate, reduced plasma folate levels, increased plasma levels of cysteine, and consequent disturbances in lipid and glucose metabolism. **Conclusions:** Thus, variants in Fcbr1 may be contributing to genetic risk for features of the metabolic syndrome in the SHR strain. These findings raise the possibility that both dietary or genetically caused folate deficiency may contribute to the pathogenesis of common metabolic disturbances associated with increased risk for diabetes and cardiovascular disease.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-420: THE SUN EXPOSURE AND VITAMIN D SUPPLEMENTATION (SEDS) STUDY; PRELIMINARY UPDATE

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Introduction: Adults in Australia are at risk of developing skin cancer, but vitamin D insufficiency is widespread. Limited evidence for the management of mild vitamin D insufficiency exists and it is unknown whether sun exposure has beneficial effects beyond vitamin D synthesis. Many studies have implicated vitamin D insufficiency as a risk factor for diseases including rickets, cardiovascular disease, autoimmune disease, cancer, and diabetes. Although low vitamin D is associated with chronic diseases, vitamin D supplementation studies have not found that supplementation reduces the disease risk. The Sun Exposure and Vitamin D Supplementation (SEDS) Study aims to determine the effectiveness of sun exposure compared with vitamin D supplementation for the management of vitamin D insufficiency, and to investigate whether these strategies differentially affect markers of immune and cardio-metabolic function. **Methods:** SEDS will recruit ~1,000 participants and randomize them to one of four arms. Participants receive either 600 or 2000 IU/d vitamin D3 or placebo, plus guidance on one of two patterns of sun exposure for twelve months. Eligibility includes 18-64y, a recent 25(OH)D 40-60 nmol/L, and Fitzpatrick skin type 2-4. Recruitment methods include medical practitioner referrals and nationwide mail-outs to individuals with a recent vitamin

D test. Intention-to-treat analyses will be used to assess the effect of the intervention on serum 25(OH)D and other blood markers. **Results:** 1,560 expressions of interest have been received, 249 participants have been randomised, 54 participants have completed the study, and 17 have withdrawn. **Conclusions:** Participant recruitment has been challenging. A range of strategies were developed to maintain relationships with medical practitioners, and we used a commercial recruitment company. Recruitment will continue, as SEDS has significant public health implications for the development of sun exposure advice and the management of mild vitamin D insufficiency.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-421: ADHERENCE TO A MEDITERRANEAN DIET (MEDDIET) RESULTS IN IMPROVED CARDIOMETABOLIC HEALTH MEASURES AND MAINTAINED COGNITIVE PERFORMANCE IN OLDER AUSTRALIANS; RESULTS FROM THE MEDITERRANEAN DIET FOR COGNITION AND CARDIOVASCULAR HEALTH IN THE ELDERLY (MEDLEY) TRIAL

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Introduction: The MedLey study investigated whether following a MedDiet for 6 months would improve cardiometabolic health and cognitive performance in older Australian adults compared to a habitual diet (control) group. **Methods:** 166 men and women aged 71±5yrs were randomly allocated to a habitual diet (n=81) or a MedDiet (n=85). Adherence was assessed using a 15-point MedDiet adherence score (higher scores=greater adherence) based on weighed food records. Outcomes measured at 0, 3 and 6 months included fasting plasma lipids, C-reactive protein (CRP), F2-isoprostanes, glucose, insulin, blood pressure (BP) and cognitive performance. Linear mixed effects models were used to compare groups over time. **Results:** MedDiet adherence score at baseline was 7 (medium) for both groups. The MedDiet score significantly increased in the MedDiet group to high adherence at 6 months relative to the control which did not change (P <0.001). In the MedDiet group, after adjustment for baseline values, mean (SEM) triglyceride concentrations were significantly lower at 3 (-0.149 (0.04)mmol/L, P<0.001) and 6 months (-0.094 (0.04)mmol/L, P<0.05), and F2-isoprostane concentrations were significantly lower at 3 (-103 (25.9)pmol/L, P<0.001) and 6 months (-65.4 (26.4), pmol/L, P=0.013) compared to the HabDiet group. Plasma glucose and total cholesterol decreased at 6 (P=0.009) and 3 months (P=0.003), respectively, in the MedDiet group but was not significantly different to the HabDiet. The MedDiet group had a significantly greater reduction in SBP than the HabDiet group at 3 months (P=0.031 for interaction). There was no difference between groups in cognitive performance (memory, executive function, psychomotor control) over time. **Conclusion:** Increased adherence to the MedDiet resulted in improvements in cardiometabolic health markers in comparison with habitual diet. Cognitive performance was maintained in both dietary groups throughout the study. This dietary pattern could be a feasible dietetic approach for improving cardiometabolic health outcomes in Australia.

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P-543: NUTRIENT INTAKE AND DIETARY PATTERN OF SPANISH VEGANS AND VEGETARIANS

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Introduction: Vegetarianism has raised a lot of interest since several findings relate vegetarian dietary patterns with an inverse association with lower prevalence chronic diseases. Epidemiological studies have provided compelling evidence that well-balanced vegetarian diets are nutritionally adequate. Nevertheless, concerns regarding the completeness of a more restrictive vegan diet still remain. To the best of our knowledge no available data about dietary pattern and nutrient intake

among Spanish vegans and vegetarians exists. The aim of this work was to study and compare food and nutrient intake between vegans and vegetarians. **Methods:** A cross-sectional food consumption was conducted in 102 participants. Information on usual food intake over the previous year was obtained with a 213-item semiquantitative food frequency questionnaire (FFQ) that was developed based on a previously validated FFQ in Spain. Extra items that are typically used by vegans and vegetarians were added to the validated FFQ to assure that other nutrient sources of vegans/vegetarians were assessed. Food and nutrient data were adjusted by gender and total energy intake using the residual method according Willet *et al.* in epidemiologic studies. **Results:** As expected, dairy and eggs intake was significantly higher as compared with vegans. Also, vegetarians showed a significantly higher consumption of snacks and chips. On the other hand, nuts, seeds and meat analogs products intake was significantly higher in vegans. As expected, cholesterol intake was higher among vegetarians. Vitamin B1 and B3 intake was significantly higher in vegans. No significant differences between groups were observed in energy or macronutrient intake. Also, no significant differences were seen in the compliance with Dietary Reference Intakes between groups, showing both groups a lower risk of inadequate nutrient intake. **Conclusions:** Although vegans and vegetarians showed some significant differences in food intake, similar energy and nutrient intake were observed probably due to alternative and enriched foods consumed by vegans.

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P-547: INCREASING ADHERENCE OF CONSUMERS TO DIET & LIFESTYLE CHANGES TO LOWER (LDL) CHOLESTEROL: THE ACT STUDY

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Introduction: The ACT study evaluated the effectiveness and feasibility of providing advice, by GP's and dieticians, on consumer adherence to long lasting diet & lifestyle changes, including the consumption of foods with added plant sterols (PS), in order to lower plasma cholesterol levels. **Methods:** A parallel, randomized dietary intervention study was designed enrolling 100 individuals, 45-70-yrs-old, with moderately elevated plasma cholesterol levels, who were not on lipid-lowering medication. 50 subjects were followed by dietitians (Intervention group, IG) with six face-to-face behavioral therapy sessions on a weekly basis (regarding physical activity (PA) and healthy eating including fruit, vegetable and whole grain consumption) while the other 50 subjects (Control group, CG) were given standard advice from physicians in one session. Both groups were asked to consume foods with added PS (3 servings/day) for 6 weeks. Intervention period was followed by a 6-week follow-up period under real life conditions, with no guidance for both groups. Questionnaires were completed to assess PA and perception of effectiveness and feasibility of provided advice, at the beginning, at 6th and 12th weeks. **Results:** When comparing the Intervention vs. Control groups for PA levels (according to IPAQ), at weeks 6 and 12, the percentage of subjects in the IG who were moderately/highly physically active, was significantly higher than in the CG (44.7 vs. 13.6% and 45.7 vs. 17.8%, respectively, P=0.001, P=0.004). Regarding the perception about the effectiveness and feasibility of advice, a significant higher percentage of subjects in the IG reported them as "very effective" and "very easy to adhere" compared to the CG, both at weeks 6 and 12. **Conclusions:** dietary advice given by a dietitian resulted in a better adherence to diet & lifestyle changes and higher PA levels compared to the common standard advice from a physician. This more pronounced effect even remained in the 6 week follow-up real-life period.

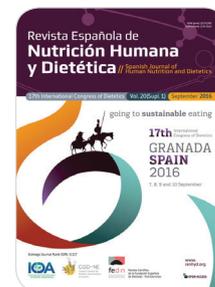
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POSTER COMMUNICATIONS



TEACHING, EDUCATION AND TRAINING OF THE DIETITIAN-NUTRITIONIST

P-422: A CROSS COMPARATIVE STUDY TO EXAMINE BELIEFS AND ATTITUDES REGARDING DISORDERED EATING BETWEEN NUTRITION AND SOCIAL WORK STUDENTS

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Introduction: The prevalence of disordered eating is increasing for Canadians with the complexity of cases requiring an inter-professional approach. However, little is known regarding the attitudes and beliefs are in relation to eating and food among food and nutrition and social work learners. To determine differences and similarities between undergraduate food and nutrition (FN) and social work (SW) students regarding their attitudes and beliefs about disordered eating. **Methods:** Framed by a mixed methods approach, participants completed a self-administered, validated Eating Attitudes Questionnaire (EAT-26) followed by student facilitator led focus groups. Participants examined 33 photographs of 11 different food portions which were displayed as a small, normal and large portion and asked to categorize these into three respective groups followed by their rationale which was captured digitally and transcribed. **Results:** Responses to the EAT-26 expressed as rarely/never indicated that: 100% FN compared to 57% SW [$p=0.003$] vomited after eating; 81% FN vs. 36% SW [$p=0.025$] binge ate and were unable to stop; 70% FN vs. 0% of SW [$p=0.001$] were preoccupied with desire to be thinner; and 73% FN compared to 18% SW [$p=0.031$] engaged in dieting behavior. Of interest there were only differences between the two groups and no similarities. Internal tension emerged from the responses by the FN students between the portion size they wanted and that which was clinically correct. Whereas, tension was identified within SW responses that centered upon eating a portion size that was determined externally (i.e., family or restaurant). FN students responded used clinical language that distanced them from a personal location compared to SW students who spoke from a very personal standpoint. **Conclusions, discussion and/or practical application:** There are no similar studies documented. Results from this study will inform future *curriculum* by supporting more competency based and inter-professional content for food and nutrition and social work students.

COMPETING INTERESTS: The authors of this document can confirm there are no conflicts of interests.

P-423: AN EXPLORATION OF THE KNOWLEDGE AND SKILLS CRITICAL CARE DIETITIANS' EXPECT OF A COMPETENT NON-SPECIALIST DIETITIAN WORKING IN CRITICAL CARE: A MIXED METHODS STUDY

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Introduction: National UK guidelines recommend that specialist dietitians are employed to lead dietetic services within a critical care unit and dietetic standards define the expectations of their role. However, no standards exist for non-specialist dietitians working in critical care. This sequential, two-phase mixed-method study aimed to explore the knowledge and skills that critical care dietitians(CCD) expect non-specialist dietitians to have when working in critical care. **Methods:** Recruitment was from the British Dietetic Association's specialist group, Dietitians in Critical Care(DCC). In phase one, qualitative data were obtained from semi-structured audio-recorded telephone interviews with two highly specialist CCDs. The transcripts from the interviews were analysed using applied thematic analysis and the results used to develop an online survey. In phase two, all DCC members (n=209), comprising both specialist and non-specialist dietitians, were invited to complete the survey which was then analysed descriptively. **Results:** Fifteen dietitians completed the online survey including nine specialists and six non-specialists; 80% of these had up to five years' experience of working in critical care. Most respondents expected non-specialists to have completed in-house shadowing of specialist CCD (93%) and to have attended formal study days (87%). Only 44% of the non-specialist dietitians worked with specialists within their critical care unit so most had limited opportunities to learn from colleagues. A competency-based training programme was deemed the most appropriate way of training non-specialist CCDs (87%). All participants agreed that skill competency should include using ventilation data to calculate requirements, ability to interpret physiology and biochemistry, formulate enteral and parenteral regimes and to communicate effectively with conscious patients. **Conclusions, discussion and/or practical application:** The participants in this study identified the need for a competency-based training programme for non-specialist dietitians working in critical care and agreed specific skill competencies that should be included.

COMPETING INTERESTS: The presenting author declares their membership of the DCC specialist group. However, no funding was received to undertake this research.

P-424: DEFINING PROFESSIONALISM IN NUTRITION AND DIETETICS: EXPLORING THE SCHOLARLY DISCOURSE USING A SYSTEMATIC LITERATURE REVIEW

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Introduction: Professionalism has been a major topic of interest in medical education with definitions and assessment strategies proposed in the literature. There is consensus that whilst practicing professionally is essential in modern healthcare, professionalism remains difficult to define. Professionalism is a key component of many national dietetic association standards and competencies for practice yet is relatively uncharted in the scholarly literature. The aim of this study was to explore how professionalism is defined in nutrition and dietetics using a systematic literature review. **Methods:** A search of databases ERIC, CINAHL, PsychINFO, Scopus, Ovid Medline and Pubmed was performed in August 2015. Eligible studies included English language studies published from 2000 to 2015, which used research methodologies to explore the concept of professionalism in nutrition and/or dietetics. Eligible studies were assessed for quality and extracted data analysed using thematic approaches. **Results:** The search identified 92 articles after duplicates were removed. Five eligible studies were identified. Thematic analysis revealed three key themes in defining professionalism: (i) Values and qualities (ii) Approach to practice and (iii) Interactions with others. Studies published more recently introduced concepts of cultural competence, self-awareness, emotional intelligence and marketing skills; aspects which were not identified in earlier literature. The definition of professionalism differed depending on the experience of dietitians and the context of their practice. **Conclusions, discussion and/or practical application:** This review identified key elements of professionalism in nutrition and dietetics. Professionalism is a dynamic concept which changes according to the experience of the dietitian and

the operational context. Professionalism must be embedded into the training and education of nutrition/dietetic professionals and their continual competency development as these are integral to the development of professionalism and excellence.

COMPETING INTERESTS: The authors of this document can confirm there are no conflicts of interests.

P-426: FIRST STEPS IN RETHINKING COMPETENCY-BASED ASSESSMENT

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Introduction: Credible and dependable assessment, linked to entry-level competency standards, is an essential part of dietetic education internationally. This study sought to engage the dietetics education community in exploring the challenges for, and how best to support, assessment of entry-level competence of dietitians. **Methods:** Qualitative data from focus groups with university-affiliated academics and practitioners across Australia, illuminated these challenges. Twelve focus groups were conducted (10 face-to-face; 2 via videoconference) involving five to twelve participants, with both academics and practitioners in each group (mean 7±3 participants respectively in total). Participants were questioned on ways in which standards were applied, and in particular, attributes that described successful, unsuccessful, and borderline students for achieving competency. Data was transcribed verbatim and analysed using thematic analysis. **Results:** Findings revealed that current approaches to assessment are based on historical antecedents and individual assessor's experience or familiarity with long-standing methods. These methods are limited in their ability to support a student's reflection on their own capabilities. Among practitioners, there were no shared 'mental models' of what entry-level competence 'looks like'. Professionalism was identified as one of the most difficult competency areas to assess. Assessors were also uncomfortable with the subjectivity implicit in assessment. **Conclusions:** Students are not in control of their assessment, or at the centre of the learning process, and their assessment is constrained by assessors' previous experiences. This work builds the first steps in re-thinking assessment, to put students at the centre to progress their own learning.

COMPETING INTERESTS: The authors of this document can confirm there are no conflicts of interests. Funding: Support for this activity was provided by the Australian Learning and Teaching Council (ALTC) Ltd., an initiative of the Australian Government Department of Education, Employment and Workplace Relations. The views expressed in this activity do not necessarily reflect the view of the ALTC or the Australian Government.

P-427: VALIDATION TOOL FOR A NUTRITIONAL COACHING INTERVENTION

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Introduction: There is a growing literature on nutritional coaching, however, in most publications it is difficult to detect if the intervention applied is actually coaching. The high variability of previous training among professionals working from this approach leads to a lack of rigor for the identification of coaching interventions. **Objectives and target population:** To validate a self-assessment tool measuring coaching skills by Delphi method for better reliability of coaching interventions. The self-assessment tool consists on a 30 items questionnaire that focus on communication skills and coaching strategies as setting realistic and achievable objectives, showing confidence on patients, assessing the benefits of change, helping patients connect with their values and empowering them. **Previous theories and investigations:** There are no validated tools to assess the reliability of nutritional coaching interventions. **Intervention:** 30 certified nutritionists trained in nutritional coaching will held 2 nutritional coaching sessions each, in which audio will be recorded (with permission of the patient) and self-assessment tool will be applied by the nutritionist. The nutritionists will not listen to his own recordings until completing the questionnaire to minimize bias. **Evaluation:** The research team, with university education in the field of health coaching, will compare the recordings and questionnaires, getting a percentage of reliability of the questionnaires by statistical analysis. **Results:** It is

expected to get a high percentage of coincidence, and thus reliability, in the results of self-assessment questionnaire conducted by the nutritionists trained in coaching and expert assessment based on audio recordings. **Conclusions of authors and discussion:** Having a validated tool to be applied in nutritional coaching interventions will serve coaching researchers in the field of health to perform intervention studies ensuring rigorous implementation of coaching. Similarly, this tool will also be useful for nutritionists' own work under the nutrition coaching approach to assess what skills are well developed and which ones should be improved.

COMPETING INTERESTS: The authors of this communication declare that they have no conflict of interest.

P-428: NUTRITION FOCUSED PHYSICAL EXAMINATION KNOWLEDGE SCORE CHANGES FOLLOWING COMPLETION OF A COMPUTER-ASSISTED INSTRUCTION MODULE AMONG AN INTERNATIONAL COHORT OF DIETETIC STUDENTS

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Introduction: Lack of education and training are barriers to use of nutrition focused physical examination(NFPE). Computer-assisted instruction(CAI) can be used for NFPE education globally. The purpose of this study was to assess changes in knowledge scores of an international cohort of dietetic students enrolled in an online NFPE CAI module. We hypothesized that there would be a significant increase in scores from before to after completion of the CAI for students in each school. **Methods:** Participants from the Rutgers University Coordinated Program in Dietetics in the United States (U.S.) and Tel-Hai College in Israel enrolled in an eight-week online NFPE CAI module. The module included live virtual classroom sessions, multi-media synchronous and asynchronous presentations, online discussion forums, and case studies. Changes in pre/post-test scores using a 48-item multiple-choice exam given before and after completion of the module were analyzed retrospectively using Wilcoxon signed rank tests. **Results:** Of the 21 U.S. participants who completed the pre- and post-tests, there were significant increases in knowledge scores from a \bar{x} of 29.2 (SD=4.47) at pre-test to a \bar{x} of 39.4 (SD=2.91) at post-test ($p<0.001$). There were significant increases in scores for the 26 Israeli participants from a \bar{x} of 24.0 (SD=4.37) on the pre-test to \bar{x} of 47.3 on the post-test (SD=1.15) ($p<0.001$). Post-test scores were higher for extra- and intra-oral and dysphagia screening content areas compared to introduction to NFPE and malnutrition screening areas ($p<0.001$). Similarly, there was a significant increase in scores for the 26 students from Israel from 24.0 (SD=4.37) at pre-test to 47.3 (SD=4.37) at post-test ($p<0.001$). **Conclusions, discussion and/or practical application:** All participants enrolled in this CAI on NFPE exhibited increased knowledge scores from before to after completion of the module. The findings support the need for larger controlled studies to test the effectiveness of using CAI to provide NFPE education and training to dietetic students. This research was funded by the Rutgers University Centers for Global Advancement and International Affairs.

COMPETING INTERESTS: The authors confirm there are no conflicts of interest.

P-429: A COMBINED MASTER'S DEGREE AND DIETETIC INTERNSHIP IN A USA COLLEGE WITH PREDOMINANTLY HISPANIC POPULATION: ALLEVIATING THE REGISTERED DIETITIAN NUTRITIONIST SHORTAGE

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Introduction: An increase of chronic diseases requires more registered dietitian nutritionists(RDNs). The USA-Mexico border cities of Las Cruces, NM, and El Paso, Texas (TX), register a shortage of RDNs in the area, especially those who are bilingual. New Mexico State University(NMSU) is considered predominantly Hispanic (49%), and one of the top universities serving this minority in the USA. NMSU has developed a combined master's degree with a dietetic internship program to alleviate the

RDN shortage. **Objectives and target population:** To increase the number of graduates who will be hired as RDNs, targeting undergraduate dietetic students, and providing entry-level dietetic professionals to the region. Previous theories and investigations: According to the USA Accreditation Council for Education in Nutrition and Dietetics(ACEND), during 2010, only 52% of internship applicants nationwide secured an internship slot. Four percent of all RDNs in the USA are Hispanic. **Intervention:** NMSU developed a combined master's degree with a dietetic internship program to increase the number of internship slots and RDNs in the area. **Evaluation:** Dietetic interns completing the NMSU Dietetic Internship(DI) program are eligible to take the Commission on Dietetic Registration(CDR) USA national examination for RDNs. Goal: $\geq 80\%$ pass rate for all test takers. **Results:** Three classes have graduated, 100% (N=17) have completed a master's degree, 88% (N=15) have passed the RDN exam; 59% (N=9) have reached employment within the NM-EI Paso area. Ten out of thirty interns are Hispanic. **Conclusions of authors and discussion:** The NMSU DI has been successful, as all the alumni have received a master's degree and 88% have passed the RDN exam, addressing the shortage of RDNs in the community. NMSU DI is considered to receive full accreditation in 2016. A major nationwide barrier to increasing the number of interns is the shortage of preceptors who take interns for Supervised Practice Rotations. More NMSU DI graduates may increase the number of preceptors in the future.

COMPETING INTERESTS: The authors confirm there are no conflicts of interest.

P-430: BACHELOR OF SCIENCE DIETETICS: DEVELOPMENT AND IMPLEMENTATION OF THE STUDY PROGRAM AT UNIVERSITY OF APPLIED SCIENCES FULDA

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Introduction: The international standard of Dietetic education is a bachelor degree. In Germany Dietitians are considered health professionals. This health profession and the educational programs are protected by law (DiätAssG). Only special types of state licensed schools (Berufsfachschulen für Diätassistenten) are allowed to educate Dietitians. The three year program finishes with a state examination, graduates obtain the title "Diätassistent/in" (Dietitian). The objective was to raise their professional health status to an academic level and create the first dual study program in Dietetics at University of Applied Sciences in Fulda by integrating the existing German educational program. **Methods:** According to legal and structural preconditions and by participation of all stakeholders a process-model of a dual study program Dietetics was developed. Module structure and modules were created followed by development of an equivalence-acceptance procedure for global crediting to admit the educational program "Diätassistentenz" on higher education. **Results:** Under participation of all stakeholders an acceptable concept was developed. The dual study program Dietetics has been successfully undergone the procedure of accreditation in August 2013 and started in winter semester 2013/14 at University of Applied Sciences. Characteristics of the dual study program Dietetics: 180 ECTS distributed on 9 semester; dual – educational program and Bachelor program temporal and contentual intermeshed; 45 ECTS of the educational program account as equivalent to the Bachelor program; communication of theoretical principles (methodology and methods of Dietetics); competence level: to apply and to reflect; applied study program with integrated; practical experience (modules e.g. study project, case studies, internship), scientific working and good scientific practices; bachelor thesis; co-operation partners: five state licensed schools. **Conclusions:** A standard of an educational program in Dietetics at academic level was created which generates attention for the development of the discipline Dietetics in Germany. This is underlined by an increasing demand of the dual study program.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-431: EVOLUTION OF DIETETIC EDUCATION AND DIETITIAN'S ACT IN TAIWAN

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Introduction: The registration of dietitians in Taiwan has taken 5 decades to achieve the current status. The purpose of this paper is an overview of the strength and weakness of the progress. **Methods:** Information of the curriculum and training programs of universities in Taiwan are collected and compared with the Standard of Dietetic Education adopted by the

International Confederation of Dietetic Associations(ICDA), and also Academy of Nutrition and Dietetics(AND). The information of registration examination and Dietitian's Act is obtained from the Examination Yuan and Ministry of Health & Welfare, respectively. **Result:** There are 20 universities offering nutrition courses in Taiwan. Before year 2000, either 2- or 3-yrs junior college diploma or 4-yrs bachelor degree holders, with or without internship, could all sit in for registration examination. After continuous lobby for upgrading the qualification, now the education and training of dietitians are transformed to 3 stages: 4-yrs bachelor education at university level, internship at undergraduate year, and 2-yrs post graduate year practical training in teaching hospitals. According to Dietitian's Act passed in 1984, all eligible candidates must pass the national examination and also get licence from the local health department to practice. Although the internship will be increased to 504 hours starting from 2016, meeting the international standard of ICDA, but it is much less than that of AND and some other Asian countries. **Conclusions, discussion and /or practical application:** In Taiwan, the strength of dietetic professionalism is the support and protection by legislation of the Dietitian's Act. However, the rather short period of internship can hardly prepare a graduate to become a competent entry-level dietitian. The 2-yrs post graduate year training is meant to build the dietetic expertise in depth, should not be regarded as the replacement of internship. The internship program needs further improvement.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-432: FROM CONCEPT TO CANDIDACY TO ACCREDITATION: THE LAUNCH OF A NEW MASTER'S DEGREE DIETETIC INTERNSHIP IN THE UNITED STATES

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Introduction: Changes to dietetic education in the United States (USA) are being considered. The shortage of dietetic internships(DI) is of concern. **Objectives and target population:** To address the shortage of DIs, a new program was founded. To position this DI with education models being considered, it was designed as master's requiring. **Previous theories and investigations:** The USA Commission on Dietetic Registration (CDR) has mandated that newly credentialed Registered Dietitians/Nutritionists (RDNs) must have a master's degree by the year 2024. The USA Accreditation Council on Education in Nutrition and Dietetics (ACEND) is considering master's competencies for education programs for entry-level RDNs. **Intervention(s):** A master's degree requiring DI was conceptualized at New Mexico State University (NMSU). A candidacy self-study was submitted in 2010 and site-visit occurred in 2011. ACEND granted candidacy status to the NMSU DI and the first class began in August 2011. Dietetic interns are required to complete the master's degree and a minimum of 1200 hours of supervised practice. A self-study in 2014 and site visit in 2015 were conducted for initial accreditation status. **Evaluation:** Accreditation status is granted by ACEND. The pass rate of DI graduates on the RDN examination and conferring of master's degrees are important outcome measures. **Results:** Of the first three classes of dietetic interns, all had earned a master's degree at program completion (N=17) and 88% (N=15) had passed the RDN exam within the first year of attempting. Of NMSU dietetic internship graduates, 53% (N=9) had found employment in New Mexico and west Texas. The classes of 2014-2016 and 2015-2017 are underway. **Conclusions of authors and discussion:** A DI integrating master's degree with supervised practice aligns with CDR future requirements and potential new education models in the USA, and has assisted in alleviating an RDN shortage in a section of the southwestern region of the USA.

COMPETING INTERESTS: The authors confirm there is no conflict of interest.



P-433: THE LEARNING OUTCOMES OF SIMULATED PATIENT PRACTICE WITH UNDERGRADUATES ON A REGISTERED DIETICIAN TRAINING COURSE IN EDUCATION ON NUTRITION SUPPORT FOR FRAIL ELDERLY LIVING IN THE COMMUNITY

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Introduction: As the average age in Japan and elsewhere increases, welfare facility-based care for the infirm elderly is becoming increasingly stretched. One solution may be to provide home-based care, but dietitians would require appropriate training. This study examined the learning outcomes of simulation-based training for undergraduate dietitians, assuming the null hypothesis that no significant learning would occur. **Methods:** Convenience sampling recruited 62 volunteer undergraduates studying in Japan to become registered dietitians. After obtaining their informed consent, they completed a pre-treatment questionnaire containing 25 five-point Likert scale items divided in to seven knowledge and practical skills domains relating to at-home care for the infirm elderly. Participants were then divided in to three equally sized groups based upon their questionnaires' total scores: low-scoring (low ability), middle-scoring (medium ability) and high-scoring (high ability). They then all participated in three different simulated home-care scenarios in small groups, offering one-to-one nutrition counselling to a simulated patient (SP). After each simulation the SP provided feedback to the dietitian. Immediately after all three simulations were completed the questionnaire was re-administered to measure the activity's learning outcomes. **Results:** The low and medium groups' average total scores increased significantly in four and five of the seven domains respectively ($p < 0.01-0.05$), suggesting perceived improvements in those areas. In the high group, the average score in one domain decreased significantly ($p < 0.05$) and other average scores showed no significant changes, although some participants indicated a better understanding of what they needed to improve. **Conclusions, discussion and/or practical application:** The simulation activity used here can help to develop undergraduate dietitians' knowledge and practical skills or awareness of those needed to home-care the infirm elderly. Such training can help to meet the increasing demand for trained dietitians to relieve the burden on welfare facility-based care resources. Further research in to such simulations might also incorporate trainer assessment to further the activity's educational objectives.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-434: WHAT INFLUENCE DO PROFESSIONAL DEVELOPMENT WEBINARS HAVE ON THE PRACTICE OF DIETITIANS?

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Introduction: Advances in nutrition and medical research mean that dietitians must continue learning at all stages of their career to remain current and achieve industry-mandated Continuing Professional Development (CPD). At the same time, online learning is becoming increasingly popular. We set out to investigate the effectiveness of Professional Development Webinars (PDW) on the respondent's professional practice (knowledge, skills, attitude, behaviour). **Methods:** We invited dietitians to participate in an anonymous internet-based survey. Potential respondents were solicited through a professional association email list as well as an independent nutrition newsletter. Participation was voluntary. **Results:** Three hundred and forty dietitians completed the questionnaire. Ninety percent of respondents had used webinars for professional development. Respondents most commonly used five to nine hours of webinars over the previous twelve months (39%). Ninety one percent agreed or strongly agreed that watching PDW improved their confidence as dietitians. Ninety two percent agreed or strongly agreed that watching PDW helped them reflect on their clinical practice. Seventy seven percent agreed or strongly agreed that watching PDW increased their awareness of current clinical practices. Seventy three percent agreed or strongly agreed watching PDW prompted them to make changes to their clinical practice. **Conclusions, discussion and/or practical application:** The vast majority of respondents accessed PDW. When they did, they clarified or increased their nutrition knowledge, improved their confidence, and reflected on their clinical practice. The information in this survey indicates that PDW have the potential to

provide practitioners with current clinical information which clarifies their knowledge, improves confidence and changes their practice.

COMPETING INTERESTS: Education in Nutrition hosts and distributes independent professional development webinars for dietitians.

P-435: EXERCISE ADDICTION AND THE RELATIONSHIP TO DISORDERED EATING ATTITUDES IN A SAMPLE OF AUSTRALIAN NUTRITION AND DIETETIC STUDENTS

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Introduction: Educators and professional bodies have previously expressed concerns about the issue of maladaptive behaviours, such as disordered eating, in individuals studying nutrition and dietetics. Another maladaptive behaviour that have been previously linked to disordered eating is exercise addiction, which have not been investigated in this population. Therefore, the aim of this research was to examine the prevalence of self-reported symptoms of exercise addiction in a sample of nutrition and dietetic (ND) students, and to explore correlations between exercise addiction, disordered eating attitudes and cognitive restraint in this sample. **Methods:** A total of 147 student volunteers (97 ND; 50 controls) completed four validated tools for assessment of exercise- and eating-related attitudes and behaviours: the Exercise Addiction Inventory (EAI), the International Physical Activity Questionnaire, the Eating Attitudes Test - 26, and the Three Factor Eating Questionnaire - R18. **Results:** Approximately 23% of ND students scored as at-risk of being addicted to exercise, whilst 95% demonstrated some symptoms of exercise addiction. The EAI scores did not vary between genders ($p=0.058$), albeit male ND participants reported greater amounts of exercise than females ($p=0.006$). In females, the scores for exercise addiction correlated with the amount of exercise ($r_s=0.43$, $p<0.00$), disordered eating attitudes ($r_s=0.31$, $p=0.006$), and cognitive restraint ($r_s=0.31$, $p=0.007$). **Conclusions, discussion and/or practical application:** Results of this study revealed a high prevalence of exercise addiction symptomology and correlation to maladaptive eating attitudes in ND students. These findings will be of interest to teaching and professional bodies involved with educating this population. Support programs devised to prevent and manage disordered behaviours, should not overlook the issue of exercise addiction.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-436: SLEEP MEDICINE AND NUTRITIONAL THERAPY: POINT OF CONTACT FOR CLINICAL SYNERGY

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Introduction: Clinical nutritionists engage in instituting healthy life-style among their patients by balancing metabolic-energetic needs with behavioral process over long duration, focusing on nutrition and physical activity. In spite of the mutual relationship between diet and sleep there is still no effective application that connects both disciplines as aspects of the clinical approach to lifestyle. There's also a lack of awareness to this among the patients themselves. From my perspective, the dietitian serves as an intersection and can be a leading factor in diagnostics and treatment in this area. **Objectives:** To propose a treatment protocol that combines the two disciplinary areas in a way that would maximize the effectiveness of the treatment and its results. **Methods:** 3 case studies: 1) A man who does shift work suffering from Sleep Apnea Syndrome. (OSA); 2) A boy with Asperger syndrome suffering from insomnia and is underweight; 3) A girl with morbid-obesity presenting symptoms of metabolic syndrome who sleeps 5 hours at night due to DSPS. **Results:** Case 1: I recommended a sleep-test and OSA was diagnosed treated by CPAP. Dietary counseling included constructing a daily routine that relates to night-shifts. After one month weight-loss was observed and an improvement in metabolic parameters. Case 2: Endocrinologist prescribed Melatonin and I also requested that a sleep-diary be kept along with appropriate nutritional guidelines. Case 3: A sleep routine was instituted with a gradual process of Phase-Advancement in addition to appropriate nutritional guidelines. Nutritional

treatment coordinated lifestyle (sleep, diet, activity) with metabolic condition. The weight change resulted from a balanced process rather than being the goal itself. **Conclusions, discussion and/or practical application:** Examples of the significant overlap between the two disciplines has been described. A preliminary protocol is offered for dietitians relating to the subject of sleep, thus creating a treatment synergy for each patient to the full extent of his metabolic needs.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-437: DIETETICS PRECEPTORS BELIEF ABOUT STUDENT MENTORING IN TRINIDAD AND TOBAGO

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Introduction: Dietitians preceptors play an essential role in the development of student future career. Studies show that preceptors are instrumental in evaluating learners, fostering critical thinking, implementing strategies to improve dietetics program and training techniques. However, no study has been conducted in the Caribbean regarding preceptor's belief about training students. The purpose of this study was to assess dietetics preceptors' belief about student mentoring in Trinidad and Tobago. **Methods:** A purposive sampling design was used to recruit dietitians in Trinidad and Tobago to participate in a qualitative study. Eligible criteria include dietitians working as preceptors for more than three years at public institutions that accommodate dietetic interns. Preceptors participated in a thirty minutes focus group that sought to understand preceptor's perception about fostering interns training. The interview guide questions were developed and piloted by a team of nutrition faculty from two universities. Each focus group was audio taped and transcribed verbatim. Grounded Theory techniques were used to identify emerging categories and subcategories. **Results:** A total of 30 dietitians and 1 nutritionist participated in the study. Twenty-eight (n=28) dietitians worked at the public Hospitals, one (n=1) private hospital and one (n=1) at the National Schools Dietary Services Limited. The preceptors' working experiences ranged from 3 to 35 years. The dietitian preceptors expressed three broad categories that impact students mentoring: 1) most students' interns lack the ability to incorporate theory in clinical settings; 2) student to preceptors mentoring ratio is too high and 3) limited spacing to effectively train and mentor students. **Conclusions, discussion and/or practical application:** The findings showed that preceptors are concerned about students' ability to meet the required competencies to perform as entry level dietitians. Mentoring and training should be continuous to enhance preceptor's skills for educating dietetic interns. More work is needed to understand how dietitians can assist students with theory in clinician settings.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-438: CHANGES IN KNOWLEDGE OF NUTRITION FOCUSED PHYSICAL EXAM OF THE OROFACIAL REGION AND DYSPHAGIA SCREENING OF ISRAEL MINISTRY OF HEALTH DIETITIANS FOLLOWING AN EDUCATION AND TRAINING PROGRAM

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Introduction: The integration of nutrition focused physical examination(NFPE) into nutrition care by dietitians has been slowly increasing globally. Essential to this integration is skill specific training and education of dietitians. The purpose of this research was to examine the change in knowledge of dietitians who completed a two-day training course on orofacial NFPE and dysphagia screening. Our hypothesis was that the dietitians' total knowledge score would increase significantly from pre to post training. **Methods:** A two-day training course on orofacial NFPE including dysphagia screening was conducted

in Tel Aviv, Israel, in February 2015 with Israel Ministry of Health (MOH) dietitians (n=60). A retrospective pre/post test design was used. To test our hypothesis, knowledge was assessed with a 28-item test administered before and after the two-day training. A paired T-test was used to examine the change in knowledge score from pre to post training. Independent samples T-tests were used to examine the relationship between the scores and prior training in NFPE. **Results:** For the 44 participants who completed the pre and post-tests, knowledge [\bar{x} =9.81 (SD=3.90) points] ($p<0.0001$) increased significantly from pre-test [\bar{x} score= 15.52 (SD=3.95)] to post-test [\bar{x} score= 25.34 (SD=2.11)]. Participants who had prior NFPE training scored higher on the pre-test [\bar{x} = 18.57 (SD=2.69)] than those without prior training [\bar{x} = 14.94 (SD=3.90)] ($p=0.024$). Although the overall change in score was significantly different between those with and without prior training ($p=0.047$), there was no significant difference in post-test scores between these two groups ($p=0.616$). **Conclusions, discussion and/or practical application:** Israel MOH dietitians who participated in training on orofacial NFPE and dysphagia screening demonstrated increased knowledge independent of any previous training which is consistent with prior research. Increased knowledge can lead to expanded NFPE practices however, future research with a control group is required to assess the direct effects of this training and impact on patient/client care.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-439: DEVELOPING A SYSTEMS BASED APPROACH TO COMPETENCY-BASED ASSESSMENT

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Introduction: Competency-based assessment is the evaluation of performance against defined standards. This work aimed to develop a programmatic approach to assessment within a newly developed post-graduate dietetics program. This approach aimed to provide a holistic evaluation process of student performance. **Methods:** An iterative approach was taken whereby the authors met on four occasions over three months and scrutinised each individual assessment task regarding its contribution to evidence of competence. Those that were considered competency-based tasks were included in the system and mapped together with competency standards, course and unit learning outcomes and teaching, learning and assessment approaches. Two focus group discussions were held with all dietetics academic staff (n=7), a purposive sample of placement educators (n=6) and a convenient sample of students (n=6) who had just completed all coursework requirements of the undergraduate dietetic degree and were eligible to enter the workforce. The focus groups were presented the systems map with the aim of ascertaining participants' views and feedback. Discussions were audio-recorded and documented and the data collected was used to further refine the map. **Results:** There was support for the usefulness of the systems map, in particular its ability to illustrate the role of simulated *versus* work-based assessments, enhance the emphasis on assessment of professionalism competencies and integrate assessment processes across a range of academic and work-based settings. Students in particular valued being able to see the link between assessment tasks and the competency standards. **Conclusions:** There is a need to evaluate the role of this system map in transforming assessment practice.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-441: DEVELOPMENT OF A DIETETIC RURAL GENERALIST PATHWAY

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Introduction: "Generalist" is a term often used to describe dietetic practice in rural and remote settings. However the term is not well understood, nor is it well described. A project was undertaken to identify and describe the key components of a rural generalist pathway for a number of allied health professions, including dietetics. This included description of requisite workforce structures to grow employment opportunities in rural areas, and creation of a framework to guide the development of a structured rural generalist education program focussed on contemporary rural practice capabilities. **Methods:** This project built on work previously completed by jurisdiction health services and regional training networks. A structured education framework for dietetics was developed with input from a range of stakeholders. The preliminary framework was verified by an external

expert panel. Existing workforce structures and initiatives supporting rural practice in Queensland were identified and where possible, realigned to form part of a broader rural generalist pathway. **Results:** The education framework developed consists of four domains of practice: service delivery, rural and remote practice, profession-specific clinical skills, and service-specific clinical skills. Components of this framework will be trialled with a cohort of dietetic rural and remote generalist positions in 2016. Workforce structures such as designated training positions with quarantined development time and co-located profession-specific supervisor provide rural experience and support for the development of rural practice capabilities. These education and workforce structures will become key components of a rural generalist pathway for dietitians in the future. **Conclusions, discussion and/or practical application:** The rural generalist pathway is an opportunity to provide a structured and supported entry to rural practice for early career dietitians. Further development of this initiative has the potential to improve the quality of service delivery and build a sustainable workforce in rural and remote areas.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interest.

P-442: MAP OF COMPETENCIES GENERIC IN THE CURRICULUM FORMATION OF THE NUTRITIONIST

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Introduction: Generic competencies are skills, attitudes and transversal knowledge required for all professional and transferable to different levels of performance; strengthening employability. For its definition of certification of professional competencies should be considered and this must help academics. The purpose of the work is determine the generic competences and their level of achievement for the formation of the nutritionist, starting from the qualification competitions. **Methods:** Collaborative work of academics to define generic skills, determine the map in the *curriculum* plan and their level of achievement; according to the competences of qualification established by areas of performance. **Results:** Identification of seven generic competences: social responsibility, ethics, teamwork, leadership, effective communication, critical thinking and learning to learn. Definition of each competition and description of the performance expectations, to the start of the race. Identification of learning for each generic competition results. Preparation of a map of generic competences which commits to each subject and each teacher in the development of the same. Determination of evaluation of these mechanisms. **Conclusions, discussion and/or practical application:** Generic competencies expressed in the profile should be defined through a collaborative work by forming a professional entities, so they are intentional and evaluated in curricular activities through a work of integration with the discipline allowing to relieve them as components essential in professional performance. They should be enhanced through active methodologies focused on the student and their development order cognitive and motivational elements interact. In this regard it is key to involve academics in the definition thereof and determine the performance demanded as a way of making them participate and commit them to achieve development which they described as important.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-443: SUSTAINING THE RURAL DIETETIC WORKFORCE IN AUSTRALIA: OUTCOMES FROM AN IMMERSIVE RURAL PLACEMENT PROGRAM

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Introduction: The University Department of Rural Health program, funded by the Australian Government Department of Health, has been developed in order to build rural health workforce capacity. This program supports health students to undertake placements in rural and remote Australia. **Objectives and target population:** To evaluate the placement experiences and workforce outcomes for dietetic students undertaking a rural immersion placement experience at the University of Newcastle Department of Rural Health. **Previous theories and investigations:** There has been limited published data of the workforce outcomes of these programs to date. **Intervention(s):** The rural immersive placement experience offers short-term to year-long placement options that involve students living and studying in a multi-disciplinary environment with the purpose of extending

their understanding of inter-professional practice, rural health issues and community engagement. **Evaluation:** A longitudinal study, using mixed methods to investigate student placement experiences and workforce outcomes. Students from allied health disciplines undertaking immersion placements were invited to participate. Participants were asked to complete: (i) an end of placement survey, (ii) a semi-structured interview and (iii) a follow-up survey at one year after graduation. Counts and proportions of data regarding intention for rural practice and workplace location, qualitative themes from student interviews and placement satisfaction ratings are reported. **Results:** End-of-placement surveys were completed by 51 dietetics students. Following a rural placement, 85% of students indicated a positive attitude to working in a rural or remote area. Twenty two students completed the one year follow-up survey, with 75% of dietetics students working in rural or remote location one year after graduation. **Conclusions of authors and discussion:** The student immersion placement program demonstrates a positive impact on rural and remote workforce outcomes for new graduates. Further longitudinal data, is required to provide evidence of the longer term impact on the rural and remote dietetic workforce in Australia.

COMPETING INTERESTS: Three of the four authors are employed by the University of Newcastle.

P-444: THE BACKGROUND TO FOOD AND NUTRITIONAL EDUCATION POLICIES IN SPAIN: FROM THE EDALNU PROJECT TO THE NAOS (EXHIBITION PROJECT)

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Introduction: Food and nutritional education has become a fundamental tool for ensuring the health of the populace, both individually and collectively. Recovering the background to those activities may help to understand the key elements of a transition in which we have managed to overcome the difficulties associated with malnutrition; however, we have not been able to avoid the problems arising from overeating. **Objectives and target population:** A virtual and a travelling exhibition, will present the food and nutrition educational programmes carried out in Spain during the latter half of the 20th century within the framework of food and nutrition policies and public health. **Previous theories and investigations:** The exhibition is part of the research project "The international context of nutrition and food policies in developmentalist Spain (1959-1975)" (HAR2014- 51859-C2-2-P) and includes the results of preliminary research addressing the historical background to community nutrition in Spain. **Intervention(s):** The team of experienced exhibition curators will show and contextualise the activities of food and nutritional education carried out in Spain in the final decades of the 20th century, and in particular those developed by the EDALNU programme. **Evaluation:** The scope of the exhibition tour, the number of visitors and web downloads will be computed, along with the public attending the complementary activities that accompany the exhibition, the number of catalogues printed and the publicity given to the event. **Conclusions of authors and discussion:** The contents of the exhibition could provide material for contemplation and consideration that may be useful in creating and managing food education and nutritional policies and programmes required by current epidemiological- nutritional challenges.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-445: A PROFESSIONAL TRAINING PROGRAMME FOR COMMUNITY NUTRITIONISTS IN HONG KONG

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Introduction and Background: Hong Kong with its predominately Chinese population is an international city with widespread acceptance of both western and eastern cultures. However, difficulties in implementing western based community rehabilitation programmes in Chinese communities have been reported and have been attributed to failure to consider differences in cultural values and norms. In Chinese culture, values such as harmony, respect, 'face-giving' and family life are important. These and other factors such as Hong Kong's high density housing and frequent eat out practice should be considered when developing

nutrition promotion programmes to ensure acceptance and participation. Graduates of overseas programmes may have difficulty applying their knowledge in the Hong Kong setting. In addition, the locally available dietetic training programme is clinically focused and graduates of degree programmes in food and nutrition may lack the practical skills necessary to work as community nutritionists. This has created a need for a programme which enables nutrition and dietetic graduates to gain knowledge and develop the necessary skills to work as community nutritionists in Hong Kong. **Intervention:** A programme was developed to impart knowledge of the processes involved in the development and evaluation of community nutrition services in the Hong Kong context and provide practical experience to develop skills and competencies. The programme features a practicum at St. James Settlement, a multi social service agency in Hong Kong. **Evaluation:** Feedback from both students and employers has shown that programme has been effective in helping to train nutritionists to work in community. **Conclusion:** An effective programme providing training for nutritionists to work in the community in Hong Kong was developed.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-447: REDESIGN COURSE DIET THERAPY OF THE ADULT AND ITS CONTRIBUTION TO THE PROFILE GRADUATION OF THE NUTRITIONIST

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Introduction: The implementation of a *curriculum* goal is to develop in the student's degree competencies in the profile; defined it as the Declaration of a University to society and itself, where designates training commitments that constitute professional identity within the framework of the institution. In order to respond to the requirements of training, it is relevant to implement changes in curricular activities that contribute to the development of the qualification competitions. The purpose of the work is to redesign the adult diet therapy I and II subjects to contribute to the development of competencies of degree of clinical and public health areas. **Methods:** The subject description specifying how it contributes to the profile, to the development of other subjects and to the achievement of the qualification competitions. Determination of learning, aspects to evaluate outcomes and will be appraised, methodological strategies, resources and time of dedication. **Results:** Design of two co-curricular activities: adult diet therapy I and II; with focus on primary and tertiary nutritional care contributing to the development of competencies of degree in the areas of clinical and public health respectively. Settled five learning outcomes for each activity *curriculum*, whereas editorially generic competencies involved in this level of training. For each learning outcome settled the aspects in which the student will be evaluated, determined methodological strategies (class exhibition, workshops, simulated attention and real, exhibition cases, laboratory dietotecnica, etc.), resources (teachers, materials, and equipment) and the time of semiannual dedication of each activity. **Conclusions, discussion and/or practical application:** The curricular activities of a plan of study must be designed to prepare students in the development of the competencies of degree engaged in the profile. A methodological planning that will allow an appropriate achievement and assessment of learning outcomes should be followed to give coherence to a program of course.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.



P-448: EATING DISORDERS AND BODY DISSATISFACTION IN MEN: AN IMPORTANT TOPIC FOR DIETITIANS

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Introduction: Body dissatisfaction and eating disorders among men are critical conditions that require greater attention from health professionals, who must be trained to respond. These disorders have a major impact on men's mental, physical and social health. **Objectives and target population:** 1) Inform health professionals and offer them the prevention and treatment tools needed to address issues related to body dissatisfaction and eating disorders among men. 2) Document the needs of health professional in handling body dissatisfaction and eating disorders among men. **Previous theories and investigations:** Men account for 10 to 40 percent of eating disorder cases. They are affected by psychiatric comorbidities at the time of diagnosis more often than women and suffer more often from addiction to various substances. Moreover, men suffering from eating disorders demonstrate more suicidal behaviours than women suffering from the same disorders. Not only are dietitians insufficiently aware of these conditions in men, they lack training to identify and treat them. **Intervention(s):** We developed a three-pronged, multiplatform training and outreach project to raise awareness among health professionals about this important men's issue: 1) A French website was created to provide evidence-based information (www.prof-il.org); 2) Videos for health professionals were produced and broadcasted; 3) A provincial symposium was held, bringing together researchers and clinicians to discuss the application of best practices. During the symposium, health professionals completed a questionnaire, which was used to document their training needs. **Results:** Among the 190 symposium attendees, 117 dietitians expressed their training needs, namely in the areas of prevention and diagnostic tools and tools for counselling men with eating disorders, non-clinical eating disorders (orthorexia) and comorbidities associated with eating disorders. **Conclusions of authors and discussion:** Men suffering from eating disorders and body dissatisfaction is an emerging topic that need to be addressed by trained dietitians.

COMPETING INTERESTS: The Movember Foundation is funding this program.

P-449: FOOD SUSTAINABILITY: UNDERSTANDINGS FROM CANADIAN DIETETIC TRAINEES

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Introduction: Food sustainability includes all the components of the food chain (production process, processing, distribution, access, consumption and waste management) and examines their effects according to the human health, environment, society and the economy. Traditionally, some of these concepts are integrated into undergraduate nutrition course *curriculums* and within community and food management training experiences. This study seeks to identify current attitudes, perceptions and beliefs of dietetic trainees in the field of the food system and sustainability within Canadian Dietetic Training Programs. Also, to further understand the factors that influence entry for new trainees into this area of practice. **Methods:** A 20 item questionnaire, validated for face and content, will be sent to interns of integrated dietetic internships as well as combined Masters/Internship programs in Canada. A valid questionnaire will be developed to characterize current trainee's attitudes, perceptions and beliefs within this practice area and identify factors influencing their understandings. **Results:** Questionnaire has been developed and tested for face and content validity. Data is being in the process of being collected across Canadian trained dietetic programs. **Conclusions, discussion and/or practical application:** There are no studies examining the current perceptions, attitudes and beliefs of dietetic trainees in the field of food systems and sustainability. Characterization of understandings from the perspective of dietetic trainees will have important implications to dietetic practice and knowledge and skill development.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-451: DEVELOPMENT OF ACADEMIC EDUCATION OF NUTRITIONISTS IN THE REPUBLIC OF MACEDONIA

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Introduction: The paper concern is on the design and implementation of the new academic programs for food, nutrition and dietetics, and innovative technologies in higher education in Macedonia. Social and national needs of the country are to educate and produce highly trained scientific staff, specialized in nutrition at Bachelor, Master and Doctoral degree levels. **Objectives and target population:** The realizing of this idea of the government and the University of Bitola started in 2010 with an aim to introduce a new professional profile in the country. **Previous theories and investigations:** National standards for the formulation of academic study programs in food and nutrition sciences was defined in 2010. Master study programs were developed in 2011/2012. **Intervention(s):** The model of designing, planning and implementation of curricula is in accordance with the European standards for improvement of academic and practical curricula and EFAD/DIETS2 advanced competencies. Proactive work with the industry is related to internships placements. Innovative application of ICT, e-learning and creating a website are intended for collaboration with other national and European nutrition networks. With more than 350 students enrolled, the Bachelor's academic study program has shown to be successful, increasingly popular and commanding rising interest among the youth. The study program consist 8 semesters, each semester totaling 60 ECTS credits. MSc study programs consists 2 or 4 semesters. **Results:** These study programs allows to educate and develop our own nutrition experts who will be able to meet the domestic and global expertise needs relating to food and nutrition, conduct inclusive research through various focused projects, support healthcare teams, academic institutions and food industry with nutritional expertise. **Conclusions of authors and discussion:** In line with the strategic development plan of the University St. Clement Ohridski of Bitola, the next step for the study program will be further improvement and development of the role of nutritionists in the specialist fields of nutrition especially sports nutrition.

COMPETING INTERESTS: The authors of this document confirms there is no conflict of interests.

P-452: GRADUATE PROGRAM IN NUTRITION: MASTER OF CLINICAL NUTRITION

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Introduction: The Master of Clinical Nutrition arises from the need of the Costa Rican nutritionists to specialize in the care of non-communicable diseases. **Objectives and target population:** To train specialists in clinical nutrition capable of providing innovative approaches in individual and group treatment of NCD. The population is comprised by nutritionists with a minimum of two years of professional experience in clinical nutrition. **Previous theories and investigations:** The cognitive constructivist approach encourages students to comprehend and reconstruct their learning and apply it in a practical way to their daily professional work. The cultural historical approach springs from the social problematics of food and nutrition, from dietary and habit beliefs, and willingness to make changes in eating behavior. The method of troubleshooting is used as reflective practice to prioritize critical dialogue in small groups. Assessment is developed through Participatory Action Research (PAR) to generate proposals for solution to specific problems. **Intervention(s):** It is biennial with a total of seven terms; four semesters and three summer sessions. It is based on three subject areas: Clinical Nutrition, Psychology, and Education applied to Clinical Nutrition. Interventions are directed in groups and individually. **Evaluation:** Teaching and course evaluations are carried out at the end of each term; and of process at the end of each program. In the interventions, before and after measurements are performed using anthropometric, clinical, biochemical and dietary variables. **Results:** To date two groups have been opened. The first group started in January 2013 and the second one in 2015, each with approximately 18 active students. From the first class, six students have succeeded in completing their graduation process conducting innovative individual and group interventions in individuals with overweight, diabetes mellitus and metabolic syndrome. **Conclusions of authors and discussion:** The Master of Clinical Nutrition is an innovative academic space that delves into the study of NCD.

COMPETING INTERESTS: The author of this document can confirm there is no conflict of interests.

P-454: USER SATISFACTION ABOUT FINAL EVALUATION METHODOLOGY PROFESSIONAL PRACTICE CATERING AREA IN TYPE OSCE SIMULATED ENVIRONMENT, STUDENTS AND TEACHERS CAREER IN NUTRITION AND DIETETICS. UNAB, VIÑA DEL MAR, CHILE

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Introduction: The assessment of learning in a simulated environment provides information about the acquisition of practical skills such as leadership, resource management, effective communication and implementation of acquisition and acquired by students during their training knowledge. **Aims:** Assess the satisfaction of students and teachers with final evaluation of professional practice in the area of catering, with simulated environments, mimicking examination OSCE (objective structured clinical examination). **Methods:** Satisfaction surveys were applied, regarding final evaluation of professional practices of mass catering 2015 students and teachers who participated in this methodology. **Results:** User satisfaction survey was applied to a total of 47 students and 7 teachers in the area of mass catering. The students showed a high level of satisfaction: 90% strongly agreed or agreed with the use of methodology; 84% felt comfortable with interacting with actors; 88% strongly agreed or agreed with objectivity of methodology. **Conclusions, discussion and/or practical application:** Students and teachers expressed satisfaction with final assessment methodology of professional practice with simulated environment, type OSCE. Students said this methodology allows them to feel that they can face the task calm in the labor market area catering. Teachers expressed that this assessment motivates and encourages to continue his development in the area of teaching in higher education. Entering this final evaluation technique allows career feedback for continuous improvement of its work in the area, still highly recommended.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-455: THE VALUE OF SIMULATION FOR TRAINING STUDENT DIETITIANS IN FOOD SERVICE AND INDIVIDUAL CASE MANAGEMENT

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Introduction: Clinical simulation is increasingly utilised in training student dietitians and as a component of placement hours in some training programs. The University of Wollongong dietetics' simulation programme enables students, prior to practical placement, to develop skills in critical thinking, effective communication, and food service management by undertaking the nutrition care process for individuals in a simulated hospital setting located on campus. **Methods:** Students participate in immersive learning where, in addition to practising their skills in nutrition assessment, they are presented with challenging scenarios they may encounter when communicating with patients and managing food service in clinical practice. These challenges and simulated patient cases were developed with expert input from clinical educators. In addition, feedback from previous students about challenging situations they faced on placement and would have liked exposure to in a low risk environment at University prior to placement, was also incorporated. **Intervention(s):** When participating in the simulation, students in small groups were required to rotate across various scenarios where they role-played as both the patient and dietitian with patient actors. They drew on these experiences to undertake reflective practice about their own clinical practice and the broader considerations for dietetic patient care, such as protected meal times. Students then received both academic and peer reviews, and along with self-reflections developed a written action plan to develop their skills in clinical practice. **Results:** A questionnaire evaluating perceived learning outcomes was administered to students pre- and post-simulation. Results indicated statistically significant improvement in levels of both perceived confidence ($p < 0.05$) and skills ($p < 0.05$) following the completion of the simulation program. **Conclusion:** The simulation program is perceived by student dietitians to be an effective learning strategy prior to the commencement of practical placement. The value of this programme for application in the clinical environment will be evaluated during 2016 when students undertake their practical placements.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-456: SALT DENSITY EDUCATION –THE COOKING TRAINING OF MISO SOUP–Kayoko Uechi¹, Naomi Katayama^{2,*}, Yasuyo Matsufuji³, Mikako Yamashita⁴¹Kio University. ²Nagoya Women's University. ³Junshin College. ⁴Kagoshima Prefectural College.* Contact: naomik@nagoya-wu.ac.jp

Introduction: The high blood pressure is one of the lifestyle-related diseases. The hypertensive number of patients in Japan is 43 million. The low salt diet is important in treatment of the high blood pressure. It is difficult to reduce salt density in the Japanese eating habits. However, the Japanese makes an effort in sodium restriction. We make miso soup one cup per day, and the people suppressing the salt intake increase. It is required to perform salt density education for the student of the dietician.

Methods: The 63 students who participated in cooking training make miso soup. The salt density of miso soup measured it with the salt densimeter (YA-33: SEKISUI). And we asked students about the favorite seasoning of miso soup. The choices are as follows. "Light seasoning" "slightly light seasoning" "slightly thick taste" "thick taste". **Results:** The salt density of miso soup which a student made was $0.870 \pm 0.25\%$. This value of salt density was light-seasoned and almost accorded with salt density (0.8%) that we aimed for. The salt density of miso soup which was made by students are almost the same salt density of the answered of favorite seasoning question. **Conclusions, discussion and/or practical application:** We understood that the student liked to eat light -taste miso soup. Because salt density becomes clear, the cooking training to perform using a salt densimeter has a big educational effect. It continues and wants to perform salt density education using a salt densimeter in future.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-457: TEACHING CULTURAL INTELLIGENCE: A FRAMEWORK FOR EDUCATION OF DIETITIANSDanielle Gallegos^{1,*}¹Queensland University of Technology.* Contact: danielle.gallegos@qut.edu.au

Introduction: Being able to work with diverse individuals and communities within local and global contexts is recognised as a key graduate competency for health professionals. For dietitians an intimate understanding of food as an integral part of nutritional health and cultural identity and means that cultural intelligence needs to be finely-tuned. The question remains what is it that needs to be taught? **Methods:** Using phenomenography as a theoretical framework, interviews with 25 informants from across the spectrum of dietetic practice, academia and disciplines were undertaken. Phenomenography explores the qualitatively different ways people experience, conceptualise and understand a particular phenomenon. The data from the interviews underwent the seven steps of phenomenography: familiarisation, condensation, comparison, grouping, articulating, labelling, and contrasting. Results then form an outcome space which is a diagrammatic representation of the logical relationships between concepts. **Results:** Conceptions are hierarchical and included: a shared understanding of "culture"; a range of ways of experiencing the skill of cultural competence or intelligence; inter-relationship with client-centred care; knowledge and communication remain core; the concept of "expert" needs to be challenged; reflexivity is a key skill; staff need to be able to create safe environments for students; and finally that institutionalised racism needs to be recognised and disrupted. **Conclusion:** These conceptualisations of cultural intelligence for nutrition and dietetics underpin a framework that includes systemic, institutional factors and pedagogy. By improving how we teach cultural competence we begin the journey for each professional whether novice or advanced of "understanding myself and seeing myself reflected in the humanity of others".

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P-458: THE MISO SOUP INTAKE SITUATION AND INGREDIENT MATERIALS IN THE BREAKFAST

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Introduction: The Japanese breakfast was rice and miso soup, but now, people like to eat bread. Therefore intake frequency of the miso soup in the breakfast decreases. The miso soup is helpful to take in various vegetables as ingredient materials. The miso soup is the food which is very good if careful about a salt intake. The student of the dietician course will perform nourishment instruction in the future. The student will perform sodium restriction instruction in the future. Therefore it is necessary to learn sodium restriction instruction in the miso soup. **Methods:** We performed questionnaire survey for 29 girl students. The question items are as follows. "Intake frequency of the miso soup", "What kind of breakfast do you eat, rice or bread?", "Do you take miso soup for breakfast?", "What kind of ingredient do you use to make miso soup?" We measured the salt density of miso soup which a student made. The device which we used for the measurement is a salt densimeter (SS-31A: SEKISUI). **Results:** The person who ate rice for breakfast was 21 of 29 people. However, the person who ate miso soup with rice was only ten people. The ingredient materials of the miso soup had tofu and seaweeds. The salt density of miso soup which a student made was 0.87 ± 0.23 . The miso soup which the student made was light-taste. The sodium restriction education is very important to a Japanese. This is because a Japanese has many people of the high blood pressure. **Conclusions, discussion and/or practical application:** We want to perform the sodium restriction instruction using the salt densimeter in future. Furthermore, we want to perform instruction to increase ingredient materials to put in miso soup.

COMPETING INTERESTS: The authors of this document can confirm there is no conflict of interests.

P-459: COMPARISON OF SALT DENSITY OF MISO SOUP (TOFU, TOFU AND SPINACH)

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Introduction: The miso soup is the food which I cannot miss in the Japanese eating habits. However, the people who did not drink miso soup for breakfast increased as a result that an eating habits custom varied from a Japanese model to a Western model. Because miso soup is fermented food, it becomes the very good medicine for intestinal disorders. However, salt intakes increase when they drink miso soup. Therefore the person who refrained from consuming miso soup came out. But we can take many nutrients by putting various ingredients materials in miso soup. Therefore salt density instructed making of low miso soup for the student of the dietician. **Methods:** 70 girl students made miso soup. As for the miso soup which they made; 1) without ingredient materials, 2) with tofu, 3) with tofu and spinach. We used a salt densimeter (SS-31A: SEKISUI) to measure the salt density of miso soup. **Result:** The salt density of miso soup without one of the ingredient materials which a student made was 0.98 ± 0.36 . The salt density of miso soup with tofu was 0.97 ± 0.22 . The salt density of tofu and miso soup with spinach was 0.89 ± 0.24 . The salt density of miso soup without one of the ingredient materials which a student made again was 0.98 ± 0.36 . **Conclusions, discussion and/or practical application:** We was able to thin the salt density of miso soup by putting ingredient materials. The miso soup becomes delicious by putting many kinds of ingredients materials. In addition, we can take in various nutrients from many ingredients materials. We think that the miso soup which many ingredients materials are in helps health maintenance.

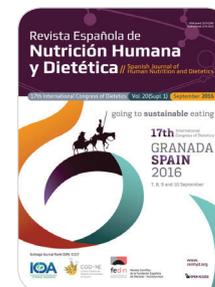
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POSTER COMMUNICATIONS



REGULATION OF THE PROFESSION OF THE DIETITIAN-NUTRITIONIST

P-461: THE PROFESSIONALIZATION OF DIETETICS IN CANADA

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Introduction: Little has been written about the professionalization of dietetics in Canada. Professionalization comprises the processes by which dietetics has gained its legal status as a regulated health profession, but also by which it has sought wider social and cultural recognition as food and nutrition experts. This presentation will review the purpose, methods, results, and tentative conclusions of my doctoral dissertation that explores the professionalization of dietetics in Canada and with which I have founded an archival resource of dietetic history in Canada. **Methods:** This research combines archival research with the oral histories of long-serving, Canadian dietitians to ask questions about the ways in which dietetics' professional project has shaped the profession. **Results:** Results indicate that how, why, and to what end dietetics undertook a project of professionalization has important implications for the present and future of the profession and its practitioners. For example, findings indicate that dietetics' project to professionalize has shaped the culture and identity of the profession, its relationship with other nutrition and non-nutrition professions, how dietetics creates and evaluates knowledge, as well as its roles in leadership and social justice issues such as food and sustainability. This presentation will focus on the impact of dietetics' professionalization on two key issues: 1) knowledge and the competing roles of food and science; 2) dietetic identity and culture. **Conclusions, discussion and/or practical application:** Tentative conclusions will be shared as they relate to dietitians' potential roles as leaders in social justice issues. Conclusions will also be drawn about the need to further integrate historical and socio-cultural perspectives of the profession into the undergraduate dietetic curriculum.

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P-462: REVIEW OF CONTINUING PROFESSIONAL DEVELOPMENT REQUIREMENTS FOR CREDENTIALING OF AUSTRALIAN DIETITIANS

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Introduction: The Accredited Practising Dietitian (APD) credential is the self-regulation program for dietetics in Australia. APDs are required to undertake a minimum 30 hours continuing professional development (CPD) annually. In 2014, the Dietitians Association of Australia (DAA) Dietetic Credentialing Council (DCC), who govern the credential, commissioned a review to establish evidence for CPD requirements to maintain currency of practice, what constitutes CPD ways to monitor CPD, and minimum CPD standards. **Methods:** A systematic search was conducted by one researcher in January 2015 for journal articles in the preceding ten years in CINAHL Complete and Medline Complete via EBSCO Host. Search concepts were: allied health occupation or profession; mandatory or competency; and continuing professional development. Limits applied were English language and full article to be available. Inclusion criteria were peer-reviewed papers and reports related to the research themes. Title and abstract of 711 eligible articles were reviewed for inclusion, with 34 retrieved. Forty-one (41) articles and reports were supplied by DAA. Of 75 full-text articles available, 27 included for detailed review. Data extraction and narrative synthesis analysis were undertaken and recommendations developed. These were confirmed by a second researcher. **Results:** Quality of available literature was low with a high proportion of narrative articles. Findings indicated the purpose of CPD is to ensure patient safety and fitness to practice or competency through evidence-based, mixed activities, however there was no evidence to inform on a minimum number of hours or type of CPD that is optimal. The majority of literature on monitoring CPD referred to use of professional portfolios. **Conclusions:** Recommendations were made to DCC to inform DAA policy on CPD, however the review was limited by the evidence available. High quality research is urgently needed on CPD requirements in allied health professions. Current requirements for CPD in the APD program remain unchanged.

COMPETING INTERESTS: JG was employed as a consultant by Dietitians Association of Australia for this review, RS is member of Dietitians Association of Australia Dietetic Credentialing Council, TP is staff at Dietitians Association of Australia.

P-463: INTEREST GROUPS POSITIVELY IMPACT NUTRITION CARE AND DIETETIC PRACTICE

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Introduction: Interest groups are an important and increasingly regulated component of dietitians associations. In Australia, interest groups must meet specific key performance indicators (KPIs) annually to continue as an interest group. While interest groups may be viewed as opportunities for professional development and for members to network, gain support from colleagues, and share and develop resources, they also play an important role in nutrition care in the wider community. The impact of interest groups will be demonstrated here through activities of the Dietitians Association of Australia (DAA) Mental Health Interest Group (MHIG). **Methods:** Key MHIG activities and projected impacts were recorded. Where available, actual impact data was collected. **Results:** The MHIG directly impacts the practice of its 672 members by providing a community of practice and monthly research updates; easily accessible research will inform evidence-based practice. For the broader membership of the DAA, the MHIG develops client and practitioner resources to support dietitians in working with mental health clients, and provides at least two continuing professional education webinars annually. In 2015, the suite of resources were accessed 1891 times and webinars were attended by 146 dietitians. The MHIG committee wrote articles for inclusion in physician newsletters with readership across the hospital and healthcare sectors in Australia highlighting the importance of food, nutrition and dietitians in the management of patients with mental health conditions. The MHIG was also one of the first interest groups to develop two role statements endorsed by the DAA which have since enabled dietitians to advocate for and secure clinical dietetics positions in mental health. **Conclusions:** The key activities of the MHIG align with the newly formed DAA requirements for interest groups. The DAA KPIs are a useful tool to maximise the impact of interest groups on nutrition care and dietetic practice.

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