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Abstracts

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OP1.01

Improved Meals Service and Reduced Food Waste and Costs in Medical Institutions Resulting from Employment of a Food Service Dietitian: A Case Study*Yona, O.¹; Goldsmith, R.¹; Endevelt, R.¹*¹Nutrition Division, Ministry of Health, Jerusalem, Israel

Introduction: Patients not receiving food that meets their nutritional and medical needs is a common problem in hospitals. A proposed contributing factor is the non-inclusion of dietitians in food service staff. Recently in Israel, food service dietitian positions in hospitals were created. This study aimed to examine the impact of the new food service dietitian role within medical institutions on the suitability of foods served, costs and waste.

Methods: A three years (2014–2017) national case study was carried out in 18 hospitals, nine of which employed a food service dietitian (intervention), and nine without (control). The number of nutritional analyses of menus was audited, as was the extent of kitchen staff training, and how often night meals were served for all patients. Data were gathered regarding food costs and waste with respect to food distributed to staff and patients. Food costs savings and waste reduction were calculated, based on the provision of unnecessary meals, at the cost of €4.76 per day per meal.

Results: Kitchen staff training was carried out in all intervention institutions, and not in the controls. In most controls, nutritional analyses were not performed, whereas in the intervention hospitals, full analyses were performed and tailoring of menus to specific department requirements improved significantly. In most intervention hospitals, late-night snacks were provided, this not being so in the controls. Total food cost savings of €195,669 per annum was seen in the six intervention hospitals, attributable to 4 factors: 1. Meals not delivered to fasting patients, or those receiving parenteral/enteral nutrition - cost savings of €86,886; 2. Better tailoring and monitoring of food delivered to the wards and staff (bread, cheese, milk etc) - annual cost savings of €62,156 in the hospitals with a food service dietitian; 3. Checking expiry dates of medical foods, and improved communication between the wards, the kitchen and the food distribution centres, has lessened food waste with savings of 5% from the medical food budget per annum of €10,580; 4. As a result of dietitian-performed nutritional analyses, tailoring of food provided according to the patient's medical

and nutrition needs was improved. In one hospital, after re-evaluation of serve sizes in high protein diets, sizes were reduced while retaining adequacy, with immediate cost savings of €52,900 per annum.

Conclusions: Implementation of the new role of Food Service Dietitian led to cost savings and significant improvements in adherence to the nutritional care plan for patients.

Conflict of Interest: None

Funding: No Funding.

OP1.02

Acceptance of Dietitians and Their Job Satisfaction in Acute Care Settings in Czech Republic: Preliminary Results*Krobot, M.¹; Jančeková, K.¹; Kapounová, Z.¹; Spáčilová, V.¹; Hawk, HV.¹*¹Department of Public Health, Faculty of Medicine, Masaryk University, Brno, Czech Republic

Introduction: Nutrition is an essential part of therapy, and dietitians play a key role in improving the health outcomes of patients and reducing the overall healthcare expenses.^{1,2} The nutrition care system in the Czech Republic has undergone significant development, beginning with the introduction of dietitians in 2004. Although some hospitals recognize the benefits of dietitians providing nutrition care with two organizations advocating for dietitians, their professionalization along with the scope of practice or mandatory full-time equivalents for hospitals is still unsatisfactory and dietitians report complaints of disrespect and futility of their work. The current situation is unclear, and as the first study of this kind in the Czech Republic, the objective of this study was to assess and describe perceptions of acute care dietitians regarding their job satisfaction and their place in the nutrition care system together with identifying barriers to providing nutrition care.

Methods: This preliminary analysis is a part of a qualitative, cross-sectional study based on individual, semi-structured interviews with a convenience sample of dietitians (n=12) working in Czech acute care hospitals. The participants represent the different types of education systems and acute care facilities in the country. The interviews were recorded, and their verbatim transcripts were coded inductively by two to three independent researchers. Using Atlas.ti software, thematic analysis was performed to identify themes and subthemes.

Results: The main themes that emerged during analysis were the professional relationships between healthcare providers, staffing of dietitians and scope of practice. While participants expressed overall satisfaction with visible results of their job, they also describe frustration from everyday effort to justify their decisions

and from humiliation originating in the absence of prescription rights resulting in being fully dependent on the doctor's opinion on the dietitian's suggestions. Respondents repeatedly identified lack of knowledge about their profession and capabilities among doctors and nurses as a major problem, who often associate dietitians with food service only. They also reported issues connected to inadequate staffing, which in their experience results in lowered quality of care together with feeling overwhelmed with work, which cannot be done in time.

Conclusion: Dietitians working in acute care hospitals in Czech Republic describe interpersonal relationships and lack of knowledge about dietitians among doctors and nurses as the most important barriers in acceptance of a dietitian as a part of a multidisciplinary team. According to the results of this study, crucial steps for improving nutrition care in the Czech Republic include legislative changes to broaden the dietitians' scope of practice, increasing staffing levels of dietitians in acute care facilities and raising awareness about dietitians among other healthcare professionals.

Conflict of Interest: None

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OP1.03

Who do you PIC to See? Validation of a Canadian Tool to Triage Hospital Patients for Dietitian Services

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Introduction: The demand for hospital dietitians to provide medical nutrition therapy (MNT) often exceeds available resources. As such, it is imperative that dietitians prioritize their work to provide MNT in accordance with the principles of triage (i.e., those with the most urgent need receive care first in a standardized and consistent manner). Although existing triage tools used by dietitians typically rely on medical diagnoses, we developed a tool that focuses on nutrition acuity and urgency for MNT. More than 100 dietitians from 12 Canadian hospitals within Fraser Health developed and tested the face validity of a priority intervention criteria (PIC) tool, which has been in use in British Columbia since 2015.

This tool focuses on identifying the urgency for MNT and incorporates a nutrition acuity score (NAS). A few examples of PIC items are suspicion of malnutrition, enteral nutrition initiation, inappropriate nutrition that may cause acute harm and education required for discharge. The purpose of this study was to test the content validity of this novel tool.

Methods: Dietitians who have worked for three or more years with hospitalized Canadian adults for at least 50% of their workday were recruited online. Dietitians from the hospitals where the tool was developed were excluded. To help ensure participants had a common understanding of the tool, they were provided with tool instructions, item definitions and/or examples, and a training video. We conducted a 2-stage consensus-building approach using a modified Delphi method to assess the validity of the tool. Tool items were examined for clarity, relevance and priority level using a 4-point Likert scale and qualitative feedback was obtained. The tool was revised based on round one findings and during round two participants were asked about their agreement with the first-round revisions. The content validity index (iCVI) threshold for item validity was 0.78, and the scale level CVI (sCVI) threshold for tool validity was 0.9.¹ The iCVI scores and qualitative data informed tool modifications.

Results: We had 37 and 23 dietitians participate in rounds one and two, respectively (attrition analysis revealed no differences between the two rounds). In round one, 3 items did not meet the 0.78 iCVI threshold, the sCVI score was 0.95, and participants provided 363 comments. Of the 78 original items, 32 items were modified; 16 removed, and 5 added in the first round. Most of the changes were informed by content analysis of participant comments. In round two, all items exceeded the 0.78 iCVI threshold, the sCVI score was 0.98 and 84 comments were provided. Of the 65 round two items, 6 items were modified, 1 removed, and 1 added. Overall, 29 items remained unchanged following both rounds. The final tool contains 66 items.

Conclusion: This dietitian-specific tool is content valid based on the consensus of experienced dietitians. There was agreement about the services dietitians provide and how those services are categorized by urgency for MNT. This triage tool provides a metric that standardizes the allocation of limited resources and provides access to the expert prioritization approach of advanced practice dietitians. It informs workload distribution and resource planning. Within the healthcare team, dietitians also use the tool to describe their work and priorities. Reliability testing is currently underway.

Conflict of Interest: None.

Funding: Research relating to this abstract was funded by Fraser Health Department of Evaluation and Research Services.

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OP2.01

A Nutrition-Focused Physical Examination Workshop Improves Skills and Knowledge of Registered Dietitians in the Diagnosis of Malnutrition

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Introduction: A nutrition-focused physical examination (NFPE) is a systematic assessment of nutrition-related health, encompassing a head-to-toe evaluation for micronutrient deficiencies, malnutrition, digestive health and functional status^{1,2}. Twenty-two CORU-registered dietitians attended an Academy of Nutrition and Dietetics hands-on training workshop on the performance and application of NPFE in the diagnosis of malnutrition in June 2018. The aim of this study was to evaluate the impact of the training on the knowledge and skills of dietitians in performing NFPE and diagnosing malnutrition.

Methods: Prior to and at 3, 6, 9 and 12 months following the workshop, the knowledge and skills of each dietitian were evaluated. To assess knowledge and skills, each dietitian answered an anonymous questionnaire and completed a 2-week caseload audit of their practice. Ethics exemption was granted by the Office of Research Ethics in University College Dublin.

Results: Prior to the workshop, only 4 dietitians were performing NFPE, inadequate training and time being cited as the main barriers. All reported performing NFPE after the workshop; however, time remained a barrier to consistent practice. 3 dietitians reported they did not diagnose malnutrition at all prior to the workshop. Of those who diagnosed malnutrition, only 3 and 5 dietitians reported classifying malnutrition as moderate or severe, respectively. After the workshop, all dietitians reported diagnosing the presence and severity of malnutrition. In the caseload audits, NFPE was carried out in 18% of 509 patients at baseline increasing to 36% of 368 at 3 months, 33% of 417 at 6 months, 32% of 318 at 9 months and 49% of 212 at 12 months. The percentage of patients diagnosed with malnutrition decreased from 41% at baseline to an average of 27% (range 24-30%) over the 3-, 6-, 9- and 12-month audit time points; however, classification of severity of malnutrition increased from 27% at baseline to an average of 84% (range 79-90%). The use of enteral feeding in malnourished patients consistently increased from 10% at baseline to an average of 31% (range 22-37%) at the audit time points. Furthermore, multidisciplinary team interactions for the malnourished cases increased consistently from 2.19 interactions per patient at baseline, to an average of 2.87 interactions (range 2.37-3.67).

Conclusion: The knowledge and skills of dietitians in performing NFPE and diagnosing malnutrition improved following the training workshop. Improved diagnosis of malnutrition severity appeared to increase rates of enteral feeding and collaboration with the multidisciplinary team.

Conflict of Interest: None.

Funding: Research relating to this abstract was funded by the Irish Nutrition and Dietetic Institute to support the evaluation of the workshop.

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OP2.02

Evaluation of an Online Malnutrition Management Education Module for General Practitioners: The ONSPres Project

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Introduction: Malnutrition occurs commonly but is not routinely identified amongst community-dwelling older adults⁽¹⁾. General practitioners (GPs) are generally the first point of contact for older adults with health concerns. Currently, there is little nutrition education in medical training and GPs report a lack of confidence in diagnosing and managing malnutrition^(2, 3). To address this, GP interviews were carried out to establish preferences for the content and delivery of a malnutrition education programme. Based on this information, an online education module was designed and its efficacy in improving the knowledge and practice of GPs was evaluated.

Methods: Thirty-one GPs and GP trainees participated in the evaluation. The module covered the topics: 'malnutrition definition, prevalence and latest evidence', 'identifying malnutrition in clinical practice', 'food-first advice', 'reviewing malnutrition' and 'oral nutritional supplements'. Knowledge was measured using a multiple-choice questionnaire (MCQ). Practice was evaluated using patient case studies at baseline, immediately following and 6-weeks after completion of the module. Case studies involved calculations of weight loss, malnutrition risk score, and approaches to treatment and follow-up, which were then reviewed by a clinical specialist dietitian for older adults. Evaluation forms assessing feedback from the module were also completed. Differences between assessment performance were investigated using paired t-tests.

Results: MCQ scores increased significantly from baseline to immediately following the module (+25%, $P < 0.001$), with the greatest improvement in 'identifying malnutrition in clinical practice' (+47%, $P < 0.001$). Eleven GPs completed the 6-week MCQ when scores remained significantly increased from baseline (+14%, $P = 0.005$), with the largest increase remaining in 'identifying malnutrition in clinical practice' (+40%, $P < 0.001$). Seventeen GPs completed the case studies with 85% correctly calculating malnutrition risk scores at baseline, increasing to 94% following

the module. Identification of appropriate approaches to malnutrition treatment improved by 33% after module completion. GP feedback about the module was positive.

Conclusion: This education module on the identification and management of malnutrition which was delivered online was well-received by GPs and was successful in improving malnutrition knowledge and practice, with this improvement being retained in the short-term.

Conflict of Interest: None.

Funding: Research relating to this abstract was funded by the Irish Health Research Board under a quality and patient safety funding stream (RCQPS-2017-4).

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OP2.03

'I Take the Amount I Need to Feel Good': A Qualitative Exploration of Patient Experiences of the Meaning and Usage of Oral Nutritional Supplements

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Introduction: Oral nutrition supplements (ONS) are important components of the nutritional management of malnutrition, but little is known on patient perspectives in their use. The aim of the study was to deepen the understanding of what ONS mean to patients and how this meaning connects to their ONS usage, by exploring patient experiences of ONS.

Methods: Qualitative interviews were conducted with ten patients with malnutrition or at nutritional risk who were prescribed ONS by a dietitian. Data were thematically analysed using systematic text condensation¹.

Results: Two final categories were identified and labelled as 'ONS is a one-dimensional remedy' and 'Everyday ONS usage is regulated autonomously'. The patients described the meaning of ONS as nutrition and while the drinks could compensate for non-eaten nutrients, they could not compensate for loss of normal eating. However, this one-dimensionality was also described as positive since the ONS could work out a simplifying solution for nutrient intake. ONS usage was described as dependent on the acceptance of taste and the priority given to nutrition in a patient's everyday life. Usage was prioritised when nutrients were perceived as needed, such as when compensating for low food intake or when striving for higher bodyweight or disease recovery. On the other hand, usage was down prioritised when a patient's own goal was not increased nutrient intake or body weight or when competing

activities were perceived as more important than taking ONS. Additionally, the dietitian-recommended amount to be consumed was perceived as a suggestion, not an exact prescription.

Conclusion: Patient experiences indicated that ONS serves as a one-dimensional remedy which compensates for low nutrient intake but cannot lessen the burden of altered eating². Additionally, ONS usage was described as regulated autonomously based on a patient's view on the importance of nutrition in their life. Those views were very diverse, which highlights the importance for ONS prescribers discussing treatment goals with each patient.

Conflict of interest: None.

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OP3.01

Nutritional Status of Hospitalized COVID-19 Patients in Iceland

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Introduction: Amid the coronavirus disease (COVID-19) pandemic, increasing evidence indicates an association between nutritional status (including obesity, malnutrition, and vitamin D status) and COVID-19 disease severeness. Nutritional status of hospitalized COVID-19 patients has been described in several countries worldwide, but there have been no published nutritional status reports from Iceland to date. The aim of the study is to describe the nutritional status of hospitalized COVID-19 patients in Iceland and assess whether nutritional status is associated with the length of hospital stay.

Methods: The study is a descriptive retrospective study of 273 patients with COVID-19 admitted to Landspítali, University Hospital in Iceland (56% male and 58% were over 65 years of age) from 28 February 2020 to 19 March 2021. Information was gathered from hospital records. At admission, all patients were screened for risk of malnutrition using a validated screening tool. 25(OH)vitD concentration was analyzed (n=266), and insufficient vitamin D status defined as 25(OH)vitD <50 nmol/L. Body mass index (BMI) was calculated from measured height and weight (n=237). Obesity was defined as a BMI of above 30 kg/m², over 35 kg/m² as severe obesity, and under 18.5 kg/m² as underweight. Results are mainly descriptive, but an independent sample t-test was used to assess possible difference in length of hospital stay according to nutritional status.

Results: Out of the 273 patients, 89 (33%) were at low risk of malnutrition, 133 (49%) were at medium risk, while 51 (19%) were defined at high risk of malnutrition. Prevalence of obesity was 43%, severe obesity 21%, and 2% were underweight. Insufficient vitamin status was observed in 20% during hospitalization. The average length of hospital stay was 13 days (± 18 days). Patients at a high risk of malnutrition were hospitalized for 21 days on average, while those at a low/medium risk of malnutrition were hospitalized for 11 days on average (95% CI 5.4 to 15.6, $p < 0.001$). No difference was observed in the length of hospital stay between groups according to state of obesity or vitamin D status.

Conclusion: This study is the first to report nutritional status of hospitalized COVID-19 patients in Iceland. Prevalence of high risk of malnutrition was similar in this patient group as seen in previous studies in other patient groups at Landspítali. High risk of malnutrition at admission was associated with a prolonged hospital stay.

Conflict of Interest: None.

Funding: No Funding.

OP3.02

Working from Home during the COVID-19 Pandemic and Its' Effects on Stress, Sedentary Lifestyle, and Diet

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Introduction: The coronavirus disease (COVID-19) was firstly reported in late December 2019 in Wuhan, China and rapidly spread throughout the world (1). Immediately after the COVID-19 pandemic appeared in Turkey, various measures including hygiene measures, social distance, quarantine, and lock-down rules began to be taken to prevent and slow down the spread of the virus. For individuals to avoid crowded places and stay at home, many companies and institutions switched to working from home. This shift to staying at home during COVID-19 potentially caused unhealthy lifestyle changes and numerous emotional consequences, including stress, depression, fear, and boredom. This paper aimed to examine the relationship between stress, sedentary lifestyle and nutrition in individuals who switched to working from home due to the pandemic.

Methods: A self-reported anonymous web-based questionnaire was developed to collect data. The questionnaire had questions on socio-demographic characteristics, anthropometric measurements, working from home arrangement, changes in diet, sedentary lifestyle, and stress status before and after working from home. Pro-Healthy Diet Index (pHDI-10) scores and Non-Healthy Diet Index (nHDI-14) scores of the participants in the study were calculated (2). The frequency of food consumption questions were based on over 33 food items. Additionally, the Perceived Stress Scale was included in the survey to determine the stress levels changes of individuals.

Results: A total of 328 individuals were included in the study. Teachers (25%) and engineers (12.5%) were the main occupational groups in the study. The mean duration of the working day increased with the switch to working at home. Most individuals

(59.1%) reported gaining weight. Considering daily snacking periods before and after COVID-19, the number of individuals with two and three snacking periods significantly increased, and the number of those who with only one snacking period decreased ($p = 0.000$). The average daily sedentary time increased from 7.7 hours to 10.6 hours ($p = 0.000$). The Perceived Stress Scale score increased significantly from an average of 18.2 points before the pandemic to an average of 22.9 points after the pandemic. The daily sedentary time spent by individuals and Non-Healthy Diet Index scores was higher in individuals who gained weight ($p < 0.005$). During the pandemic, individuals who exercised were found to have lower Non-Healthy Diet Index scores and higher Pro-Healthy Diet Index scores compared to those who did not exercise ($p < 0.005$). Individuals who exercised also paid more attention to healthy eating.

Conclusion: Working from home leads to a more sedentary lifestyle, stress, and snacking throughout the day. Further research and initiatives are needed on how to manage and support the different lifestyle effects of working from home, which is needed as we move to life after the pandemic.

Conflict of Interest: None.

Funding: No Funding.

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OP3.03

The Relationship between Weight Self-Stigma, Eating Behaviour, and Body Appreciation in Turkish Young Adults

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Introduction: Stigma is defined as the co-occurrence of labeling, stereotyping, separation, devaluation, and discrimination. Weight stigma is stigma targeted towards people with obesity due to their excess weight and size. When stigma is internalized by individuals, it can negatively affect their eating and weight-related behaviours as well as their body perception and self-esteem. Therefore, people with obesity are at risk not only for physiological health but also for psychological and social health problems (1,2). This study aimed to examine the relationship between weight self-stigma, eating behaviour, and body appreciation.

Methods: Adults aged between 19-45 were included in the study. Being pregnant or lactating were the exclusion criteria. The data were collected using an online questionnaire including socio-demographic characteristics, general health status, self-reported body weight, and height. Participants filled out Weight Self-Stigma Questionnaire (WSSQ) (3), Dutch Eating Behaviour Questionnaire (DEBQ) (4), and Body Appreciation Scale (BAS) (5). The WSSQ

has two (self-devaluation and fear of enacted stigma), DEBQ has three (emotional, restrained, and external eating) and BAS has two (body appreciation and body image investment) subscales. Three attention check questions were inserted into the survey to identify non-engaged participants, their data were not included in the analysis. SPSS version 25.0 was used for statistical analysis. Since WSSQ, DEBQ, and BAS scores were not normally distributed, Mann Whitney U and Kruskal Wallis tests were used to compare groups. Spearman's rank correlation analysis was used to examine the relationships between BMI, WSSQ, DEBQ, and BAS scores.

Results: 914 young adults were included in the analysis with a mean age of 23.28 ± 3.95 and 76.4% were female. Adults with higher BMI had higher scores for self-devaluation and fear of enacted stigma ($r=0.369$ and $r=0.144$, respectively and $p<0.001$ for each). Adults who had higher self-devaluation and the fear of enacted stigma scores remembered their body weight more frequently during the day, did regular physical activity, weight regularly and more frequently ($p<0.05$ for each). Self-devaluation and fear of enacted stigma scores were positively correlated with emotional ($r=0.356$, $r=0.288$), restrained ($r=0.358$, $r=0.174$), and external ($r=0.179$, $r=0.180$) eating scores, and negatively correlated with body appreciation ($r=-0.378$, $r=-0.388$) and body image investment ($r=-0.362$, $r=-0.370$) scores ($p<0.001$ for each).

Conclusion: Weight self-stigma was associated with lower body satisfaction and emotional, external, and restrictive eating behaviours. Internalization of weight stigma triggers unhealthy eating behaviours instead of promoting healthy ones. Therefore, weight stigma may cause a further increase in the obesity epidemic. Obesity prevention and management programs should also include interventions to reduce the weight stigma.

Conflict of Interest: None.

Funding: No Funding.

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OP4.01

The Use of Galactogogues and the Level of Knowledge about them among Pregnant and Lactating Women

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Introduction: Even though breastfeeding is the gold standard for infant nutrition, its duration often does not meet recommendations (1). The most common reasons for breastfeeding cessation

are difficulties with lactation (2) and concerns about milk supply (3). In case of breastfeeding difficulties mothers are likely to use galactogogues which are substances that promote milk production. However, evidence of their efficiency and safety are limited (4). The aims of this study were to assess knowledge about galactogogues among pregnant and lactating women, and to evaluate practices related to galactogogues consumption by lactating women.

Methods: The study was carried out between January and February 2021 and was based on convenience sampling. Inclusion criteria were being an adult woman, breastfeeding or pregnant. Data on socio demographic variables, knowledge about galactogogues, frequency of galactogogues intake, women's preferences for galactogogues and effectiveness of using them were collected using Computer-Assisted Web Interview. The questionnaire consisted of 38 close and open-ended questions, and it was designed by the authors. All participants responded anonymously. To define the level of knowledge about galactogogues a sum score for each response ranging from 0 to 9 was calculated. For each correct answer respondents got 1 point. Women were asked about a definition of galactogogues, whether galactogogues are recommended in the case of breastfeeding difficulties and whether in Poland there is any registered medication containing galactogogues. Moreover, they were asked to point out which herbals and foods are classified as galactogogues. Based on the number of correct responses, women's knowledge was classified as: good knowledge (range 7-9), adequate knowledge (range 4-6) and insufficient knowledge (range 0-3). All data were analysed using Microsoft Office Excel. Chi-square test was performed for categorical variables. Significance level was set at ≤ 0.05 .

Results: The total sample consisted of 127 women. Of these, 101 women were breastfeeding at that time. Most respondents were not familiar with the word "galactogogues". Less than 40% of them knew the role of galactogogues and only one person answered that galactogogues are recommended in case of breastfeeding difficulties. More than 85% of women had insufficient knowledge about galactogogues. There was a significant relationship between knowledge about galactogogues and their intake ($p=0.040$). In our study, 44.9% of women declared using galactogogues and 68.4% of those observed a change in milk production. Galactogogues used most frequently were a preparation characterized by a content of barley malt extract, lactation tea, fennel, and fenugreek. Almost $\frac{3}{4}$ of women used galactogogues a few times per day or once per day. There was no relationship between knowledge about galactogogues and frequency of their intake ($p=0.334$).

Conclusion: There is a need to educate pregnant and breastfeeding women on the safety and effectiveness of galactogogues.

Conflict of Interest: None.

Funding: No Funding.

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OP4.02

The Influence of Lactation and its Duration on Bone Mineral Density in Pregnancy and Postpartum: A Systematic Review with Meta-Analysis

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Introduction: There is a plethora of research on the association of parity and duration of lactation with bone mineral density (BMD) during and after pregnancy. However, there are no consensus conclusions on the impact of pregnancy and lactation duration on BMD. The aim of this study was to examine the effect of pregnancy, and the duration of lactation on BMD during pregnancy, postpartum phase, and 12 months post-delivery.

Methods: The search terms 'parity' 'lactation' 'BMD' were searched for using PubMed, CINAHL, SCOPUS and EMBASE databases in English language. Two independent reviewers assessed the quality of the included studies using the Critical Appraisal Skills Program (CASP) appraisal tool and extracted data on BMD (g/cm²) in Excel. A meta-analysis was conducted with a random effect model using Cochrane Review Manager (Rev 5.4) to analyse the outcome. Heterogeneity was assessed with Chi-Square and I² tests. The duration of lactation was grouped into short lactation duration (SLD), ≤ 4 months and longer lactation duration (LLD) > 6 months.

Results: Twenty-one studies were included in this review with four studies included in the meta-analysis. BMD is reduced during pregnancy and lactation. Recovery and net gains in BMD followed weaning. However, at 12 months postpartum, women in the LLD group had significant losses at the lumbar spine while those in the SLD recovered BMD. Between the SLD and LLD groups, the change in BMD was not significant 0.48 g/cm² (95% CI -0.14, 1.10, *p* = 0.13). BMD losses were greater in primiparous women than multiparous women.

Conclusion: Women who breastfed for >6 months had significantly reduced BMD. However, compared to women that breastfed for a ≤ 4 months there was no significant change in BMD. Further investigation is needed to clarify the association between lactation and BMD in a postpartum population in those women extending breastfeeding beyond one year.

Conflict of Interest: None.

Funding: No Funding.

OP4.03

Mapping the "Sweet Brain": A Double-Blind Randomised Crossover-Controlled Trial in Healthy Adults

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Introduction: The increased use of non-nutritive sweeteners as sugar substitutes over the last decades has raised interest in their potential effects on regulatory functions of the brain. Stevia is a non-caloric sweetener that has demonstrated beneficial effects on appetite and energy intake (1, 2). The present study aims to investigate the neural correlates of acute physiological signals, and food-cue elicited responses related to the consumption of beverages differing in sweetness and caloric content.

Methods: Eighteen healthy participants (mean body mass index: 21.5±2.1 kg/m²) completed four imaging sessions, after a 3-4 hour fast, distinguished only by the type of beverage they consumed (water, or water with stevia, glucose, or maltodextrin). Change in blood-oxygenation level-dependent (BOLD) contrast during functional Magnetic Resonance Imaging (fMRI) was monitored over a 30 min period after the consumption of the beverages. Participants were scanned while performing a food visual probe task (VPT) before and 30 minutes after the consumption of the beverages. Hunger, fullness, and sweetness sensations were also recorded.

Results: There was a significant interaction of taste-by-time in BOLD contrast in areas involved in gustatory and reward processing, with sweet beverages inducing a greater reduction in BOLD compared to non-sweet beverages. There was also a significant interaction of calories-by-time in BOLD response in thalamic, visual, frontal, and parietal areas among others; glucose and maltodextrin demonstrated a significantly greater incremental area under the curve (iAUC) of the average BOLD response in the 10-20 min time bin only compared to water, while in the 20-30 min iAUC no longer differed. The interaction of sweet taste-by-calories-by-time showed a greater and more robust BOLD decrease for stevia mainly in motor, frontal areas, and insula, which was more apparent in the 20-30 min post-consumption. In the food-cue task, the three sweet/caloric beverages (stevia, glucose, maltodextrin) showed an attenuated response in the visual cortex in response to food compared to control trials, while water demonstrated increased response post-consumption. Only the glucose beverage significantly increased fullness sensation post-ingestion.

Conclusion: Both sweet taste and calories have a modulatory effect in the brain signalling post-consumption. Stevia showed a more robust and longer lasting BOLD decrease in the human brain that could potentially be linked to effects on feeding behaviour.

The trial was pre-registered at clinicaltrials.gov under NCT04162457.

Conflict of Interest: NSS, SM, RE, JM declare no conflict of interest. CS and DB work for Cargill and Cargill that produces stevia.

Funding: NSS was supported by a UK Biological and Biotechnological Sciences Research Council Doctoral Training Partnership (DTP) CASE studentship. Cargill was the industrial partner; funded the imaging and provided the study beverages.

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E-Posters

EP1

Mushrooms as a Meat Substitute: Possible Health Effects and Consumer Acceptance

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Introduction: Guidelines recommend the consumption of two to three portions per week of red meat including sausage meat. The Austrian population consumes more than three times this amount, on average. The high consumption of meat and sausages is also associated with an increased fat intake, which may have a negative effect on the cardiovascular system and on body weight. Partial or total substitution with native mushrooms or mushroom-based meat substitutes are possibilities for meat reduction. We aimed to explore the literature for evidence on the use of mushrooms as a meat substitute and its effect on health parameters in healthy adults. The acceptance of dishes in which meat has been partially or completely replaced by mushrooms compared to pure meat dishes was also explored.

Methods: A systematic literature research resulted in five studies (1-5) being selected from four databases. Three dealt with the health effects and two with sensory aspects of meat substitutes. Each study was assessed for the study quality and level of evidence.

Results: The studies showed that with prolonged substitution, significantly greater loss of weight, body fat mass and reduction of waist circumference was observed in the mushroom group. In addition, hunger and satiety could be positively influenced. Regarding the energy deficit, no consistent results were seen. The sensory studies showed a partially hidden substitution was better accepted by consumers than an easily recognisable one. Overall meat replacement products were less acceptable.

Conclusion: No clear results could be seen from this review. While the sensory properties of mushrooms are a possible meat alternative, the health effects were mixed and came from a limited number of studies. Further research is needed to explore this area.

Conflict of Interest: None.

Funding: No Funding.

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EP2

An Analysis of the Eating Habits of Adults with Turkish Migration Background Living in Vienna

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Introduction: Individual dietary behaviour is influenced by tradition and culture (1). To ensure an adequate nutritional therapy, dietitians are required to have a basic knowledge about the individual dietary behaviours. Since many people of Turkish descent are currently living in Austria, this study examines the nutritional behaviour of this population group. The aim was to survey and analyse the current nutritional status of people with a Turkish migration background in the tenth district of Vienna to gain a better understanding of their eating behaviour.

Methods: The survey was conducted quantitatively using the Vienna food record (2). Food consumed, meals, and beverages were prospectively collected from test persons over a period of 4 days (3 working days + 1 weekend day). In addition, anthropometric and socio-demographic data as well as previous illnesses were queried by means of questionnaires. Recruitment was based on gender and age stratified quota sampling and reflected a cross-sectional study with a sample size of 30 persons with a Turkish migration background living in the 10th district of Vienna.

Results: The quantitative survey showed that the study participants have a high-calorie, protein-rich and high-fat dietary pattern, at the expense of carbohydrate intake. Deviations from the D-A-CH reference values, which were to be assessed as negative, were found in the intake of free sugar, table salt, saturated fatty acids, and cholesterol, while deviations in the intake of dietary fibre, unsaturated fatty acids and alcohol were assessed as positive. Low carbohydrate intake, low vitamin D supply in the absence of endogenous synthesis, and insufficient iodine intake and iron intake were identified as critical nutrients in women aged 19 to 50 years. Likewise, a high prevalence of diet-associated diseases such as obesity, type 2 diabetes mellitus, hyperlipidaemia and hypertension were found. Studies show that a culturally sensitive approach to counselling, education, and therapy is important in this regard (3-4).

Conclusion: A holistic view of the individual is multidimensional and requires highly specific care. A comprehensive dietary history of persons of Turkish origin with a focus on the problem areas mentioned is essential for the dietetic practice. In this

context, culture- and religion-specific dietetic counselling as well as nutritional training, taking socio-economic aspects into account, are the key factors for the success of the dietary therapy.

Conflict of Interest: None.

Funding: No Funding.

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EP3

Experiences of Post-Bariatric Weight Management among Patients with Weight Regain: A Qualitative Study

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Introduction: For patients with severe obesity, bariatric surgery is the most successful treatment for sustainable weight loss. However, a substantial number of patients regain weight. Several factors have been suggested to contribute to weight regain, including genetic-, metabolic-, hormonal-, anatomic/surgical-, behavioural-, and psychological factors. Meanwhile, little is known about how patients have experienced post-surgical weight regain and weight management. We aimed to increase the understanding of how patients with obesity perceive weight regain and weight management after bariatric surgery.

Methods: We recruited participants with weight regain after bariatric surgery at a specialist obesity clinic. We conducted individual semi-structured interviews. The recorded interviews were transcribed verbatim and analysed using thematic analysis.

Results: Participants had undergone Gastric bypass surgery between 3 to 15 years (mean 10 years) before the interview. Participants (n=16) regained on average 36 % (range 12 to 71 %) from their lowest post-surgical weight. Most participants were women (n=12) and on average 49 years (range 20 to 64 years) old. Thematic analysis resulted in two main themes. The first theme: Loss of control and focus illustrates how participants unexpectedly lost control over their weight some years after surgery. Various challenges such as eating in social settings, increased hunger and decreased satiety, cravings, difficulties in family life, loneliness, financial worries, and problems with physical and mental health distracted focus from weight management. Participants responded to weight regain with emotional distress, with self-blame, shame, and guilt. They commonly perceived that healthcare professionals were not present when they needed weight management support and advice. The second theme: Reducing the burden of weight

management represents participants' perceptions of factors they believed facilitated self-care during the challenges of weight management. Support from family and healthcare professionals was emphasized. Especially evidence-based dietary advice and psychological support was requested. Furthermore, participants expressed having gained knowledge and insights into the importance of prioritizing their own needs. Despite weight regain, participants still perceived lasting benefits from the surgery. In general, the participants did not regret having undergone bariatric surgery.

Conclusion: Weight regain after bariatric surgery was perceived as a difficult and unexpected experience that induced shame and guilt. Our results indicate that various challenges, such as difficulties in family life, loneliness, physical and mental health problems and return of hunger and cravings may contribute to loss of control and focus. All healthcare professionals who see patients with obesity and weight regain after bariatric surgery should be aware of the possibility of internalized stigma in the patient and counteract any negative attitudes.

Conflict of Interest: None.

Funding: No Funding.

EP4

Struggling to Eat to Survive Cancer: Lived Experiences of Eating among Adolescents and Young Adults Undergoing High-Emetogenic Chemotherapy

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Introduction: Eating difficulties; changes in taste, poor appetite, nausea, and vomiting are closely linked to reduced food intake and poor QOL (1,2). This study focussed on adolescents and young adults with cancer (AYAs) receiving high-emetogenic chemotherapy (HEC). Despite anti-emetogenic medication, the prevalence of nausea and vomiting is more frequently reported among AYAs than among the adult population (3). To date, little is known about how eating as a phenomenon is disrupted by cancer and its treatment. Such knowledge will critically inform the understanding of eating difficulties and improve AYAs' eating possibilities. Therefore, the purpose of this study was to provide an in-depth understanding of AYAs' lived experiences with eating at home between HEC sessions.

Methods: The study was guided by van Manen's hermeneutic-phenomenological methodology (4,5). Eligible AYAs were 15-29 yrs., diagnosed with oncological or haematological cancer, treated with HEC and Danish speaking, recruited from three university hospital departments. Thirteen AYAs, aged 17-29 yrs. were included. Data were collected by in-depth interviews.

Results: The essential meaning of the phenomenon of eating can be characterized by the overarching theme 'Struggling to eat

to survive' describing how AYAs struggled with food – not against food. It is further unfolded through the following three themes: 'Cooperating with a deceiving body' described how AYAs had to acknowledge strange and unfamiliar bodily reactions that challenged their ability to eat. 'Capturing moments of eating opportunities' described how they endured their embodied betrayals and developed strategies to capture these rare moments and 'Being loved and cared for 'at home' described how AYAs became dependent on next-of-kin as a way of gaining confidence and support to live through treatment.

Conclusion: Struggling to eat was a fundamental existential challenge that required reflection and consciousness. AYAs experienced their deceiving bodies as a major concern, which challenged their ability to eat and forced them to develop eating strategies. AYAs kept hold of doing 'something' to maintain control of their own lives and thereby assist clinical outcomes and cure. It is highly relevant for healthcare professionals to acknowledge that eating is individual in nature and affects AYAs entire lifeworld.

Conflict of Interest: None.

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EP5

Nutrition Information and Intervention Preferences of Irish Cancer Survivors

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Introduction: At present, very little is understood about how best to deliver nutrition information and support to Irish cancer survivors. Ascertaining cancer survivors' specific needs and preferences regarding nutrition information delivery is an important step in the development and design of future health interventions in oncology. Therefore, the aim of this study is to explore the nutrition information needs of Irish cancer survivors and their preferences regarding intervention delivery.

Methods: An online questionnaire (using Microsoft Forms) has been circulated to and promoted by cancer support groups and centres as well on social media since March 2021. Those aged over 18 who have completed active cancer treatment at least six months ago and who are not palliative are eligible to take part. Descriptive

analysis has been undertaken on the 42 individuals who have completed the survey to date using SPSS Version 26. Ethical approval was granted by the Research Ethics Committee in the Institute of Technology, Sligo.

Results: The majority of individuals who have completed this survey are female (n=37, 88.1%) and have been diagnosed with breast cancer (n=28, 66.7%). Ten (23.8%) have received nutrition advice with 6 of these reporting that advice came from a dietitian. The remaining four individuals received advice from an information booklet, cancer support centre, radiation therapist and a course. One-third (n=14) of the cohort reported confusion over what diet to follow. The majority have an interest in receiving nutrition advice (n=39, 92.9%), however there was not consensus over how this should be delivered (website (n=8, 19%); app (n=6, 14.3%); live online presentations (n=9, 21.4%); face-to-face personalised advice (n=8, 19%) and online personalised advice (n=8, 19%). The cohort are also split in terms of whether these should be undertaken alone (n=18, 41%) or in a group of peers (n=19, 45.2%). The most popular additional resource desired was recipes (n=20, 47.6%). In addition to nutrition there was an interest in information on how to make positive lifestyle changes (n=24, 57.1%); how to be more physically active (n=19, 45.2%) and improving sleep quality (n=28, 66.7%). The best time to deliver information was throughout the cancer journey (n=23, 54.8%) and monthly (n=15, 35.7%). Fatigue (n=14, 33.3%), time (n=14, 33.3%) and motivation (n=11, 26.2%) were deemed to be the main barriers to taking part in nutrition information sessions with the main facilitators being keeping healthy (n=35, 83.3%), reducing risk of recurrence (n=28, 66.7%), weight maintenance (n=23, 54.8%) and improved quality of life (n=23, 54.8%).

Conclusion: Those who have completed this study to date have a keen interest in receiving nutrition advice regularly throughout the cancer journey. There is also an interest in additional information to support improvements in sleep and physical activity. It is clear however that one size does not fit all in terms of how this information should be delivered. This work will continue to recruit participants to better determine the nutrition needs and preferences of Irish Cancer Survivors. Understanding the barriers and facilitators to accessing this information will ensure the development of useful and desired resources.

Conflict of Interest: None.

Funding: No Funding.

EP6

The Implementation of Dynamic Networks to Examine the Interplay between Food Cravings, Physical Hunger, Restrained Eating and Negative Emotions in Daily Life

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Introduction: Food cravings are a multidimensional component that may lead to overeating^{1,2}. They are associated with hunger³, food restriction^{4,5}, and negative emotions^{6,7}. All these

factors may interact and trigger one another in a vicious cycle. In this study, we aimed to explore the dynamic interactions of food cravings, negative emotions, restrained eating, and hunger in daily life by using a dynamic network modelling approach

Methods: Participants (n=123) completed ecological momentary assessments via their smartphones 3 times daily for 10 days assessing food cravings, hunger, restrained eating, and different negative emotions. We used a multilevel vector auto-regression model to examine temporal (lagged associations between variables in one measurement and the following measurement 4-6 hours later), contemporaneous (within-measurement associations) and between-networks (between persons' correlations) models⁸.

Results: In terms of negative emotions, only stress predicted food cravings in the temporal network, whereas loneliness was predicted by restrained eating and hunger, and sadness was predicted by restrained eating, subsequently activating other emotions and food cravings as well. In the contemporaneous network, boredom and hunger were positively associated with food cravings and anger was negatively correlated with restrained eating. Overall, the most central negative emotions in the networks were stress and sadness.

Conclusion: Negative emotions, restrained eating and hunger affect food cravings. Some negative emotions play a more significant role and might be triggered when individuals restrained their eating or feel hunger, consequently evoking other emotions and food cravings. These factors have different immediate or delayed interactions highlighting the complexity of the mechanisms underlying food cravings. The findings give new insights to identify potential targets, like reducing stress and restrained eating, for interventions and indicate future lines of research investigating factors that lead to overeating.

Conflict of Interest: None.

Funding: No Funding.

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EP7

Bewusst Trinken/Drinking Consciously: A Programme to Reduce Sugar Consumption from Beverages in Schools

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Introduction: In Europe, one in three 11-year-old children (in Austria 6th grade) are overweight or obese. At the same time, there is a clear link between the consumption of sweet beverages and obesity. It is also known that many children go to school poorly hydrated, which negatively affects their concentration. Due to the large variety of beverages, it is essential that children are able to make a conscious and health-promoting choice of beverages.

Methods: At two Styrian schools, a pilot teaching programme to improve the range of beverages and consumption was developed, tested, evaluated, and summarised in a manual for nationwide multiplication. Using a peer education approach, students of the 8th grade were trained to pass on targeted information to their younger peers in the 6th grade and to act as role models. At the same time, the range of beverages offered was optimised and the teachers and parents were also involved. The change was tested by means of sensory exercises, fluid consumption protocols, and anthropometry.

Results: Based on the measures taken, the urine colour and thus the hydration status changed by 6% from 3.3 to 3.1 points (1=light urine colour; p=0.149). Sugar intake from beverages decreased by 25% (55.6 g to 41.7 g/day; p=0.072). Energy intake from beverages decreased by 17% (300 to 248 kcal/day; p=0.162). The general preference for sweet beverages decreased by 6% (18.3 to 17.2 points; p=0.038). At the same time, the proportion of children who correctly identified sweet taste in the taste threshold test improved from 74 to 83% (p=0.307).

Conclusion: Using a peer education approach, it is possible to encourage positive trend in terms of health promotion for both hydration status and sugar intake from beverages and thus contribute to the prevention of obesity and other metabolic diseases.

Conflict of Interest: None.

Funding: No Funding.

EP8

Priorities for Preconception Health and Obesity from the Perspective of Women: A Mixed Methods Study

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Introduction: Preconception health and weight influences maternal and child outcomes in pregnancy and beyond but engaging women in health-promoting behaviours during the preconception period is challenging. Limited access to preconception services or varying intentions to conceive being potential barriers impacting preconception-focused trials success. To support improved preconception trial design for women, particularly those with obesity, we aimed to investigate their attitudes and interests towards health, research, and research participation.

Methods: This mixed-methods Study Within A Trial (SWAT) was embedded in a preconception probiotics trial. Women recruited were not pregnant, postpartum, or intending to conceive in the next three months. Women who registered interest in participating in the preconception trial were invited to complete an online survey investigating factors related to research and research participation. The survey included 10 main questions which included free text, single or multiple choice and Likert scale answers. Topics covered included recruitment strategies, motivation for taking part and opinions on study activities such as sample provision and preferred feedback. Women with BMIs $\geq 30\text{kg/m}^2$ who took part in the baseline visit of the preconception trial were invited to participate in a subsequent semi-structured focus group conducted via Zoom. The topics of the survey were further explored taking a pragmatic epistemological approach and priorities for women's health research was also discussed. The focus groups were recorded, transcribed verbatim and analysed using inductive thematic analysis.

Results: Survey participants (n=102) reported altruism as their main motivation as a desire to support health research (37.3%, n=38), followed by the free health screen (28.4%, n=29), wanting to be healthier (21.6%, n=22), and trial of the probiotic (7.8%, n=8). Their preferred recruitment strategy was direct email (as 75.5% (n=77) ranked this within the top 3 of provided options, followed by social media (49.0%, n=50). These findings were confirmed in the focus groups (n=2, total 9 participants). When discussing priorities for health research among the groups, women with obesity had an expanded view of health, which included mental health, physical functioning, and quality of life. The importance placed on these aspects were at least equal to traditional medical disease-prevention interpretations. The variable nature of health

status between individuals with the same BMI was also discussed, suggesting health interventions should be personalized and flexible to the individual. The value of convenience in study design also emerged including consideration of how the study activities will fit into their lives and the ease of study visits.

Conclusion: Women with obesity are interested in health research that covers a variety of health outcomes. Future preconception trials should consider digital rather than traditional recruitment strategies that resonate with the motivations of this group and prioritize convenience to maximize uptake.

Conflict of Interest: None.

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EP9

Do Different Dietary Assessment Methods Lead to the Same Conclusions? Comparison of the Dietary Picture Captured by Two Population Surveys using Different Dietary Assessment Methods

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Introduction: Since following a high-quality diet is not equally easy for all population groups, it is crucial to monitor the dietary intake at population level. Different methods to assess dietary intake are frequently used, yet no consensus exists as to what the best approach is when assessing diet on a population level. In this study, we aimed to compare the dietary picture captured by two population-based surveys representative for Switzerland, which used different methods of dietary assessment.

Methods: Data from the 2012 population-based Swiss Health Survey and the 2014-2015 *menuCH* were used. In the Swiss Health Survey, diet was assessed by a short set of questions focusing on selected food groups. In *menuCH*, dietary assessment was conducted using two non-consecutive 24-hour dietary recalls. We based our assessment of the dietary picture captured for Switzerland in these surveys on the Swiss food-based dietary guidelines. The weighted proportion of responders meeting the food-based dietary guidelines for vegetable, fruit, dairy product, meat, fish, and alcohol consumption was estimated in both surveys and compared overall and by selected characteristics.

Results: Responders of both surveys were balanced between sexes and had a similar distribution of body mass index categories and self-reported health. In the Swiss Health Survey, the majority met two to three guidelines and one in five met four or more of the

Swiss food-based dietary guidelines. In contrast, in the *menuCH* survey, almost two in five responders met less than two of the food-based dietary guidelines, with less than one in ten meeting four or more of the Swiss food-based dietary guidelines. In both surveys, a higher proportion of women and never smokers met four or more of the food-based dietary guidelines compared to men, or current and former smokers, respectively. The food-based dietary guidelines most infrequently met were the ones on dairy product (Swiss Health Survey) and vegetable consumption (*menuCH*).

Conclusions:

(1) Comparing the dietary picture captured in two population-based, representative surveys, we saw major differences depending on the dietary assessment method used. This highlights the urgent need of using high-quality dietary assessment methods to monitor population-level dietary habits.

(2) Overall, our results are comparable to those in the literature and accentuate the low proportion of people meeting national food-based dietary guidelines. This has important public health implications, due to the link of healthier diets with both better health outcomes and sustainability. Policy actions are needed to raise awareness of national guidelines, remove barriers to healthy eating, and make healthier foods the easiest and most readily accessible choice.

Conflict of Interest: The authors declare no conflict of interest.

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EP10

Could Fat Taste Sensitivity be a Predictor for Fat Quality Index and Dietary Fat Indices?

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Introduction: Fat taste sensitivity of individuals affects satiety responses. Lower fat taste sensitivity may cause increased dietary fat intake. It is thought that there might be a relationship between fat taste sensitivity and fat quality index (FQI), dietary fat indices (index of atherogenicity (IA), index of thrombogenicity (IT)), although there is no data related to this topic in the literature. Therefore, this study aimed to examine the relationship between fat taste sensitivity and FQI, IA and IT.

Methods: This study was conducted on 113 participants, 62 men and 51 women, aged 19–44 years. The fat taste threshold was determined using the 3-Alternative Forced Choice Methodology (3-AFC) for oleic acid. Individuals with a fat threshold under 3.0 mM were classified as hypersensitive, and those with a fat threshold equal to or over 3.0 mM were classified as hyposensitive. Participants kept a 3-day food consumption record. These food records were then analysed using the Nutrition Information Systems, a food software program for nutrients assessment that includes Turkish Food. FQI, IA and IT were calculated according to their formula [1–3]. Data collected were analysed using SPSS, version 22.0.

Results: The mean fat threshold of participants was 3.85 ± 3.36 . From the participants 56.6% were hypersensitive, and 43.4% were hyposensitive. The mean FQI score of the hypersensitive and hyposensitive individuals were 1.73 ± 0.52 mM and 1.56 ± 0.46 mM, respectively. The mean score IA of hypersensitive individuals was 0.64 ± 0.24 , and the mean score IA of hyposensitive individuals was 0.70 ± 0.22 ($p > 0.05$). The mean IT score of hypersensitive individuals (0.88 ± 0.26) were lower than hyposensitive individuals (0.98 ± 0.26) ($p = 0.051$). However, there was a correlation between fat threshold and FQI and IT (respectively $r = 0.196$ $p = 0.037$; $r = -0.206$ $p = 0.028$).

Conclusion: This study did not demonstrate a significant association between fat taste sensitivity and FQI and dietary fat indices. Future studies with a large population are needed for clarifying this relation.

Conflict of Interest: None.

Funding: No Funding.

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EP11

Basic Principles for the Development of a Standardized Dietetic Assessment for Selected Gastroenterological Diseases

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Introduction: In the dietetic process model, the assessment forms the basis of action. Currently, no standardized gastroenterological assessment exists for use in Austrian dietetics. The aim of this research was to systematically assess existing assessment and outcome instruments concerning selected gastroenterological diseases.

Methods: Systematic literature research concerning existing assessment and outcome instruments including reliability and validity studies were conducted in databases such as PubMed, Cinahl, Cochrane and PsycINFO. The collected instruments were described regarding their reliability and validity. Based on this, the requirements, and expectations of experts towards a standardized gastroenterological assessment were determined through a two-round Delphi survey and ranked according to their relevance for dietetic practice. Twelve dietitians participating in the first and nine in the second consultation, who had specialized in the field of gastroenterology in the clinical setting in Austria served as experts during both rounds of questioning.

Results: A systematic literature search yielded a total of 48 valid and reliable assessment and outcome instruments for the disease patterns of carbohydrate malabsorption, coeliac disease, inflammatory bowel disease, irritable bowel syndrome, pancreatitis, and

liver cirrhosis, as well as for selected critical nutrients (iron, zinc, calcium and vitamin D) and additional diagnoses (gastrointestinal symptoms, short bowel syndrome, osteoporosis and psychological stress).

Using the Delphi survey in two rounds based on the systematic literature research, requirements, and expectations of experts for a standardized dietetic assessment were collected and evaluated according to their relevance. Those aspects on which experts reached a consensus of at minimum 60% were considered relevant to a standardized dietetic assessment. According to the experts, the relevant contents of a standardized dietetic assessment in the field of gastroenterology include nutritional habits and status, weight changes, food intolerances, results of basic medical diagnostics, clinical-chemical blood composition, defaecation functions, functions of the digestive tract, frequency and type of complaints, medications, and a guideline for further procedure. Nutritionally valuable findings of the Delphi questionnaires were depicted tabularly.

Conclusion: Despite the existence of reliable and valid assessment and outcome instruments, there are no disease specific instruments being used in dietetic practice. A plethora of these instruments require additional research regarding reliability and validity for inclusion into a standardized procedure. Further work should include evaluating tools according to COSMIN and the nutritionally valuable aspects linked to ICF-Dietetics.

Conflict of Interest: None.

Funding: No Funding.

EP12

Differences in Height-for-Age z-Score between Children and Adolescents of Mapuche Ethnicity and Descendants of Europeans Living in Chile: A Systematic Review and Meta-Analysis

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Introduction: Stature is an excellent measure of general health status in female and male children and adolescents (FeMaCA) [1]. Several studies have compared the height, through the height-for-age z-score (HAZ), between FeMaCA of Mapuche ethnicity and European descent, and the results have been inconclusive [2–4]. This systematic review and meta-analysis aimed to compare the HAZ between FeMaCA of Mapuche ethnicity and descendants of Europeans.

Methods: This study was registered in Prospero (CRD42017069924), and the protocol can be consulted elsewhere [5]. The search was performed in four databases until October, 2020: PubMed/Medline, Scopus, Web of Science and SciELO. Observational studies conducted on FeMaCA of Mapuche ethnicity and descendants of Europeans; providing data on HAZ reported as mean and standard deviation, or statistics that allow its estimation; published in English or Spanish, were included. The selection process was performed first, from title and abstract, and then, through full text of relevant manuscripts. The global mean difference (GMD) and the 95% confidence interval (CI) were estimated using the generic inverse variance method applying random-effects models. To examine the influence of living in rural or urban areas, a stratified analysis was conducted. Heterogeneity was assessed by the Cochran Q-statistic and the I² statistic, and the publication bias through the Egger's and Begg's test. All analyses were performed with STATA 15.

Results: From 3141 records initially identified, three studies were selected [2–4]. The HAZ for FeMaCA of Mapuche ethnicity ranged from -0.96 in rural areas with high poverty to 0.38 in urban areas. Meanwhile, the HAZ for FeMaCA of European descent ranged from -0.58 in rural areas to 0.16 in urban areas. Stratified analysis based on the area of residence of Mapuche subjects showed a significantly lower HAZ in Mapuche subjects living in rural areas compared to European descent (GMD = -0.43; 95% CI: -0.58, -0.27). Conversely, FeMaCA of Mapuche ethnicity living in urban areas had a significantly higher HAZ compared to urban Europeans descendants (GMD = 0.25; 95% CI: 0.33, 0.30). The heterogeneity was undetectable in any case (I² = 0.0%), and no evidence of publication bias was found after applying Egger's and Begg's tests.

Conclusion: This study found a higher HAZ in FeMaCA of Mapuche ethnicity living in urban areas compared to European descent, and a lower HAZ in Mapuche FeMaCA of rural areas. Living in rural or urban environments may play a crucial role in the stature of FeMaCA of Mapuche ethnicity, possibly linked to a higher social vulnerability that this ethnic group presents, especially in rural areas.

Conflict of Interest: The authors state that there are no conflicts of interest.

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EP13

Comparison of BMI-for-Age z-Score between Children and Adolescents of Mapuche Ethnicity and Descendants of Europeans Living in Chile: A Systematic Review and Meta-Analysis

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Introduction: Some studies, but not all, have observed significant differences in the BMI-for-age z-score between children and adolescents of Mapuche ethnicity and those of European descent [1–3]. This systematic review and meta-analysis aimed to compare the BMI-for-age z-score between children and adolescents of Mapuche ethnicity and descendants of Europeans.

Methods: The present study was registered in Prospero (CRD42017069924) [4]. A robust search was carried out in Web of Science, Scopus, PubMed/MEDLINE and SciELO until October 15, 2020. Observational studies carried out in subjects between 2 to 18 years of Mapuche ethnicity and descendants of Europeans, providing data on BMI-for-age z-score reported as mean and standard deviation, were included. The global mean difference (GMD) and the 95% confidence interval (CI) were calculated using the generic inverse variance method with random-effect models. To examine the influence of age (age range 5 to 8 vs age range 9 to 16 years), a stratified analysis was conducted. Cochran's test and I^2 were used to examine heterogeneity. Publication bias was assessed by Egger's and Begg's test. All analyses were performed using STATA 15.0 statistical software.

Results: The search strategy yielded 3141 records, of which three studies, comprising 1581233 subjects, were selected [5–7]. The GMD for the BMI-for-age z-score was 0.09 (95% CI: -0.05, 0.24). Stratified analysis based on the age range showed no significant differences between children ranging from 5 to 8 years of Mapuche ethnicity and those of European descent (GMD = 0.05; 95% CI: -0.10, 0.21). Interestingly, the GMD for the age range of 9 to 16 years was 0.23 (95% CI: -0.01, 0.47), at the border of significance. Heterogeneity in the stratified analyses was low or undetectable ($I^2 = 19.9\%$, $p = 0.287$). No evidence of publication bias was found in the meta-analysis after applying Begg's and Egger's tests, showing robustness of the results.

Conclusion: This systematic review and meta-analysis found no significant differences in the BMI-for-age z-score between children and adolescents of Mapuche ethnicity and descendants of Europeans living in Chile. Further studies are warranted to delve into the possible differences that may exist between these groups.

Conflict of Interest: None

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EP14

The Unmet Nutritional Needs of People Living with Parkinson's Disease

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Introduction: Nutritional guidelines outline the importance of clinical nutrition to the lives of people living with Parkinson's Disease (PwP) [1]. Research has shown that improving nutritional status improves quality of life for PwP [2–4]. Within neurological disorders, Parkinson's disease (PD) is the fastest growing, with predictions of 12 million people worldwide being diagnosed by 2040 [5]. Considering these facts and that Ireland's older population is growing, it is important to identify if the nutritional care needs are being met to enhance the quality of life of those living with a progressive and incurable disease. To date there has been no research on nutritional needs of people living with PD in Ireland.

Methods: A 13 question survey was distributed to PwP through the Dublin branch of the Parkinson's Association of Ireland. Members were emailed an online survey and sent a postal option with a stamped addressed envelope for those who did not have Internet access.

Results: We received 82 responses, 50 postal and 32 online. 8 out of 10 respondents were over 64 years old and most had PD for <15 years. 87.5% and 79.5% reported that neither their GP nor neurologist, respectively, ever asked them about their diet. 82% said they had never been referred to a Dietitian since diagnosis and 88% of people had never requested a referral to a Dietitian. Of the people who had seen a Dietitian, 70% were happy with the advice received.

61.2% and 59.3% reported that neither their GP nor neurologist, respectively, had ever weighed them. Whilst 63% had lost weight unintentionally since their diagnosis. 60% suffered from constipation. 36.4% had difficulty cutting food, 41.6% had difficulty holding utensils and 28.6% had difficulty preparing/cooking food. Almost 25% had difficulty choking/coughing on food/fluids, whilst 20% had difficulty swallowing food. Almost 50% were not taking a Vitamin D supplement.

Conclusion: This survey identifies many of the nutritional needs of PwP such as weight loss, eating difficulties and constipation all which are known issues within the clinical nutrition literature and guidelines. However, the survey also demonstrates a concerning gap between the nutritional needs of PwP and the delivery of nutritional care by their healthcare providers. A more comprehensive survey of the nutritional care needs of PwP should be carried out for the whole of Ireland alongside a survey of healthcare providers' knowledge (e.g., GP's, neurologists) of the nutritional care

needs of PwP. This could inform the integration of better nutritional care for PwP within the multidisciplinary team.

Conflict of Interest: None.

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EP15

Dietary and Physical Activity of 4–10-Years-Old in Hungary and Comparison with 2014 Results

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Introduction: Eating habits developed in childhood greatly influence the health status of the growing generation [1]. To understand the eating habits of the 4–10-years-old children, the representative dietary intake survey in two Hungarian cities, conducted in 2014, was repeated on a national representative sample.

Methods: Children's physical activity and parental nutritional attitudes were measured by a questionnaire. Data on children's eating habits were collected using the internationally recommended three-day dietary record method and the results were compared to national dietary recommendations [2, 3]. Following the WHO recommendation, basal metabolic rate was calculated, and children with a high probability of under- and over-reporting of dietary intake were excluded from further analysis [4, 5]. In line with the method of Cole et al., lean, normal, obese, and overweight categories were developed based on body mass index [6, 7]. 725 evaluable questionnaires and 666 nutrition diaries were processed in this study. A subsample of the 4–10-year-old children from Budapest and Kecskemét was created and compared with the survey conducted in 2014.

Results: The rate of overweight and obesity was 23% among the surveyed children. Excessive fat (34.2% of energy) and cholesterol intake were typical, while omega fatty acid ratio was unfavourable among children. Consumption of dairy products (290 g/day), and consequently calcium intake, fruit, and vegetable consumption (263 g/day), and consequently fibre intake were significantly lower than recommended. Salt intake calculated from sodium was 8.4 g/day, of which 41% came from food preparation. The average energy from added sugar was 11%. Low vitamin D intake was observed in almost the entire sample.

Compared to the 2014 survey, the rate of overweight and obesity among children increased by 26.7%. Among macronutrients, fat intake increased by 3.4%. Among food groups, consumption of milk and dairy products decreased by 7.65%, however, calcium intake increased by 8.9%. Consumption of whole grains decreased significantly (by 63%). Fruit and vegetable intake increased by

15.2%. Energy from added sugar decreased by 11% and sodium intake by 7.5%.

Conclusion: The obtained results prove that it is important to educate children about balanced nutrition. To develop proper eating habits parental and children education, health preservative programs, and food product innovations are essential.

Conflict of Interest: None

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EP16

Impact of COVID-19 on Food Security and Food Behaviours in Ireland

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Introduction: The COVID-19 pandemic brought global financial, psychosocial, and physical changes into everyday life. The impact of the pandemic is purported to be felt more strongly within vulnerable groups within society. We aimed to explore the effects of COVID-19 and lockdown restrictions on food behaviours and food security across vulnerable groups in Ireland.

Methods: Semi-structured interviews were conducted online with representatives ($n = 12$) from non-government organisations and social enterprises who support vulnerable groups in Irish society during the first nationwide lockdown of 2020. The transcribed interviews were initially coded using inductive thematic analysis and subsequently deductively analysed using separate food security and food behaviour frameworks.

Results: The main themes for food behaviours were food access/availability, social factors, and individual factors such as finances or cooking skills. Where food consumption increased, this was due to boredom and greater time availability to eat. Snacking behaviours increased especially among children no longer in school. Food insecurity themes were inability to access food regularly or enough food, lower food affordability, and poor nutritional value of the food accessed. Sub themes included lack of choice, poor cooking skills, shame, and financial strain. Many households, particularly those with children, reported increased food costs and the 'heat or eat' phenomenon.

Conclusion: COVID-19 and lockdown shifted food behaviours in Ireland's vulnerable populations towards increased food

insecurity and highlights a lack of resilience within social support services and the food chain to withstand the stress of a pandemic.

Conflict of Interest: None.

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EP17

The Effectiveness of Weight Loss Intervention Program and Nutrient Intake in Overweight and Obese Women

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Introduction: In 2016, obesity was diagnosed in about 25% of adult Polish women. It is estimated that by 2030 this proportion will increase to over 32% [1]. The most common cause of obesity is improper nutrition [2]. Data obtained from the National Multicenter Health Survey (WOBASZ II) showed that diet quality of over 60% of Polish women was low [3]. In Poland, consumption of sugar is too high, and the intake of numerous minerals is too low [4]. Assessment of nutrient intake in women with excess body mass may indicate which ingredients should be considered during dietary treatment. The aim of this study was to assess changes in selected nutrients intake in women with excessive body mass participating in a weight reduction program and to assess body mass changes among this group.

Methods: In the study, 112 women aged 19 to 55 (43.2 ± 9.4) with overweight or obesity ($BMI \geq 25$ kg/m) participating in a weight loss program were enrolled. 600 kcal were subtracted from each individual's estimated daily energy requirement. Participants were divided into the group aged 19 to 45 ($n = 56$) and the group aged 46 to 55 ($n = 56$). To obtain detailed information about consumption of total foods and beverages, a three-day food record was collected at the beginning and at the end of the program. For this study, some nutrients were selected based on WHO guidelines on a healthy diet. χ^2 and Mann-Whitney U tests were used. The significance level was considered at $p \leq 0.05$.

Results: The nutrients whose consumption deviated the most from the reference values both before and after the end of the program were the consumption of folate, calcium, potassium, and saturated and polyunsaturated fatty acids. Before the program, older women consumed significantly more often an appropriate amount of polyunsaturated fatty acids ($p = 0.027$), and their consumption of saturated fatty acids and cholesterol significantly improved during the program ($p = 0.004$ and $p = 0.02$, respectively). In both groups, women significantly reduced their sugar consumption (gr 1 $p = 0.001$; gr 2 $p = 0.002$). The consumption of other ingredients did not change. In women, the BMI decreased on average by 1.3 kg/m², regardless of age.

Conclusion: Despite the dietary intervention, the consumption of many nutrients did not change. Women, regardless of age, had similar nutrient intake. In the effectiveness of weight reduction, apart from changes in body weight, special attention should also be paid to improving the quality of the diet.

Conflict of Interest: None.

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EP18

“Espaço-S” Health Promotion Division: A Municipal Primary Health Care Response in Nutrition

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Introduction: Integrated in the Health Promotion Division, Espaço-S, represents a free municipal response for all young people living in Cascais, allowing for early intervention at this crucial age. The nutrition consultations ensure that access to specialized and individualized nutritional interventions in the area of primary health care, promoting healthy behaviours and reducing the risk of chronic diseases occurs [1-3]. The COVID-19 pandemic added challenges to the nutritionist's performance, both in terms of response and maintenance of a healthy diet [4]. Municipalities play a key role in Health Promotion, through the development of projects suited to the needs of the population, such as Espaço-S [4].

Methods: Convenience sample ($n = 420$), young people aged 10–30 years, were analysed from January 2020–June 2021 using the platform AidHound Software.

Results: Espaço-S nutrition consultations were with young people aged 18.7 ± 5.41 years, mostly female (71%). 420 nutrition consultations were carried out, of which 95 were first consultations. During the pandemic containment period, 44.05% nutrition consultations were online. Adherence to nutrition consultations was 81.4%, which remained stable during confinement. The main reason for consultations were weight management (94.4%), food education (72.2%) and eating disorders (22.2%). The number of eating disorder consultations quadrupled from 2020 = 5.6% to 2021 = 22.2%.

Conclusion: The nutrition consultations allow for a variety of health issues to be managed. The COVID-19 pandemic has impacted the eating behaviour of young people with changes seen in physical and mental health. The online delivery seems to be adequately used option for this age group and allowed the continuity of nutritional clinical intervention during the lockdown period.

Conflict of Interest: None.

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EP19

Micronutrient Deficiencies in Preschool and School Children with Cow's Milk Allergy

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Introduction: Food allergies (FA), especially those involving major food groups, pose a serious risk for affected patients regarding their nutrient intake. In the Czech Republic, as well as worldwide, the cow's milk allergy (CMA) is the most widespread, affecting especially infants and toddlers, but sometimes persisting until adulthood. Eliminating milk and dairy products without proper substitution and counselling can decrease not only intake of high-quality protein and calcium, but also several other vitamins and minerals. The aim of this study was to assess the intake of micronutrients among children suffering from the CMA and to bring hypotheses for the following major research.

Methods: We retrospectively gathered 28 3-day food records of children aged 1–13 from dietitians' counselling offices across the Czech Republic, which were obtained from the patients before any counselling by the dietitian. The amounts of nutrients in these records were calculated using the NutriPro dietetic software with emphasis on the risk nutrients in CMA. These results were compared to EFSA dietary reference values (DRVs) for particular gender and age group and after expressing them relatively as a percentage of the recommended amount, they were compared also among groups with and without breast milk substitutes (BMS) being part of the child's diet, all using nonparametric statistical methods

Results: The data were limited due to patients with FA not normally being referred to dietitians and the dietitians frequently do not work with or store the food records. For the 28 children, only 7 (25%) had isolated CMA; most were combined with egg allergy (15/54%) and/or wheat allergy (11/39%). Decrease was statistically significant in the intake of vitamin D (-78,8%; $p < .001$), pantothenic acid (-27,8%; $p = .005$), calcium (-37,7%; $p = .001$) and magnesium (-25,8%; $p = .001$). The only difference between children with and without BMS could be seen in vitamin D (2.1x higher percentual fulfilment of DRVs in children with BMS; $p = 0.02$).

Conclusion: A decreased intake of vitamin D, pantothenic acid, calcium, and magnesium was found in children with CMA either isolated, or combined with other FA, most frequently eggs and wheat. These deficiencies can potentially impair the growth and bone development in children and highlight the need for future dietetic referrals and appropriate nutrition care documentation of paediatric patients with food allergies.

Conflict of Interest: None.

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EP20

Assessment of Food and Cooking Skills Confidence from Portuguese Health-Related Higher Education Students

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Introduction: Food and Cooking Skills (FCSk) are complex, multidimensional concepts that include cooking and food competences. These concepts are part of food literacy which can be divided into 4 areas: planning and management; selection; preparation; and eating, each including knowledge, attitudes, behaviours.

Methods: An online cross-sectional study was designed to evaluate cooking and food skills in young adults in higher education health-related degrees from the Centre and South of Portugal. The adapted (1) questionnaire had 16 questions on cooking skills (CSk), 19 on Food Skills (FSk) and a section on sociodemographic questions.

Results: 236 participants completed the survey. The students were from nursing (30%), medicine (47%) and nutrition (43%) programmes, mostly female (68%), and aged 20.6 ± 4.2 years old. The average BMI was 21.9 ± 2.9 kg/m² (10.6% overweight/obese). 50% reported to prepare meals daily, 21% weekly (4–6 times), 16% weekly (1–3 times) and 12% reported never. Confidence measure was 5.3 ± 1 for CSk and 5.4 ± 0.9 for FSk. Moderate but significant correlation was found between cooking and food skills ($r = 0.63$, $p < 0.05$). Medicine students presented higher CSk skills (5.4 ± 1) whilst nutrition students achieved higher FSk skills (5.6 ± 0.7). “Boil or simmer food” was the CSk with the highest confidence (6.2), while for FSk “best-before date on food” had the highest score (6.4), both for medical students. For most of the CSk, no differences were found between the 3 groups of students. Exceptions were “Fry/stir-fry food in a frying pan/wok with oil or fat” and “Microwave food” in which differences were found between medical and nursing students ($p < 0.05$), medical students being more confident. For FSk, “Plan meals ahead”, “Prepare meals in advance” and “Shop with specific meals in mind” were the competences with differences between medical and nursing students ($p < 0.05$), and between nutrition and nurse students ($p < 0.05$), medical and nutrition student presenting higher confidence. “Follow recipes when cooking”, “Plan how much food to buy”, “Cook more or double recipes which can be used for another meal” and “read the best-before date on food” had differences between medical and nursing students, medical students being more confident. The CSk that students mostly report rarely or never doing were steam food (39.8%), cook pulses (38.9%), make sauces and gravy from scratch (22.9%) and stew food (22.5). Food skills that students rarely or never do were buy cheaper cuts of meat to save money (32.2%) and plan meals ahead (16.5%).

Conclusion: Good confidence on FCSk was seen among health-related degree students but some cooking and food skills still need improvement amongst them. Developing these FCSk with food habits in future research will help to better understand and develop strategies to improve nutrition and health.

Conflict of Interest: None.

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EP21

Relationship between Advanced Glycation End-Product Levels in the Body and BMI, Waist Circumference and Lifestyle

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Introduction: Advanced glycation end products (AGEs) are formed in the final stage of the Maillard reaction, named after the process descriptor. This multi-step process, which after a while becomes irreversible, takes place between reducing monosaccharides and molecules (proteins, lipids) containing amino groups. The products of the Maillard reaction are commonly found in foodstuffs and can also be produced within the body. The glycation of tissue proteins occurs slowly and continuously under physiological conditions, leading to the accumulation of AGE in tissues, but under certain conditions (hyperglycaemia, hyperlipidaemia, inflammation or increased oxidative stress) the process is accelerated. AGE is involved in the pathogenesis of many diseases (often age-related), such as inflammatory diseases, cardiovascular problems, diabetes, or neurodegenerative diseases. The Maillard reaction in food occurs during storage, processing, and heating, so AGE is commonly present in the food we eat. In addition, exogenous AGE is also derived from the inhalation of tobacco smoke and exhaust fumes. The aim of the present study is to investigate the relationship between lifestyle, physical activity, BMI and waist circumference and body AGE levels.

Method: The participants of the pilot study are volunteers over 50 years old. Number of people involved in the research so far reached 68. The AGE level of the subjects was measured with the “AGE Reader” from Diagnostics. This validated device measures the level of glycated proteins in the body based on the principle of autofluorescence. Body weight, height and waist circumference were measured by a professional and lifestyle information was collected through a questionnaire designed by us.

Results: BMI of the men ranged from 24.8 to 38.7 kg/m² (mean 29 kg/m²) and only 1 of them fell into the normal BMI category. The BMI of women ranged from 18.6 to 43.7 kg/m² (mean 27.5 kg/m²) and 60% were overweight or obese. Men’s AGE ranged from 1.6 AU to 4.6 AU, with an average AGE of 2.67 AU. Women’s AGE ranged from 1.6 AU to 3.5 AU, with an average AGE of 2.43

AU. This value may already indicate cardiovascular risk in this age group. 79% of men had waist circumferences greater than 102 cm, meaning they were at very high risk of cardiovascular disease. The mean AGE of this high-risk group (2.81 AU) was well above that of the non-high-risk group (2.27 AU). 70% of women fell into the high-risk waist circumference category of more than 88 cm. For women, the difference in AGE values between the high- (2.45 AU) and non-high-risk groups (2.36 AU) was not that significant. The average AGE level was lower for women who regularly exercised than for women who did not (2.30 AU vs. 2.55 AU). No such relationship is yet apparent for men at this stage of the research.

Conclusion: The correlation between BMI and AGE is not clear. However, for women, there seems to be a difference between the AGE levels of those who participated in sports and those who did not participate in sports at all: the AGE levels of non-athletes were higher, as well as their waist circumference and BMI.

Conflict of Interest: None.

Funding: No Funding.

EP22

Dietary Diabetes Risk Reduction Score and Breast Cancer Risk: A Prospective Evaluation in the SUN Project

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Introduction: A potential link between type 2 diabetes and cancer has been proposed. This association can be potentially explained by hyperglycaemia, hyperinsulinemia and higher insulin-like growth factors which may increase breast cancer risk affecting the insulin/IGF system. We aimed to prospectively investigate the association between a dietary diabetes risk reduction score (DRRD) and breast cancer risk under the assumption that greater adherence to DRRD score is associated with lower breast cancer risk.

Methods: The SUN Project is a prospective, dynamic and multipurpose cohort. For the present study, 10,930 Spanish female university graduates, initially free of breast cancer, were included. Dietary information was collected with a semi-quantitative food frequency questionnaire. A DRRD score was derived based on 9 factors: lower glycaemic index of diet; lower intakes of trans fat, sugar-sweetened beverages/fruit juices, and red/processed meat; higher intakes of cereal fibre, coffee, nuts, and whole fruits; and a higher ratio of polyunsaturated to saturated fat (score range: 9–36). Adherence to the DRRD score was categorized into quartiles.

Self-reported information on new cases of breast cancer was confirmed by a trained oncologist and consultation to the National Death Index. Multivariable Cox regression models were fitted with age as the underlying time variable and adjusted for potential confounders to assess the possible relationship between adherence to DRRD score and incidence of breast cancer.

Results: During a median follow-up time of 12.1 years and among 123,297 women-years of follow-up, 119 cases of breast cancer were confirmed. Hazard ratios (HR) and 95% confidence intervals (CI) were estimated with Cox regression models. We found a significant inverse association between a moderate adherence to DRRD score and overall incidence breast cancer (HRT2vs.T1 = 0.61 (95%CI 0.39- 0.95) and HRT3vs.T1 = 0.88 (95%CI 0.56- 1.37)).

Conclusion: In this cohort of female university graduates we found an inverse association between moderate adherence to the DRRD score and overall incidence breast cancer risk, although no association was observed across extreme tertiles.

Conflict of Interest: None.

Funding: The SUN Project receives funding from the Spanish Government-Instituto de Salud Carlos III, as well as the European Regional Development Fund (FEDER) (RD 06/0045, CIBER-OBN, Grants PI10/02658, PI10/02293, PI13/00615, PI14/01668, PI14/01798, PI14/01764, PI17/01795, PI20/00564 and G03/140), the Navarra Regional Government (27/2011, 45/2011, 122/2014), and the University of Navarra.

EP23

Evaluation the Accuracy of Nutrient Databases of Nutrition Smartphone Applications with USDA and Turkomp Nutrient Databases

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Introduction: The use of smartphone applications is increasing daily. The most used category within health and fitness applications are nutrition applications. Although many nutrition applications are available, the reliability of the nutrition information of food composition varies widely. In this study, we aimed to examine the accuracy of nutrition information of smartphone nutrition applications by comparing data available within the application with that of established nutrient databases.

Methods: The three most downloaded nutrition applications (Fit365, Dietkolik, YAZIO Calorie Counter) based on a “healthy eating” search in the free smartphone application section of the iTunes AppStore in Turkey on April 17, 2021 were used for this study. We used USDA (United States Department of Agriculture) and Turkomp (Turkish national nutrient database) nutrient databases as the reference databases. We grouped foods into 6 categories: dairy, vegetable, fruit, meat (including egg, legumes, and nuts), grains, and discretionary foods. The foods used in the study were selected as 30 different foods to provide nutritional diversity in each group. Energy and macronutrients (carbohydrate, fat,

protein) contents of selected foods were obtained. Intraclass correlation coefficient (ICC) analyses evaluated the reliability between the USDA and Turkomp and nutrition application. We considered ICC > 0.90 as excellent; 0.75 to < 0.90 as good; 0.50 to < 0.75 as moderate and < 0.50 as poor.

Results: There was excellent reliability between all nutrition applications and USDA nutrient database for all nutrients (ICC range=0.90-1.00). Turkomp nutrient database and all nutrition applications had had excellent reliability (ICC range=0.90-1.00), except for carbohydrate (ICC=0.83 for Dietkolik; ICC=0.86 for Fit 365 and ICC=0.84 for YAZIO Calorie Counter). There was also moderate reliability for the fat content of Turkomp nutrient database and YAZIO Calorie Counter (ICC = 0.67).

Conclusion: Overall, the most popular nutrition applications provided accurate nutrient information for the foods selected across the applications reviewed. Further research is necessary to assess the scientific coverage, other nutrition information and any weight management related information provided.

Conflict of Interest: None.

Funding: No Funding.

EP24

The Comparison of the Quality and Nutrient Databases of Nutrition Smartphone Applications

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Introduction: The use of smartphone applications is widespread to promote and improve health and fitness. Among smartphone applications of health and fitness, the most popular ones are nutrition applications. Nutrition applications are used for dietary assessment and weight management purposes which makes the accuracy of nutrient information of these applications crucial. The purpose of this study is to examine the accuracy and quality of nutrition information of nutrition applications.

Methods: We determined three most downloaded nutrition applications (Fit365, Dietkolik, YAZIO Calorie Counter) from iTunes AppStore in Turkey on April 17, 2021. We categorized foods into 6 groups: dairy, vegetable, fruit, meat (including egg, legumes, and nuts), grains, and discretionary foods. We selected 5 foods from each group to provide nutritional diversity. Energy and macronutrients (carbohydrate, fat, protein) contents of selected foods were obtained. Intraclass correlation coefficient (ICC) analyses evaluated the reliability between the USDA and Turkomp and nutrition application. We considered ICC > 0.90 as excellent; 0.75 to < 0.90 as good; 0.50 to < 0.75 as moderate and < 0.50 as poor. To evaluate the contents and qualities of applications, a quality assessment and grading system were used. According to the system, total compound score from maximum 100 points is calculated from the total of five different quality criteria including behaviour changing technique, accountability, scientific content, accuracy, technologically enhanced features and availability.

Results: The score of three applications in terms of quality assessment and grading system out of 100 points were as follows: 69 points for YAZIO Calorie Counter; 39.4 points for Fit 365 and 68.2 points for Diyetkolik. There was excellent reliability between Diyetkolik and Fit 365 for all nutrients (ICC range = 0.90-1.00). We also found excellent reliability between YAZIO Calorie Counter with Diyetkolik and YAZIO with Fit 365 (ICC range = 0.90-1.00 for both) except for fat content (ICC=0.61 for YAZIO Calorie Counter with Diyetkolik and ICC=0.77 for YAZIO and Fit 365).

Conclusion: Although the application quality differs among the smartphone nutrition applications, there is a consistency between smartphone nutrition applications in terms of nutrient contents. Future studies are needed to include more nutrition applications and to evaluate the accuracy of the applications.

Conflict of Interest: None.

Funding: No Funding.

EP25

The Influence of Sociodemographic Factors on Adherence to Mediterranean Diet of Portuguese Middle School Adolescents

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Introduction: Eating habits developed during adolescence, that generally endure over time, are determinant to individual's health status. Family, friends, cultural and sociodemographic environment play a crucial role in the development of attitudes, values, and behavioural eating patterns. Mediterranean Diet (MD) represents not only a diet but also lifestyle and it is a well-recognized eating pattern, sustainable and health status protector. However, we observe a gradual fade away from this dietary pattern in Mediterranean countries such as Portugal, with replacement MD by westernized eating patterns. The aim of this study was to analyse the influence of sociodemographic factors on MD adherence.

Methods: A "Healthy Eating Habits Promotion" project in middle school adolescents (325 students) was designed and approved by the Ethics Committee (ESTeSL-IPL) in May 2021. The cross-sectional study for diagnosis phase evaluated sociodemographic variables, nutritional status and MD adherence. Parents who authorized their children's participation in the study, signed a consent form and filled the sociodemographic questionnaire. Anthropometric evaluation was performed at school during physical education classes with weight and height measures. BMI was classified according to age and gender z-scores of the World Health Organization for children aged 5 to 19 years old using WHO Anthro Plus[®] MD adherence was evaluated by interview applying the Mediterranean Diet Quality Index in Children and Adolescents (KIDMED).

Results: A consent was obtained from 140 students and parents with an average age of 11.8 ± 0.6 years. Students were mostly female (60%). 40.7% had excessive weight, with 17.1% been obese. MD adherence obtained was low in 16.4% (KIDMED ≤3), average

in 45.7% (KIDMED 4-7) and high in 37.9% (KIDMED ≥8). Adolescent's MD adherence was associated with mother's educational level (whether graduated or not), occupational status (whether employed or not) and birthplace (whether in Portugal or not). Adolescents had higher adherence to MD when the mother had Portuguese birthplace ((p<0.05), higher education levels (p<0.01) and were employed (p<0.05). No significant differences were found in adolescents MD adherence for father's birthplace (=0.133), education level, (=0.069) and occupational status (=0.219).

Conclusion: Adolescence is a determinant period to adulthood, so it is crucial that during this period healthy eating habits are developed to prevent future health problems. There are several factors that influence eating habits, and in this study the mother proved to be a crucial factor for adherence to DM. Even though the results reveal a medium-high adherence to DM, it is necessary to implement food and nutrition education programs that involve the entire educational community, namely parents and teachers, based on the Mediterranean lifestyle.

Conflict of Interest: None.

Funding: No Funding.

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EP26

Managing COVID-19 in the First Wave: Improving Food, Hydration and Nutritional Care on the Wards

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Introduction: COVID-19 has been a huge challenge to the Irish health service. The provision of food and nutritional care of inpatients in isolation required fast and efficient adaptations of service delivery, where usual system processes were limited in their capacity to operate in this new situation. The aim of this project was to maximise food service provision to those on the COVID pathway, to identify those who required automatic referral to the dietitian, and to identify and manage those at malnutrition risk, whilst complying with infection control criteria and in accordance with the Health Service Executive (HSE) and Department of Health (DOH) nutrition policies and guidelines^{1,2}.

Method: A COVID dietetic and catering team was established to provide service across the 6 COVID wards. The following areas were targeted: A review of food service provision to the COVID wards including the introduction of disposal food service

equipment, supplying additional food at all mealtimes and the introduction of an evening snack bag service to maximise access to food and hydration. Nutrition screening was commenced for patients in isolation, not already referred to the dietitian, using a brief nutrition screening tool. A suite of patient resources were developed, as well as a COVID nutrition guide for staff. Data was collected weekly on the numbers of patients screened and identified at malnutrition risk, and feedback on the snack bags was obtained formally (via short survey) and informally from patients and dietitians.

Results: From 4th May – 3rd July 2020, an average of 79% (range 63-92%) of isolated patients were referred to the dietitian, 49% (range 30-69%) of patients who had not been initially referred were identified at malnutrition risk. Feedback on the snack bags indicated that 71% of patients liked their snack bag, with 21% wanting additional items. Individual patient and dietitian comments were also collated regarding preferred food items, pros and cons of the snack service and other logistical issues.

Conclusion: Managing the first wave of the COVID pandemic was challenging, but working collaboratively, the dietetic department, with catering and nursing colleagues, made significant changes to dietetic and food services, to overcome barriers posed by isolation and to meet the nutritional needs of patients on the COVID pathway. The meals and snacks provided met nutrition targets, as per HSE policy. A high level of malnutrition risk was identified amongst those screened. Lessons learned will be used to inform the rollout of screening and oral nutrition support in line with the national guideline and policy^{1,2}.

Conflict of Interest: None.

Funding: No funding received.

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EP27

Abnormal Eating Attitudes and Behaviours among Polish Dietitians

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Introduction: Dietitians in their professional work focus on issues related to healthy nutrition and are exposed to different ideas about food, weight, and its place in health. They must constantly expand their knowledge of currently fashionable diets and nutritional trends to provide dietary counselling to their patients/clients. Therefore, this group is particularly vulnerable to the occurrence of disturbed eating attitudes and behaviours.

Orthorexia nervosa (ON) is characterized by a fixation on healthy eating, which may lead to physical, psychological, and social disorders. Eating disorders (EDs) are serious mental illnesses with symptoms related to eating, body image and self-esteem. The aims of the study were to examine the prevalence of ON and EDs risk and to evaluate the association between ON, EDs and selected variables amongst Polish dietitians.

Methods: This cross-sectional observational study investigated self-reported anthropometric and sociodemographic characteristics, eating attitudes, behaviours and subjective and objective level of knowledge using validated questionnaires: Orthorexia Nervosa Questionnaire (ORTO-15) [1], Eating Attitudes Test (EAT-26) [2] and Polish questionnaire Nutritional Beliefs [3]. The ORTO-15 scale was used to evaluate ON tendencies among participants. Scores > 40 are suggested to indicate the absence of ON. The EAT-26 is a screening tool to assess ED risk. Scores ≥ 20 suggest the possible presence of ED. The Nutrition Beliefs questionnaire consists of 25 statements assessing nutrition knowledge with the possibility of “True”, “False” and “No opinion” answers. For the correct answer 1 point is assigned; a satisfactory level of knowledge is from 9 to 16 points, a result above 16 indicates a good level of knowledge, and below 9 - unsatisfactory. A convenience sample was recruited with the selection criteria: education in the field of dietetics and consent to participate in the study. Data were analysed using Statistica 13.1. Chi-square test was performed for assessing the relationship between categorical variables. Significance level was set at ≤ 0.05.

Results: From a total of 354 participants (96% female) aged between 21 and 43 years, 30% was at risk of ON and 27% of EDs. The mean ORTO-15 score was 41.8 ± 4.5; the EAT-26 score 14.0 ± 9.2. A significant relationship was observed between the risk of ON and ED (p<0.001) and between ON and the subjective assessment of the level of knowledge (p<0.04). ON and EDs tendency were not affected by educational level (Master’s vs. bachelor’s degree), type of occupation (catering, dietary counselling, not in the profession), BMI status and objective level of knowledge.

Conclusion: The risk of ON and/or EDs was found in nearly every third dietitian. Dietitians must be able to recognize the signs of these problems not only in their patients, but also themselves as abnormal eating attitudes and behaviours may adversely affect the correctness and reliability of dietary counselling. Regular screening and counselling are needed to reduce the prevalence of abnormal eating attitudes among dietitians. Future research is required to find underlying variables that may contribute to the occurrence of ON and EDs in this group.

Conflict of Interest: None.

Funding: No Funding.

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EP28

Analysis of Dispensing Patterns and Non-Disease Specific Oral Nutritional Supplement Usage in primary care: the ONSPres project

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Introduction: Maximising dietary intake is the first line of treatment for malnutrition. However, oral nutritional supplements (ONS) are recommended when optimising the diet is insufficient⁽¹⁾. ONS prescribing is problematic for GPs as they have limited education and multidisciplinary support to manage malnutrition⁽²⁾. Moreover, patterns of ONS usage and characteristics of ONS users are unclear. In this analysis, we describe the characteristics of ONS users and dispensing patterns of ONS in primary care.

Methods: A retrospective secondary analysis was carried out on anonymised dispensed pharmacy claims data for 14,282 patients aged ≥ 18 years dispensed any ONS on the General Medical Services (GMS) Scheme during 2018 in three community health-care organisations (CHOs) in Ireland. These data represented 30% of GMS claims nationally and just under one-third of the population of Ireland. Data on sex, age, residential care/living independently, area of residence (based on CHO), number of individual ONS products and volume of ONS (in units) dispensed, and cost of ONS (€). Patients were categorised based on volume dispensed into 'Average' (<75th centile), 'High' (75th-89th centile) and 'Very High' ONS Users (≥ 90 th centile). Differences in ONS volume and cost between groups were analysed using t-tests, Mann-Whitney U tests, and Chi-square analyses.

Results: Median age was 76 years with 71% of patients aged ≥ 65 years and 18.7% living in residential care. More females were dispensed ONS than males (58.2% vs 41.8%, $P < 0.01$) and females were older (80 years vs 71 years, $P < 0.01$). Median volume of ONS dispensed over the year was 126 units and median cost was €251. Very high energy sip feeds were most frequently dispensed, to 45% of the cohort. There was no difference between males and females overall, but age and residential status were associated with the ONS category, with males aged <65 years dispensing significantly more ONS units compared to similarly aged females (median units 135 vs 90, $P < 0.01$). No difference between genders was found in those aged ≥ 65 years. Patients in residential care were dispensed twice the volume of those living independently (240 vs 112 units, $P < 0.01$),

with this also being reflected in costs (€541 vs €212, $P < 0.01$). 'Average' ONS users were dispensed a median 84 units of ONS over the year (median cost €153), 'High' users were dispensed 420 units (median cost €806), and 'Very High' users 892 units (median cost €2,402, $P < 0.01$).

Conclusion: Clear disparities between patient groups using ONS were identified. Further research is required to elucidate the reasons for the high ONS usage among younger males and patients in residential care. Training and support are required for health-care professionals on the management of malnutrition and evidence-based prescribing to enhance patient-centred care and optimise healthcare expenditure in primary care.

Conflict of Interest: None.

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EP29

Sourdough Bread Making Practices in Linz Bakeries and the Lower Fructan Content Bread's Potential Use in Irritable Bowel Syndrome

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Introduction: Irritable bowel syndrome is a gastrointestinal disease with symptoms potentially triggered by FODMAPs (fermentable oligo-, di-, mono-saccharides and polyols). Bread typically contains large amounts of FODMAPs, especially fructans and consumption may not be recommended for those with irritable bowel syndrome. The use of sourdough in bread making can reduce bread's fructans content. The extent of the fructan reduction and thus tolerance depends on several factors in the bread manufacturing process, as for example the fermentation time. We aimed to examine the production difference for sourdough bread handled in various bakeries in Linz and review the evidence on sourdoughs and other breads for patients with irritable bowel syndrome.

Methods: Six interviews with experts from five different bakeries were carried out to survey the production and processing of sourdough bread in bakeries in Linz. The interview partners were selected based on defined inclusion criteria. An interview guide was developed for the interviews and each interview was evaluated using qualitative content analysis according to Mayring. Main and sub-categories were defined both deductively and inductively. Based on these categories, a coding guide was created to structure the content. Following the assignment of the text passages to categories, the material was summarized for each main or sub-category.

Results: The qualitative interviews identified the following categories: history of the bakery's use of sourdough, sourdough production, ingredients, customers, and trends in bread production. The results showed that sourdough is an important ingredient in bread production, not only for technological reasons, but also in terms of quality and sustainability. Tolerability was not a reason for bakeries using sourdough in their bread production yet general allergies and intolerances are a big issue within bakeries business, illustrating its significance. The evidence of factors that influence the fructan reduction and the associated tolerability show a duration of dough fermentation being important with more than twelve hours recommended. In practice, this can only be achieved with certain breads. The role of grain type in the final fructan content is controversial but appears to have a lower influence on the fructan content than the sourdough process itself.

Conclusion: Consuming sourdough bread made with a long dough fermentation can result in better tolerability for irritable bowel syndrome patients. However, the variability of sourdough and bread making processes between manufacturers mean that this recommendation cannot be applied globally and the fructan content of different breads will need to be established prior to recommending.

Conflict of Interest: None.

Funding: No Funding.

EP30

Development of a Tool for Calculating the Equivalence of Oral Nutritional Supplements with Diabetic Exchanges

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Introduction: Malnutrition is very common among in-patients, nursing homes and community. Nutritional supplements have been used by dietetic professionals to complement the daily diet in energy, macronutrients, and micronutrients. The goal of the present study was (i) to provide a dataset of nutritional supplements with their corresponding estimated nutrient content and (ii) to calculate the diabetic food exchanges for each product to facilitate meal planning for people with malnutrition.

Methods: A web-based search was conducted for nutritional supplements and products proposed by the American Academy of Nutrition and Dietetics. A digital dataset was created with information on the energy, macro- and micro- nutrient content of each product. Food exchanges per product were calculated based on the round method of Wheeler et al (2008). More particularly, for carbohydrates, if the serving had 11–20 g carbohydrates, it was counted as one exchange. If the serving had 1–5 g carbohydrates, it was not counted as a carbohydrate exchange, and if it had 6–10 g carbohydrates, it was counted as a 1/2 exchange. For protein exchanges, if the serving had 4–10 g protein, it was counted as one exchange, while if it had less than 4 g, it was not counted as a protein exchange. For fat, if the serving had 4–7 g fat, it was counted as one fat exchange. If it contained less than 2 g of fat, it was not

counted as a fat exchange, whereas if it had 2–4 g fat, it was considered as half an exchange.

Results: In total, 388 products were assessed from the following brands: Abbott Nutrition, Axcan Pharma Inc, Global Health, Hormel Health Labs, Hormel Health Labs/Diamond Crystal Brands, Kate Farm, Lyons Magnus, Mead Johnson, Medical Nutrition USA, Inc, Medtrition, Nestle Nutrition, Nutricia North America, Nutritional Designs Inc., Vitaflo USA. The resulting database enables the comparisons between products and classification per product category (i.e., high energy, high energy-protein, protein supplements, bars etc) or nutrient. Moreover, an algorithm was developed to calculate food exchanges for each one of the above products per serving or newly inserted/ developed ones.

Conclusion: The present tool is a useful assistance for dietetic professionals since it allows the comparisons between products and facilitates the easier incorporation of medical nutrition products in the administered meal plans. Such tools may serve as basic features in web-based applications and may help dietetic professionals to familiarize with the new era of digital health.

Conflict of Interest: None.

Funding: No Funding.

EP31

Vitamin and Mineral Supplement use Among Cancer Survivors on the Island of Ireland

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Introduction: In the absence of evidence-based guidance, many individuals living with and beyond cancer in Ireland are choosing to use vitamin and mineral supplements⁽¹⁾. However, there is a paucity of comprehensive data on prevalence and type of vitamin/mineral supplements used by this cohort. Therefore, the aim of this study was to quantify the prevalence of vitamin/mineral supplement use among adult cancer survivors across the Island of Ireland.

Methods: This cross-sectional study recruited Irish cancer survivors over the age of 18, who were not palliative and had completed active cancer treatment at least six months previous. Recruitment took place via social media platforms between October and December 2020. An open-ended question on supplement use and type was included in a larger questionnaire which was designed to assess the nutrition related life of Irish Cancer Survivors. Descriptive analysis was used to analysis the data using SPSS Version 26. Ethical approval was granted by the Research Ethics Committee in the Institute of Technology, Sligo.

Results: The cohort (n=169) was predominantly female (85.8%) and had breast cancer (64.5%). Mean age was 51±11 years and 47.3% of the cohort were greater than five years post-treatment. Supplement use was reported by 69.8% of the cohort, of this 52.5% (n=62) reported using a single supplement, 22.0% (n=26) reported using two supplements and 25.4% (n=30) reported using

three or more supplements. The most popular choice of vitamin and mineral supplements among the cohort was 'Vitamin D' (65.3%), 'Vitamin C' (24%), 'Magnesium' (24%), 'Calcium' (18.4%) and 'Multivitamin' (16.8%). There was no significant difference between genders, age, or cancer type with regards to supplement use.

Conclusion: This study provides novel data on supplement use in Irish cancer survivors, addressing a gap in the literature. However, these results highlight the need for further studies on the dose of dietary supplements used by cancer survivors. Additionally, further research is necessary on the association between dietary supplement use, recurrence, and quality of life to support

evidence-based clinical guidelines for dietary supplement use among cancer survivors.

Conflict of Interest: None.

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Reference

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