The Nutrition Society

Scottish Section Conference 2024

Circadian rhythms in health and disease

26-27 March 2024 - Aberdeen, Scotland

Abstracts are presented as accepted for publication.

OC01. Eating on the Night Shift: A qualitative study to understand what is important to UK night workers when designing nutritional research. *R. Gibson[1] and C. Fitzhugh[1,2] 1. Department of Nutritional Sciences, King's College London, London UK and 2. Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Liverpool, UK.*

The night-time economy contributed £93.7bn to the total UK economy in 2023[1] and relies on extensive employment of night workers. There is strong evidence to support the association between shift work, predominately involving night shifts, and adverse cardiometabolic health[2]. However, there are limited evidence based dietary guidelines available for night workers or nutritional practitioners[3]. Simulated shift work studies have significantly contributed to understanding how eating at night impacts physiology however, real world research is needed among shift workers. Engaging end users in research design is key to inform acceptable and feasible interventions.

The aim of the *Eating on The Night Shift* study (King's College London Ethics:LRM-22/23-35745) is to understand how UK night workers view working at night in relation to nutritional health and wellbeing and the barriers and enablers to participating in nutritional research studies.

Semi-structured qualitative interviews were undertaken with a convenience sample (n=18) of UK night workers between June and September 2023. Interviews were held virtually and covered experiences of working night shifts, perceptions about night work and health, and perceptions of, and barriers and facilitators of engagement with, nutritional research. All interviews were audio recorded and transcribed verbatim. Transcripts were coded using an inductive thematic analysis approach to identify overarching themes and sub-themes[4].

Of the final sample 13 were female (72%), 39% worked a rotating shift pattern, 50% had worked night shifts for between one to three years and 39% were employed in the healthcare sector. Four overarching themes were identified *1)* The consequences of night work on health and wellbeing: this theme included concerns about the impact on physical and psychological wellbeing and on cognitive function during night shifts, *2)* Eating at night means a less healthy diet: this theme highlighted the concerns about less healthy diets at night and how night work impacts meal planning and eating patterns, *3)* Working at night has wider knock-on effects: sub themes were related to the negative impact on physical activity, sleep and social networks and *4)* Nutritional research is perceived as important but there are barriers – barriers discussed were related to workload and the ability to change eating patterns, identified enablers were clear study instructions and financial compensation.

The results suggest that night workers are aware of the negative long-term consequences working nights has on their health. Furthermore, efforts to maintain a healthy lifestyle are impeded by the nature of night work and its disruptions to the circadian rhythm. Although night workers support research to understand how diet during night work can impact long-term health, several barriers to taking part in research need to be considered in the design of research studies. This will ensure that studies are acceptable and feasible to the night shift population.

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OC02. Simultaneous plasma and interstitial profiles of hormones and metabolites using U-RHYTHM: a novel ambulatory collection device. *C.M. Isherwood[1], D.R. van der Veen[1], N.R. Chowdhury[1], S.T Lightman[2], T.J. Upton[2], D.J. Skene[1] 1. Section of Chronobiology, Faculty of Health and Medical Sciences, University of Surrey, Guildford, Surrey GU2 7XH, UK and 2. Henry Wellcome Laboratory, Integrated Neuroscience & Endocrinology, Translational Health Science, University of Bristol, Bristol BS1 3NY, UK.*

Increasing the sampling resolution when examining plasma hormone and metabolite profiles will more accurately describe diurnal/circadian rhythms and expose previously undiscovered ultradian rhythms that underpin metabolic physiology[1]. In human research studies this must be tempered by the practical, ethical and safety concerns of repeated cannulation/blood draws. Here we examine the correlation between hormone and metabolite profiles present in interstitial fluid microdialysate[2], and plasma to help solve this dilemma.

Hormonal markers of circadian phase (melatonin, cortisol) and metabolites will show similar profiles in plasma and interstitial fluid.

Compare time-series hormone and metabolite profiles collected in interstitial fluid using a novel ambulatory microdialysis collection device (U-RHYTHM) with simultaneously drawn plasma samples.

All study protocols were reviewed by Health Sciences Faculty Research Ethics Committee, University of Bristol. Fasted healthy male volunteers aged 18-35 (n=3) were fed a standardised breakfast (08:00), lunch (13:00), dinner (19:00) and snack (22:00) (2225kCal [83g protein, 273g carbohydrate, 83g fat, 27g fibre]). Participants remained on the study bed, lights off/sleep occurred between 23:00-07:00 (<4 lux).

A 20kDa cutoff 30mm linear microdialysis membrane was placed in periumbilical subcutaneous tissue, perpendicular to the midline. The membrane was perfused at 1µl/min and the microdialysate collected every 20 minutes for 25 hours into discrete samples using a portable fraction collector (U-RHYTHM) worn around the waist. Time-matched blood samples were obtained from an antecubital fossa canula.

All samples were stored at -80°C prior to analysis. Hormones and metabolites were measured via targeted UPLC-MS/MS metabolomics, for the metabolites the AbsoluteIDQ® p180 kit (Biocrates Life Sciences AG)) was used with 10µL of plasma[3] and 15µL of microdialysate.

Simultaneous time-courses of n = 24 metabolites were detected in plasma and interstitial microdialysate: alanine, arginine, asparagine, citrulline, glutamine, glutamate, glycine, histidine, isoleucine, leucine, lysine, methionine, ornithine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, valine, trans-4-Hydroxyproline, taurine, carnitine and acetylcarnitine.

Spearman rank cross correlation identified the time shift that was required to reach highest correlation between the plasma and microdialysate profiles. Excluding taurine, microdialysate profiles were delayed by 32.3 minutes (range 0-130) and 12.9 minutes (range 0-50) for participant 1 and 2, respectively (p <0.05), only 3/20 metabolite profiles were correlated for participant 3. Trans-4-hydroxyproline had the strongest correlation (r_s 0.890, 0.814 and 0.808), with only participant 3 displaying a time shift (50 minutes). Taurine had the weakest correlation in all 3 participants. (r_s 0.096, 0.182, 0.325).

These data demonstrate that our novel approach can be used to comprehensively detect hormone and metabolite profiles in interstitial fluid. Thus, the U-RHYTHM would serve as a useful tool, not only to increase sampling resolution in controlled laboratory studies but would prove particularly useful for examining circadian/ultradian profiles for chronobiology and nutrition studies in free-living individuals.

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OC03. What is the usual eating window for children and adolescents aged 6-20 years: a systematic review. *J. Townley[1], K. Northstone[2], E.C. Hinton[2], J.P. Hamilton-Shield[2] and A.J. Searle[2], S.D Leary[1] 1. Bristol Dental School, University of Bristol, Bristol, UK and 2. Bristol Medical School, University of Bristol, Bristol, UK.*

Time-limited eating is a dietary intervention whereby calorie intake is limited to a specific window of time during the day ([1]). The usual eating windows (EW) of adults, and how this can be manipulated for dietary interventions, is well documented ([2]). However, there is a paucity of data on the usual EW of children and adolescents, which may be a useful intervention for reducing obesity.

The primary objective was to systematically review existing literature on the usual EW of children and adolescents. Secondary objectives were to identify average clock times of first and last food/drink intakes and also variations in EW and clock times by age, nationality or weight status subgroups, if available data allowed.

Two databases (Medline and Embase) were searched for eligible papers published between February 2013 and February 2023. Included papers were forward searched using the citation network on Web of Science. 6347 papers were identified, and after deduplication 4569 papers were screened by two independent reviewers. Methodological quality was assessed using a Joanna Briggs Institute checklist ([3]).

Ten studies were included, with both observational and experimental designs. These studies had a total population of 4,589 participants, with individual study sample sizes ranging from 22 to 2195. Ages of participants ranged from 6 – 20 years, with six studies involving adolescents alone (≥10 years), and four involving children and adolescents. There were four studies from the USA, two from Germany and one each from Brazil, India, The Netherlands and pan-European.

Narrative synthesis showed large variations in average eating windows from 9.7 to 16.4 hours. Only four studies included clock times of intake, with large variations in both first and last intake times. Five studies were included in a random-effects meta-analysis, in which heterogeneity was considerable (I^2 = 95.8%), and pooled duration of usual daily eating was 11.3 hours (95% confidence interval (CI) 10.95, 11.73). Sources of heterogeneity included differences in study design and populations, variation in dietary assessments methods and definition of eating windows. Narrative synthesis of an adolescent sub-group showed eating windows increased as children got older. Four studies were included in a random-effects sub-group meta-analysis, with a pooled EW of 11.2 hours (95% CI 10.27, 12.05; I^2 = 96.6%) in adolescents. Insufficient data prevented further subgroup analysis.

In conclusion large variations in eating windows exist across different study populations, with limited data available on first and last intake times; however, the pooled data suggest it may be possible to design time-limited eating interventions in paediatric populations aimed at reducing eating windows. Further high-quality research, of eating windows and associations with health outcomes, is needed.

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Student Competition

OC04. Short-term changes in human metabolism following a 5-hour delay of the light-dark and behavioural cycle.

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The circadian timing system regulates many aspects of metabolic physiology, including the postprandial response to meals [1]. Experimental inversion of circadian and behavioural rhythms by 12-hours adversely effects markers of metabolic health [2]. We investigated effects of a more modest 5-hour delay in behavioural cycles.

Fourteen participants completed an 8-day in-patient laboratory protocol, with controlled sleep-wake opportunities, light-dark cycles, and diet. The 5-hour delay in behavioural cycles was induced by delaying sleep opportunity. We measured: melatonin to confirm central circadian phase; fasting markers and postprandial metabolism; energy expenditure; subjective sleepiness; and appetite, throughout the waking period.

After the phase delay, there was slower gastric emptying at breakfast, lower fasting plasma glucose, higher postprandial plasma glucose and triglycerides, and lower thermic effect of feeding. Any changes were abolished or attenuated within 48-72 hours. Further, we show no difference in 16 h waking energy expenditure.

These data extend our previous findings, which showed no time-of-day effect on energy expenditure in healthy adults.

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OC05. Investigating the Longitudinal Bi-Directional Relationship between Restrictive-Type Disordered Eating and Sleep in UK Adolescents within the Millennium Cohort Study. *M.-C. Opitz[1*], N. Trompeter[2], F. D. Rabelo da Ponte[3], G. Gaggioni[4], N. Micali[2, 5], S. Desrivieres[3], U. Schmidt[3, 6], and H. Sharpe[1] 1. Department of Clinical Psychology, School of Health in Social Sciences, University of Edinburgh, Scotland and 2. Institute of Child Health, University College London, UK and 3. Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK and 4. Division of Psychiatry, Centre for Clinical Brain Sciences, University of Edinburgh, Scotland and 5. Ballerup Psychiatric Centre, Eating Disorder Research Unit, Copenhagen, Denmark and 6. Department of Psychological Medicine, King's College London, UK.*

Eating disorders (ED) and sleep can be linked through a variety of physiological and psychological mechanisms, such as altered hormone levels, disturbed mood, and decreased quality of life (e.g., Allison et al., 2016). In line with this, previous research has shown clear associations between sleep disturbances and EDs, which are likely to be bidirectional (Linnaranta et al., 2020). However, research has yet to establish both the directionality and symptom-specific associations between sleep and different types of disordered eating. To gain a better understanding of the mechanisms involved, the present study used a secondary data analysis to investigate the longitudinal bidirectional relationship between restrictive-type disordered eating behaviours and self-reported sleep behaviours/evaluations within a sample of UK adolescents who participated in sweep 6 (age 14) and 7 (age 17) of the Millennium Cohort Study (MCS).

Using a Structural Equation Modelling approach, we analysed a series of regression models to investigate the prospective association of individual sleep behaviours (e.g., sleep duration, sleep onset latency, wake after sleep onset, social jetlag; reported at age 14) and indicators of restrictive-type disordered eating (reported at 17). Moreover, the association between restrictive-type disordered eating (reported at age 14) and self-reported sleep quality (reported at age 17) was tested. A mediation analysis was conducted to explore the role of depressive symptoms in this relationship. In total, N=6,041 young people (56.35% girls, 43.65% boys) provided self-report data on relevant measures and a subsample of N=2,164 (42.51% girls, 57.49% boys) additionally provided diary data on their sleep behaviour at age 14. The present study was pre-registered at https://doi.org/10.17605/OSF.IO/5C3NS.

Although effect sizes were small (β<.20), all but one of the assessed sleep indicators were significantly concurrently associated with restrictive-type disordered eating. Yet, sleep indicators did not significantly predict changes in disordered eating across time. Even after controlling for baseline sleep behaviours/problems and relevant demographics, engagement in restrictive-type disordered eating significantly predicted poorer self-perceived sleep quality three years later (β=.06, SE=.01, p<.01). Depressive symptoms fully mediated this relationship.

The present study provides evidence for a prospective positive association between restrictive disordered eating and subsequent poorer-rated sleep quality in a large, general population sample of both boys and girls. Findings of the present mediation analysis suggest mood as an important target for tertiary prevention when addressing disordered eating behaviours in adolescents. Further research is needed to investigate the relationship between sleep and other forms of disordered eating (e.g., binge-purge-subtype disordered eating).

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OC06. Impact of circadian rhythm disturbance on metabolic parameters: Identification of chronodisruption biomarkers in Wistar rats. *F. García-Reyes [1,2], R.A. López-Villalba [1,2], F.I. Bravo [1,2], M. Suárez [1,2] and C. Torres-Fuentes[1,2] 1. Universitat Rovira i Virgili, Departament de Bioquímica i Biotecnologia, Nutrigenomics Research Group, Spain and 2. Nutrigenomics Research Group, Institut d'Investigació Sanitària Pere Virgili. C/ Marcel·lí Domingo 1, 43007 Tarragona, Spain.*

Circadian rhythms, controlled by central and peripheral clocks, play a critical role in regulating biological processes that follow a 24-hour cycle. Circadian dysregulation is associated with an increased risk of metabolic disorders (1). Previous studies have used the "forced internal desynchronization protocol" following a 22-hour cycle to study circadian disruption (2,3,4). However, a comprehensive characterization of the resulting metabolic changes is still lacking.

This study aimed to assess the impact of the forced internal desynchronization protocol on metabolic parameters and to identify metabolic signatures indicative of chronodisruption.

Sixteen Wistar rats were randomly assigned to either a control group (n=8) with a 12-hour light/12-hour darkness cycle (LD 12h12h) or a chronodisrupted group (n=8) subjected to 11-hour light/11-hour darkness conditions (LD 11h11h) over 8 weeks. Weekly measurements of body weight were taken and food intake was recorded segregated in the active and dark phase. In addition, telemetry sensors recorded blood pressure, locomotor activity, and temperature over a 48-hour period each week. Plasma biochemical parameters were assessed using commercial kits, and gene expression was analyzed via RT-qPCR. Data normality and homogeneity were assessed by using Shapiro-Wilk test and Levene's test, respectively. For data meeting parametric data standards, a student's t-test was performed, otherwise a Wilcoxon test was used. Results are expressed as the average ± SEM. Rhythmicity analyses were conducted using a cosinor-based rhythmometry method (5).

Our results suggest that the protocol effectively disrupted the animal's circadian rhythm. Several parameters were significantly different when compared to the control group, including triglycerides (LD-12h12h 44.20 ± 2.22 mg/dL vs LD-11h11h 62.88 ± 6.34 mg/dL**), very-low-density lipoprotein (LD-12h12h 8.84 ± 0.44 mg/dL vs LD-11h11h 12.58 ± 1.27 mg/dL**), phospholipids (LD-12h12h 73.71 ± 12.32 mg/dL vs LD-11h11h 116.38 ± 9.53 mg/dL*), insulin (LD-12h12h 37.20 ± 6.78 μU/mL vs LD-11h11h 64.94 ± 7.07 μU/mL*) and leptin levels (LD-12h12h 6.01 ± 0.60 ng/mL vs LD-11h11h 9.38 ± 1.06 ng/mL*) *p value < 0.05, **p value <0.01. Moreover, a shift in the food intake pattern was observed, particularly at weeks 2 to 4 of the experiment. Likewise, chronodisrupted animals displayed a slower gain of weight rate compared to the control group throughout the whole experiment. Furthermore, a complete loss of rhythmicity was observed in blood pressure, temperature, and locomotor activity oscillations after 8 weeks of chronodisruption. Finally, an alteration in Cry1 and Rev-erb a expression, genes involved in the master clock's negative feedback loop was observed in the hypothalamus.

The forced internal desynchronization protocol successfully disrupted the circadian rhythm, which enabled the identification of chronodisruption-metabolic biomarkers. These findings contribute to a deeper understanding of the consequences of chronodisruption and may later serve as potential therapeutic biomarkers in the context of metabolic disorders.

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Student Competition

OC07. The effect of vitamin D supplementation on muscle strength in community-dwelling postmenopausal Asian women: a scoping review. *C. Y. Kwan[1] 1. School of Human Sciences, London Metropolitan University, London, UK.*

Approximately 40% of the community-dwelling population aged over 65 experiences falls annually, leading to significant morbidity, immobility, and mortality, with reduced muscle strength identified as a major risk factor [1]. In comparison to other ethnic populations, Asian older adults often demonstrate weaker muscle strength, with this decline accelerating notably in female Asian older adults as they age[2]. Existing research indicates a correlation between vitamin D deficiency (circulating level of 25(OH)D below 50 nmol/L) and sarcopenia in community-dwelling older adults[3]. Postmenopausal women, experiencing a decline in oestrogen, face an elevated risk of vitamin D deficiency[4]. Notably, vitamin D deficiency is prevalent in Asian populations[5]. However, the effectiveness of vitamin D supplementation in promoting muscle strength among community-dwelling postmenopausal Asian women has not been comprehensively investigated. This scoping review aims to provide an overview and synthesis of existing evidence in the literature concerning the efficacy of vitamin D supplementation in enhancing muscle strength among community-dwelling postmenopausal Asian women.

A scoping review was conducted in accordance with PRISMA-ScR recommendations[6]. Randomised controlled trials (RCTs) published from 2013 to 2023 were identified through searches conducted in PubMed, EMBASE, and the Cochrane Central databases. Articles would be included if they: (i) were human RCTs with a cross-over or parallel design, (ii) included community-dwelling postmenopausal women, and (iii) investigated the effect of vitamin D supplementation on muscle strength. The review excluded: (i) *in vivo* animal studies, *in vitro* cell research, case reports, and observational studies; (ii) studies investigating the effect of vitamin D supplementation combined with other interventions, such as physical exercise, amino acid supplements, or other medication administration records like insulin or hormone therapy; and (iii) studies not in English. Following deduplication and relevance screening, five studies met the criteria, with Jadad scores (methodological quality assessment) of 1, 3, 5, 5, and 5, respectively.

Five RCTs involving a total of 872 subjects were reviewed[7-11]. The three studies with Jadad scores of 5 indicated statistically significant and meaningful increases in muscle strength, measured by handgrip strength, with p-values <0.05 and effect sizes of 0.97, 1.75, and 3.83, respectively, indicating large effect sizes. The study with a Jadad score of 3 highlighted such increases only in the younger subgroup (<68 years old). Conversely, the study with a Jadad score of 1 suggested no significant changes in muscle strength.

In conclusion, this review suggests promising outcomes for vitamin D supplementation in enhancing muscle strength among postmenopausal Asian women. The prevalence of vitamin D deficiency underscores potential health benefits, but heterogeneity in study designs, Jadad scores, and age subgroup responses necessitates cautious interpretation. Further high-quality research is imperative to elucidate optimal dosages and durations, ensuring a nuanced understanding of the relationship between vitamin D supplementation and muscle strength.

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Student Competition

OC08. Effects of meal timing on human plasma metabolite rhythms. *C. M. Isherwood, D. R. van der Veen, C. F. Frampas, D. J. Skene* and J. D. Johnston* *Joint senior authors 1. Section of Chronobiology, Faculty of Health and Medical Sciences, University of Surrey, Guildford, UK.*

The term 'chrono-nutrition' describes the interaction between circadian timing and nutritional intake, as demonstrated by a wealth of animal and human studies [1]. This relationship is bi-directional, with post-prandial response varying across the day and meal timing acting as a synchronising signal for some circadian rhythms. In humans, we have demonstrated that meal timing is a strong synchroniser of plasma glucose rhythms [2]. Our recent data also suggest that interstitial glucose concentration can anticipate large meals [3]. However, little is known about the effects of meal timing on other metabolic pathways. The existence of circadian rhythms in human plasma metabolites [4-6] provides a clear opportunity to address this timely issue. Here, in a controlled laboratory protocol, we tested the hypothesis that the anticipation of large meals is observed in human plasma metabolites.

Twenty-four male participants undertook an 8-day laboratory study, with strict sleep-wake schedules, light-dark schedules, and food intake. For 6 days, participants consumed either hourly small meals throughout the waking period or two large daily meals (7.5 and 14.5 h after wake-up). Isocaloric meals were calculated using the Mifflin St Jeor formula, and contained 55% carbohydrate, 15% protein, 30% fat [2]. All participants then undertook a 37-h constant routine. Samples were collected across a 30-h period in the middle of the constant routine. Plasma was collected every 30 minutes for targeted UPLC-MS/MS metabolomics analysis (Absolute p180 Biocrates kit), and saliva was collected hourly for assessment of melatonin onset, a marker of circadian timing. Data were statistically evaluated by cosinor analysis, unpaired t-test, and repeated measures ANOVA.

There was no difference ($p > 0.05$) in melatonin onset between the two groups. Rhythms, as indicated by significant ($p < 0.05$) cosinor fit, were detected in 64 plasma metabolites (out of 141 detected) in both groups. These metabolites included glucose, triglyceride, cholesterol, plus multiple amino acids, acylcarnitines, phospholipids and sphingolipids. Consistent with previous work, there was a large (c. 7-hour) difference in the phase of plasma glucose between groups, with no significant difference in the phase of plasma triglyceride. Some other metabolites (e.g. histidine and proline) exhibited phase changes like that of glucose, but the phase was mostly unchanged. Glucose, alanine, arginine, citrulline, glutamine, methionine, phenylalanine, met-SO, 3 acylcarnitines and 13 phospholipids exhibited a significant interaction (FDR <0.05 meal-size x time, n=25). Total-cholesterol, asparagine, glutamate, glycine, isoleucine, leucine, ornithine, proline, serine, threonine, tryptophan, tyrosine, kynurenine, SDMA, sarcosine, t4-OH-Pro, taurine, 6 acylcarnitines, 25 phospholipids and SMC18:1 exhibited a significant effect of meal-size and time. A further 8 metabolites had a significant effect of time only. Sixteen metabolites had no significant differences in neither meal size nor time. Our data therefore reveal novel effects of meal timing on multiple metabolite rhythms and average daily concentrations.

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OC09. *Exploring the Associations between Chronotype, Meal Frequency, and Physical Activity: A Population-based Study in Adults.* M.H. Alhussain[1] and A.S. BaHammam[2,3] 1. Department of Food Science and Nutrition, College of Food and Agriculture Sciences, King Saud University, Riyadh, Saudi Arabia and 2. University Sleep Disorders Center, Department of Medicine, College of Medicine, King Saud University, Riyadh, Saudi Arabia and 3. King Saud University Medical City, King Saud University, Riyadh, Saudi Arabia.

Chronotype is an established concept designed to capture the internal clock's phase in real-life conditions. It is vital in many aspects of daily life and can interfere considerably with numerous factors in a given population. Recognizing nonmodifiable and modifiable factors is crucial for identifying covariates of interest when studying the link between chronotype and health status. To date, chronotype and its related factors have not been extensively investigated.

The present study aimed to explore the association of chronotypes with meal frequency, physical activity, and demographic factors among the Saudi population.

This cross-sectional web-based survey involved 1369 adults (aged 18 years and above) from the general public in Saudi Arabia. Chronotype was assessed using a validated Arabic language version of the short 19-item Horne and Ostberg morningness-eveningness questionnaire (MEQ) to characterize participants' chronotypes (1,2). Data obtained included meal frequencies and demographics (age, gender, marital status, place of residence, educational level, employment status, income). Physical activity level was also obtained using the international physical activity questionnaire. The MEQ scores group individuals into three categories: morning-type, neither-type, and evening-type.

The neither-type individuals represented 41.6 % (95% confidence interval [CI], 37.5% - 45.6%) of the study population, followed by the morning-type (34.1 %; 95% [CI], 29.8% - 38.4%), then the evening-type individuals (24.3 %, 95% [CI], 19.6% - 28.9%). Chronotype was significantly associated with age ($p < 0.001$), marital status ($p = 0.027$), employment status ($p = < 0.001$) and monthly income ($p = 0.008$). Significant associations between chronotype and meal frequencies (number of meals per day, breakfast frequency, lunch frequency, and dinner frequency) were also observed (All $p < 0.05$).

This study highlights that meal frequencies and physical activity levels are influenced by chronotype distribution. Furthermore, demographics, including age, marital status, employment status, and income, have an impact on chronotype distribution.

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OC10. Undernutrition levels in Scottish older-adult population: a secondary data analysis of the Scottish Health Survey 2021. *D. Morecroft[1], D. R. Crabtree[1], and A. M. Johnstone[1] 1. The Rowett Institute, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Aberdeen, UK.*

The proportion of the UK population over 65 years old is predicted to increase from 18.7% to 26% by 2066 [(1)]. However, healthy life expectancy (HLE) and disability free life expectancy (DLE) are decreasing [(2)(3)], which is particularly concerning in Scotland which also has the lowest overall life expectancy [(4)]. Diet is a major modifiable factor in healthy aging [(5)] and should be a target to address declining HLE and DLE, but nutrient deficiencies in over 65s in Scotland are poorly understood. This study aimed to understand the presence and extent of inadequate intake of protein, fibre, vitamins, and minerals within over 60 year olds in Scotland.

Secondary data analysis of the Scottish Health Survey 2021[(6)] was performed. Dietary data of older adults (≥ 60 years old, n = 1344) were analysed for protein, fibre, and micronutrient (from food sources) inadequacies, defined as percentage below estimated average requirement, reference nutrient intake or adequate intake [(7)(8)]. Wald Z-test was used to analyse inadequacy between males and females, and urban and rural populations. Differences between Scottish index of multiple deprivation (SIMD) levels (1 [most deprived] to 5 [least deprived]) were analysed using χ2 test and cellwise sub-analysis [(9)] with Bonferroni corrections.

The percentage of over 60s that had inadequate nutrient intake was highest for vitamin D (97%), fibre (93%), selenium (90%), potassium (79%) and Zinc (65%). Compared to males, females were at a greater risk of undernutrition in 18 of the 25 nutrients analysed, of which 11 were significant (p<0.05). Compared to rural populations, urban populations were at a greater risk of undernutrition in 22 of 25 nutrients analysed, of which 10 were significant. People in SIMD 1 were at a greater risk of undernutrition in 20 of 25 nutrients analysed, of which 14 were significant. 40% of over 60s had inadequate protein intake. Risk of inadequate protein intake was greatest for people in SIMD 1 (56%, p<0.001). 24% of over 60s had inadequate folate intake which was significantly higher in females than males (28% and 18%, respectively; p<.001), urban than rural (26% and 19%, respectively; p<.01), and in SIMD1 (36%; p<.001). Inadequate fibre intake was significantly higher in females than males (95% and 91% respectively, p<.01), and urban than rural (95% and 89%, respectively, p<.001). 26% of over 60s had inadequate calcium intake. Inadequate calcium intake was significantly higher in females than males (25% and 17%, respectively; p<.001).

These data highlight a considerable undernutrition risk, both overall and within specific nutrients important for healthy aging, in Scotland's older adult population. Those in SIMD 1, females, and urban dwelling demographics being particularly vulnerable. Although the extent of potential health implications, are dependent on key aspects such as nutrient absorption and utilisation.

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Student Competition

OC11. Food image validation for assessing diurnal patterns of appetite and food reward in individuals ranging in BMI with and without type 2 diabetes. *K. Beaulieu[1], H. Pedersen[2*], C. S. Søndergaard[2], C. van Elst[2], K. Færch[2*], G. Finlayson[1], J. S. Quist[2,3] 1. School of Psychology, University of Leeds, Leeds, UK and 2. Clinical Research, Copenhagen University Hospital—Steno Diabetes Center Copenhagen, Herlev, Denmark and 3. Department of Biomedical Sciences, University of Copenhagen, Copenhagen, Denmark.*

Increasing scientific interest in diurnal patterns of appetite and food reward means it is important to employ valid methodologies that are time-of-day appropriate. Moreover, it is unknown whether people with type 2 diabetes (T2D) experience similar diurnal patterns to healthy individuals. The Steno Biometric Food Preference Task (SBFPT)[1] utilises an array of food images to assess food reward and biometric responses to food cues varying in fat content and sweet taste. We aimed to adapt and validate the SBFPT to assess diurnal appetite and food reward in Danish adults with a range of BMI with/without T2D.

An anonymous online survey was used to validate 28 food images (7 high-fat sweet (HFSW), 7 low-fat sweet (LFSW), 7 high-fat savoury (HFSA) and 7 low-fat savoury (LFSA)) in Danish residents in order to select 16 images for the diurnal-SBFPT (4 from each category). For each food image, participants had to name the food, report the frequency of consumption, and rate its tastiness, sweetness, fat content, appropriateness to consume in the morning (between 8:00-12:00), afternoon (between 12:00-16:00), and evening (between 16:00-20:00) on a 100-mm visual analogue scale[2].

We obtained 207 complete responses (with >80% completion). Participants included 61 men, 144 women and 2 not specified. Of these, 124 did not have T2D and 83 had T2D with a median [Q1, Q3] diagnosis duration of 12 [8, 18] years. Median [Q1, Q3] age was 61 [50, 67] years and BMI was 26.4 [23.4, 31.8] kg/m^2. After data were cleaned, the mean of the individual ratings for each food was calculated and adequacy was judged according to pre-specified criteria[2]. As there were overall differences in ratings of appropriate consumption time between those with/without T2D regardless of time of day (linear mixed model β = -5.3mm; p=.01), a difference score between morning (AM) and afternoon/evening (PM) ratings was computed (AM-PM difference). Adequacy for this criterion was based on foods with the smallest absolute mean across those with/without T2D and smallest absolute difference between groups.

Overall, the majority of the final 4 images from each food category met the criteria for recognition, frequency of consumption, liking, taste and perceived fat content. LFSW foods had the smallest absolute AM-PM differences (i.e., more similar appropriateness scores in AM vs PM; range 1-10mm), followed by LFSA (5-21mm), HFSA (8-21mm) and HFSW (8-38mm).

This image validation study will allow us to examine appetite and food reward across the day using a validated tool among Danish adults ranging in BMI with/without T2D. Future studies should consider the perceived appropriateness of the foods selected for appetite-related assessments in T2D, especially high-fat sweet foods.

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OC12. Identification of differentially expressed genes associated to circadian rhythm disruption in rat peripheral blood mononuclear cells: a transcriptomic analysis. *F. García-Reyes [1,2], R.A. López-Villalba [1,2], F.I. Bravo [1,2], C. Torres-Fuentes [1,2] and M. Suárez[1,2] 1. Universitat Rovira i Virgili, Departament de Bioquímica i Biotecnologia, Nutrigenomics Research Group, Spain and 2. Nutrigenomics Research Group, Institut d'Investigació Sanitària Pere Virgili. C/ Marcel·lí Domingo 1, 43007 Tarragona, Spain.*

Circadian rhythms play a vital role in regulating various physiological processes. Disruption of these rhythms has been associated with adverse health outcomes [1-3]. However, identifying transcriptomic signatures indicating chronodisruption-metabolic alterations remains a challenge. The present study aims to fill this gap by investigating the presence of such signatures in peripheral blood mononuclear cells (PBMCs). PBMCs act as 'sentinel' cells, interacting with different tissues across the body, allowing them to reflect gene expression profiles of internal tissues that are more difficult to obtain [4]. This makes them an ideal source of transcriptomic markers for studying metabolic alterations. Thus, the aim of this study was to identify novel biomarkers associated with metabolic changes as a result of circadian rhythm disruption in PBMCs from Wistar rats by RNA-sequencing analysis.

Wistar rats were divided into two groups: a control group with a 12-hour light/12-hour darkness cycle, n=8 and a chronodisrupted group subjected to an altered 11-hour light/11-hour darkness cycle, n=8. PBMCs were isolated from both groups via density gradient centrifugation over Ficoll-Hypaque. The isolated RNA was selectively enriched for mRNA and then sequenced using Illumina NextSeq2000 equipment to explore differential gene expression profiles. The data analysis involved mapping the reads to a reference genome using HISAT2 (version 2.2.1), followed by annotation and quantification of the aligned reads using String Tie (version 2.1.4). ClusterProfiler R package and Bioconductor r/ package for disease ontology semantic and enrichment analysis were further used to analyze the data [5,6].

Analysis of the RNA-sequencing data revealed 46 differentially expressed genes (DEGs) between the control and chronodisrupted groups (p value <0.05). The top genes with the highest differential expression were *Lyplal1*, *Amdhd2*, *Pid1* related to metabolic functions; *Ackr1*, *Stx3*, *Fpr3* related to inflammatory response, and *Shisa7*, *Prrt2*, *Gprasp2* related to cognitive functioning. Gene Ontology Biological processes analysis showed that the DEGs found were mainly related to negative regulation of protein localization to membrane and plasma membrane processes. Furthermore, the majority of the activated enriched pathways revealed by KEGG analysis were related to neurodegenerative diseases like Alzheimer's and Parkinson's disease. On the other hand, the most significant suppressed pathways were those related to cell cycle, polycomb repressive complex and miRNAs in cancer.

Our findings strongly suggest that circadian rhythm disruption has a significant impact on the gene expression profile of PBMCs in Wistar rats. The identification of 46 DEGs highlights the potential involvement of these genes in mediating the effects of circadian disturbances.This study provides valuable insights into the molecular mechanisms underlying circadian rhythm regulation opening avenues for further research on the intricate connections between circadian rhythms, metabolism, inflammation, and cognitive function.

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Student Competition

OC13. Assessment of motivating factors to follow a time-restricted eating dietary protocol. M. *Lages[1,2,3,4], S. Carmo-Silva[5,6], R. Barros[2,3,4], M.P. Guarino[1,7] 1. ciTechCare – Center for Innovative Care and Health Technology, Polytechnic University of Leiria, Leiria, Portugal and 2. Faculty of Nutrition and Food Sciences, University of Porto, Porto, Portugal and 3. Laboratory for Integrative and Translational Research in Population Health (ITR), University of Porto, Porto, Portugal and 4. EPIUnit - Institute of Public Health, University of Porto, Porto, Portugal and 5. Polytechnic Institute of Castelo Branco, Castelo Branco, Portugal and 6. Coimbra Health School, Polytechnic University of Coimbra, Coimbra, Portugal and 7. ESSLei, School of Health Sciences, Polytechnic University of Leiria, Leiria, Portugal.*

The number of clinical studies assessing the effects of time-restricted eating (TRE) has increased in recent years [1]. The results of the studies conducted on humans demonstrate some health benefits, however, there is still a need to design larger and longer randomized clinical trials to prove the effectiveness and long-term benefits of these types of interventions [2]. However, to ensure these health benefits, individuals need to be able to integrate its principles into their daily routines. This work aimed to associate daily habits with the potential adherence to different TRE protocols and to determine the factors that predict adherence to these protocols.

A cross-sectional study was conducted using an online questionnaire based on a previous study [3], to assess the dietary and sleeping habits, daily routines and willingness to adhere to different windows of time-restricted eating in a sample of Portuguese adults. To analyze the associations between variables, the Spearman correlation coefficient and the Chi-Square test were calculated, and multiple linear regression was performed to identify the predictive factors. Statistical analysis was conducted on IBM SPSS Statistics version 29.0.

130 responses were obtained (26% men, 74% women) with a mean age of 37.9±13.59 years old. On workdays, 60.0% of participants reported a daily eating window (the period between the first and last caloric intake) of 12h-14h, while on free days the highest percentage (41.5%) was between 10h-12h. An inverse correlation was observed between age and willingness to adhere to a TRE protocol if there were health benefits (r=-0.356, p<0.001). Moderate correlations were also found between the availability to follow a TRE protocol on work days (r=0.538) and free days (r=0.598) and the potential health benefits of this type of intervention (p<0.001)). Associations were found between sex and potential adherence to the TRE protocol (χ^2=10.644, df=2, p=0.005), with a tendency for more men not to adhere to a TRE protocol. There was also an association between body weight management and reducing the eating window by 1h-2h (χ^2 =24.883, df=12, p=0.015) and 2h-3h (χ^2=22.367, df=12, p=0.034). The living situation, motivation for change, income, weight management, cooking knowledge, and working schedule were among the main factors predicting the willingness to adhere to TRE protocols (p<0.05).

People's willingness and motivation to adhere to TRE protocols outside the controlled environment of a clinical study depends on several factors. The results presented herein provide information that may be central when considering the translation of study results into nutritional practice and counselling.

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Student Competition

OC14. Dietary Intake and Snacking Behaviour of Children Aged 3-5 in Urban and Rural Areas of Thailand's Southernmost Border Provinces. *N. Tayeh[1], C. Wright[1] and A.L. Garcia[1] 1. Human Nutrition, School of Medicine, Dentistry and Nursing, College of Medical, Veterinary & Life Sciences, University of Glasgow, Glasgow, UK.*

Thailand suffers from the double burden of malnutrition due to the nutrition transition[1]. Shifts in eating patterns from traditional foods to more processed foods, an increase in snacking and urbanisation are associated with the nutrition transition[2]. We aimed to explore eating, feeding, and snacking behaviours in children aged 3-5 living in urban and rural areas of Thailand's Southernmost Border Provinces (SBPs).

A cross-sectional survey was conducted among 279 parent-child dyads recruited from one urban (n=135) and three rural schools (n=144) in the SBPs. The International Eating and Feeding Tool (ICFET)[3] was used to collect sociodemographic data, feeding frequency, food and snack consumption. Weight and height were measured to calculate WHZ (weight- for-height z score) and HAZ (heigh-for-age z score) scores. The frequency of consumption for groups and types of food were summed to give a monthly frequency. A 24-hour recall of intake of plated foods and drinks during five potential eating occasions was taken. Carers rated the applicability of statements regarding their use and control of snacks. Descriptive statistics and Mann-Whitney U test for comparisons between urban and rural areas were analysed using SPSS V28.

Socioeconomic disparities between caregivers from urban and rural areas were observed. One-fourth (22%) of rural caregivers reported senior high school education and no income (16%) compared to 0.7%, (P<0.001) and 1% respectively in urban caregivers (P<0.001). Child stunting was more prevalent in rural areas (24% vs 6% urban, P<0.001). No difference in wasting was observed between the two settings (7% rural vs 9% urban, P<0.423). Monthly food frequencies (times) (Median, IQR) were higher in urban compared to rural areas for milk and dairy products (30, 15-45) urban vs (15, 15-30) rural (P<0.001) and fruits and vegetables (Mean, SD) (53, 31) urban vs (43, 29) rural, (P=0.008). Half the children (56%) had three between-meals snacks and dry finger foods (mean, SD) (1.7, 0.5) times daily. Rural parents described higher scores of snack control (Median, IQR) (16, 15-18) rural vs (15, 13-16) urban, (P<0.001), and felt children were more likely to seek snacks in response to hunger compared to urban children (5, 2-5) rural vs (4, 2-5) urban, (P<0.001). Surprisingly, more snack foods were consumed in rural areas (50, 33-75) rural vs (45, 33-60) urban, (P=0.042).

Eating snacks between meals is common in Thai children living in SBPs. Snack foods are widely eaten, even more in rural than urban children. Despite the substantial differences in socioeconomic characteristics and levels of stunting, there was little variation between urban and rural areas in the commonness of snacking.

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Student Competition

OC15. Synchronizer role of flavanols in cafeteria-diet-induced obese rats administered a sweet treat at different times. *JR. Soliz-Rueda [1,2,3], R. López-Fernández-Sobrino [1], H. Schellekens[2, 3], F.I. Bravo [1], and B. Muguerza [1,2,3]* 1. University Rovira i Virgili, Biochemistry and Biotechnology Department, Nutrigenomics Research Group, Tarragona, Spain and 2. Department of Anatomy and Neuroscience, University College Cork, Cork, Ireland and 3. APC Microbiome Ireland, Cork, Ireland.*

Feeding patterns such as late-night food intake can cause a misalignment between external cues and internal clock and alter the circadian synchronization and promote metabolic disruptions [1]. In previous studies we observed that sweet treats before bedtime promote alterations in clock system, increasing metabolic risk [2]. However, with current human lifestyle, including caloric-dense diets, the impact of the timing of snacking could be different on clock system due to the important damage caused by the diet on clock system [3]. Flavanols are phenolic compounds that have shown beneficial effects on metabolic disorders, and our group has demonstrated that their bioactivity may vary depending on administration time [4]. In fact, the modulation of the circadian system has been involved in their health effects [5]. Therefore, this study aimed to assess the impact of sweet treats at different times in obese rats and investigate whether flavanols can restore the circadian disruption caused by these altered dietary patterns. Sixty-four Fisher rats were fed cafeteria diet for 5 weeks. Then, animals were administered daily a low dose of sugar (160 mg/Kg, equivalent to 2.5g in humans) as a sweet treat without or with 25 mg/kg grape seed flavanols at 8 a.m. or 8 p.m. (ZT0 and ZT12, respectively) for 4 weeks. Finally, animals were sacrificed at different time points (ZT1, ZT7, ZT13, and ZT19). The results showed important alterations at circadian level by cafeteria diet and a slight influence of dose time on diurnal rhythmicity on some serum biochemical parameters like glucose or hormones like corticosterone that showed a shift oscillation with acrophase means around ZT10 and ZT14 (glucose differences, p=0.078) and ZT16 and ZT13 (corticosterone differences, p=0.042), and hypothalamic genes like *Cart* which displayed opposite oscillation with acrophases around ZT16 and ZT7 (p=0.002), by cosinor method. However, flavanols improved the metabolic health (decreased weight gain by ZT12 dose, p=0.003 by two-way ANOVA) and restored the oscillation of biochemical parameters, hormones and clock and appetite-signaling genes in a time-of-day-dependent manner, showing greater effects at ZT12. Notably melatonin rhythm, a key marker of the light/dark cycle, was restored by flavanols treatment at ZT12 (p=0.023, mesor mean 2,45 ng/L) by cosinor method. In conclusion, the alterations of the obesogenic diet were considerably more significant than the effects of the bedtime snack, which were weaker than those previously reported in healthy animals. Moreover, flavanols administration improved metabolic status in obese rats and restored diurnal oscillations of central clock. Although further investigations are needed to elucidate the specific effect of flavanols in these conditions, these results suggest that these phenolic compounds may modulate the diurnal rhythmicity of the central clock contributing to the improvement of the metabolic profile associated to obesity, especially, when flavanols are administered at night.

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OC16. Zinc and iron biofortification of crops grown in a vertical farm. *A. Bucky[1], M. Pičmanová[2], V. Porley[3], S. Pont[2], A. Johnstone[1], D. Stewart[2] 1. The Rowett Institute, University of Aberdeen, Aberdeen, UK and 2. The James Hutton Institute, Invergowrie, Dundee, UK and 3. Intelligent Growth Solutions, Invergowrie, Dundee, UK.*

With the growing global population and climate change, achieving food security is a pressing challenge [1]. Vertical farming has the potential to support local food production and security. In the UK population females and younger adults appear to be particularly vulnerable to micronutrient shortfalls from food sources alone. Levels of micronutrient intakes including zinc and iron are below the recommended daily intake [2]. As a Total Controlled Environment Agriculture (TCEA) system, vertical farming employs hydroponics using a nutrient solution which offers opportunities to modulate nutrient uptake, and thus influence plant mineral and vitamin composition [3].

In this study we aimed to determine the suitability of different crop types for soilless agronomic biofortification with zinc and iron to achieve biofortified crops.

In this study, we investigated the effect of the addition of 20ppm ($+20$ mg L^{-1}) of zinc ($ZnSO_4$) or iron (Fe-EDTA) to the nutrient solution on the growth and nutritional components in pea microgreens, kale microgreens and kale baby leaf plants. The growth conditions were kept identical throughout the treatments with photoperiod 18 h d^{-1}, temperature 20-22°C and relative humidity at 70-80%. Plant growth, mineral composition, glucosinolate content and protein content were evaluated. Results were analysed using ANOVA ($p < 0.05$, Tukey's test).

It was determined that higher amounts of zinc in the nutrient solution resulted in significantly higher levels of zinc in all three crops ($p < 0.05$), with increases of 205% in pea microgreens, 264% in babyleaf kale and 217% in kale microgreens compared to the control plants. Higher amounts of iron in the nutrient solution resulted in significantly higher levels of iron only in pea microgreens, with an increase of 38% ($p < 0.05$). Neither dosing regimen negatively influenced the overall crop performance.

These results suggest that the three different crops are suitable for soilless biofortification with zinc and iron, although pea microgreens were the only crop that had a significant increase in iron upon iron-dosing.

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Student Competition

OC17. An investigation into parental awareness of the importance of gut health in infancy and of the effect of mode of delivery and gestational age on their infant's gut health. *E.Lynch[1], J.L. O'Neill[2], K. O'Connor[2], Z. O'Regan[2], and S. Wilkinson[2] 1. Technological University Dublin, Dublin, Ireland and 2. Danone Nutricia Specialised Nutrition, Dublin, Ireland.*

The early establishment of the gut microbiome during the first 1000 days of life is crucial for health and development during childhood and beyond[1,2]. The composition of the microbiome is influenced by various factors including mode of delivery, gestational age, feeding method, medication use, and other early life experiences[1]. Disruptions to optimal early microbial colonisation, as presented with preterm infants, and infants delivered via caesarean section, can compromise microbial diversity which in turn may manifest in health problems[2,3]. This study aims to investigate parental awareness around infantile gut health to establish potential gaps in the education provided by healthcare professionals (HCPs).

This study involved the distribution of a 15-item questionnaire to parents of infants aged 0-12 months, *via* a parenting platform, 'everymum.ie'. Descriptive statistics were conducted using IBM SPSS V29. Frequencies, Cross-tabulations and Pearson Chi-Squares were performed to analyse categorical variables (significance at $p \leq 0.05$).

A total of 933 valid responses were collected. The majority of respondents were female (98%), aged between 25 and 44 years (95%) and had received third level education (85%). Of the sample, 76% did not receive any information from a HCP on the importance of their infant having a healthy gut. Only 15% of parents received this information before their infant's birth and 22% received this information after. Furthermore, 89% of respondents did not receive any information from a HCP about the role of pre- or probiotics for their infant's gut health.

Of the 364 parents (39%) who gave birth via caesarean section, 70% were not aware that mode of delivery was linked to their infant's gut health and 73% did not receive information on the importance of their infant having a healthy gut. Almost 7% of the sample (n=64) had a premature infant. Of this subgroup, only 22% received information after their infant was born on the importance of gut health in infants. Furthermore, 86% of parents with a preterm infant did not receive information about the role of prebiotics or probiotics in relation to their infant's gut health. There was no significant difference in the information provided to those with or without a preterm infant, and those who gave birth vaginally or via caesarean section, where p=0.950 and p=0.824, respectively.

This study highlights gaps in parental knowledge around infantile gut health and in the education provided by HCPs. Preterm infants and those born via caesarean section are particularly at risk of disruptions to optimal early microbial colonisation and these parents may potentially benefit from information on the importance of supporting their infant's gut microbiome for long term health and development. Further support and education for HCPs appears necessary to help deliver this message to parents to reduce the burden of health problems during infancy.

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Student Competition

OC18. Exploring protein literacy online: a thematic analysis of YouTube comments on food protein knowledge. *C.M. Conti[1], E. Nikokavoura[1] and L. Starr-Vaanholt[1] 1. School of Pharmacy and Life Sciences, Robert Gordon University, AB10 7GJ, Aberdeen, UK.*

Social media platforms like YouTube have become tools to get information on self-care, including nutrition and health. Recently, there has been a growing public interest in protein sources and protein content of foods due to health and environmental concerns[1]. High-protein diets, particularly, have gained popularity for their perceived benefits[2], highlighting the importance of individuals' nutritional literacy. This study aimed to identify and describe the predominant topics about food protein discussed by YouTube commenters to explore their level of protein literacy.

Videos for analysis were selected employing the approach suggested by Gibson[3]. Comments added from 2022 to 26 June 2023 (date of data collection), posted within 15 YouTube videos related to food proteins, were extracted through a big data text analysis software, Mozdeh[4], which allows the gathering of comments from YouTube videos by utilising YouTube APIs to collect data. Eight search terms (*protein for vegetarians*, *protein shake*, *protein foods*, *low protein foods*, *Vegan diet*, *Keto or keto diet*, *plant based diet vs animal based diet*, *high protein diet*), informed by YouTube's search predictions and Google Trends, facilitated video identification. Inductive semantic thematic analysis[5] was conducted to organise comments into patterns (codes) and to summarise, interpret, and theorise meanings in broader concepts by connecting them[5].

Of 3,993 comments, 307 referred to food and dietary protein-related content, with a subset of comments contributing to multiple codes. Five themes emerged: 1: *Quality* (with a reference percentage of comments (RP) = 20.0%, indicating the proportion of comments pertinent to a given theme, relative to the total number of comments), about comments on bioavailability and amino acids content of protein sources; 2: *Intake* (RP = 30.0 %), regarding protein requirements and metabolism; 3: *Health* (RP = 15.0%), about health consequences and benefits of protein intake; 4: *Sources* (RP = 10.5%), on aspects inherent to specific food protein sources; 5: *Queries* (RP = 25%), related on questions and concerns raised by users.

Comments primarily focused on the importance of identifying daily protein requirements, the perceived ineffectiveness of high-protein diets, and the need for personalised dietary guidance. Also, a polarised viewpoint regarding protein sources emerged, with a marked divergence between animal- and plant-based diet advocates. This study underscores the significant demand for nutritional advice on YouTube, emphasising the potential use of the platform as a means for sharing validated information by registered nutritionists and authoritative bodies. It also accentuates the pressing need for implementing methods into the platform to guarantee the reliability of shared information, such as community-driven approaches that can alert the public about potential misinformation. Future research should delve into the validity of nutritional claims made by non-expert contributors and shed light on their impact on shaping nutritional literacy among the public.

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Student Competition