



WHAT'S NEW?

A conference for health and nutrition professionals

21 March 2023
W5, Odyssey, Belfast

The Dairy Council for Northern Ireland



WHAT'S NEW ?

CONFERENCE PROGRAMME

09:30 REGISTRATION AND COFFEE

10:00 Professor Sean Strain, OBE

ULSTER UNIVERSITY

Chairperson's introduction

10:15 Dr Sandra Iuliano

UNIVERSITY OF MELBOURNE

Improving dairy consumption in residential care homes: a food-based strategy to help prevent fractures and falls in older adults?

10:50 Professor Marion Hetherington

UNIVERSITY OF LEEDS

Mindful mealtimes: the role of reading infant cues in responsive feeding

11:25 COFFEE

11:45 Professor Nicole Darmon

FRENCH NATIONAL INSTITUTE FOR AGRICULTURE, FOOD AND ENVIRONMENT (INRAE)

Studying dietary shifts to improve nutrition and sustainability: how do we best measure it?

12:20 Professor Ciarán Forde

WAGENINGEN UNIVERSITY

Going beyond ultra-processed: research challenges for processed food and health

12.55 LUNCH

2:00 Dr Claire McEvoy

QUEEN'S UNIVERSITY BELFAST

Food for thought: can diet protect against cognitive decline during ageing?

2:35 Dr Michael Crowe

DUBLIN DENTAL UNIVERSITY HOSPITAL & TRINITY COLLEGE DUBLIN

Dairy ingredients or dairy matrix: a role in dental health?

3.10 CLOSE

Improving dairy consumption in residential care homes: a food-based strategy to help prevent fractures and falls in older adults?

Dr Sandra Iuliano

SENIOR RESEARCH FELLOW, DEPARTMENT OF MEDICINE, UNIVERSITY OF MELBOURNE

Longevity is increasing, but morbidity remains unchanged resulting in a growing proportion of older adults requiring full time assistance in aged care homes. These older adults are often frail with high risk of falls and fractures, with 30% of the community burden of hip fractures arising from aged care homes. Preventing fractures in this high-risk group would likely reduce the community burden of fractures, but any intervention must be effective, safe, and cost saving.

Older adults in aged care homes have inadequate intakes of calcium and protein, risk factors for fractures, so correcting these inadequacies may reduce risk of fractures. Milk, yogurt, and cheese are good sources of both nutrients so improving intake may reduce fracture risk. We tested this notion over a 2-year period among 7000 residents in 60 care homes, 30 of which included additional milk, yogurt, and cheese on the menu, while the remaining 30 control sites continued with their usual menus. Dairy intake increased to 3.5 servings daily in intervention residents and was associated with a 33% reduction in fractures, 46% reduction in hip fractures and an 11% in falls. Malnutrition and weight loss were abated with intervention but continued in controls. Compliance with intervention was maintained for two years perhaps as dairy foods are familiar to residents and offerings were based on their preferences. All-cause mortality remained unchanged in intervention residents, so relative to mortality risk the intervention was safe. The cost of the additional dairy foods was less than 60p per resident per day.

The study provides evidence to support the provision of high-protein, high-calcium dairy foods to older adults as part of a balanced and nutritious menu in aged care homes and can be used to prompt policy changes in the sector to ensure these types of nutritious foods are available to residents in their care. This food-based strategy may be cost-saving to the aged care and health systems but more importantly benefit the older adults living in aged care homes.

Mindful mealtimes: the role of reading infant cues in responsive feeding

Professor Marion Hetherington

PROFESSOR EMERITA, SCHOOL OF PSYCHOLOGY, UNIVERSITY OF LEEDS

From birth, babies are proficient in signalling their need for milk via a number of behaviours culminating in the hunger cry. A few days after birth neonatal facial expressions in response to basic tastes indicate a positive affective response to the sweet taste and an aversive response to bitter. Thus, babies have an unlearned preference for sweetness and acquire a liking for bitter tastes through experience. As infants transition from univore (milk-feeding phase) to omnivore (diverse solid foods) they communicate hunger, appetite, satiation and satiety with a series of cues from rapid and transient facial expressions to subtle or potent gestures, bodily movements, and vocalisations. For the sophisticated communication system to be effective, caregivers must be able to understand and respond appropriately to their infant (responsive feeding).

Our research has used video capture and behavioural coding of infant communication and caregiver responses during meals to reveal the dynamic nature of mealtime interactions. Characterizing infant cues and encouraging caregivers to engage in responsive feeding provides a means to promote infant self-regulation, healthy eating, and growth. However, infants vary in their proficiency to communicate energy needs and eating traits such as fussiness may contribute to difficult mealtime interactions. Understanding both the caregiver's ability to recognize cues and the infant's ability to convey their needs is crucial to effective communication of hunger, appetite, and satiation. We will discuss infant communication, responsive feeding and potential applications of this research including developing interventions to facilitate infant self-regulation through responsive feeding.

Studying dietary shifts to improve nutrition and sustainability: how do we best measure it?

Professor Nicole Darmon

SENIOR RESEARCHER, FRENCH NATIONAL INSTITUTE FOR AGRICULTURE, FOOD AND ENVIRONMENT (INRAE),
MONTPELLIER INTERDISCIPLINARY RESEARCH CENTER ON SUSTAINABLE AGRI-FOOD SYSTEMS, FRANCE

Dietary changes are needed to address the challenges of reducing the environmental impact of our food systems and promote health. The nutritional and cultural dimensions are central to the definition of sustainable diets, defined as nutritionally adequate, healthy, safe, culturally acceptable, economically equitable, accessible and affordable, protective and respectful of biodiversity and ecosystems.

In response to the urgent issue of mitigating the environmental impacts of food systems, the number of published studies exploring the sustainability of diet has exploded over the past decade. In the face of such profusion of studies, there is a need to facilitate their understanding and use by policy makers and all other stakeholders possibly influencing diet sustainability. They should be provided with keys for reading and tools for classifying the numerous studies, to help them become aware of each study's scope and limitations, and ensure a well-informed interpretation of results.

In a literature review published last year¹, we have proposed to categorize studies into 4 approaches, based on the type of methodology used to explore diet sustainability. The four methodological approaches are: i) sustainability assessment of hypothetical diets (a priori scenarios), ii) assessment of sustainability characteristics of existing diets, iii) identification of "positive deviants" in existing diets (multi-criteria approach), and iv) design of more sustainable diets by constrained optimization (multi-criteria approach).

We will highlight the data required, the advantages and limitations of each approach in order to help study users in their interpretation, and future research in the choice of the most relevant methodology. Key findings drawn from each approach are described, and challenges for future studies are discussed.

[1] Perignon M., Darmon N. (2022). Advantages and limitations of the methodological approaches used to study dietary shifts towards improved nutrition and sustainability. *Nutrition Reviews*, 80 (3), 579-597, <https://dx.doi.org/10.1093/nutrit/nuab091>

Going beyond ultra-processed: research challenges for processed food and health

Professor Ciarán Forde

PROFESSOR AND CHAIR, SENSORY SCIENCE AND EATING BEHAVIOR, DIVISION OF HUMAN NUTRITION AND HEALTH, WAGENINGEN UNIVERSITY AND RESEARCH, THE NETHERLANDS

The association between food and health has traditionally focused on nutrient composition, but in recent years there has been an increased emphasis on the degree to which a food is processed as an index of its health potential. Numerous association studies and data from one randomised clinical controlled trial have shown links between the consumption of processed foods and higher energy intakes, cardio-metabolic disease, increased cancer risk and other health outcomes. Understanding what promotes higher energy intakes from diets dominated by processed foods will provide insights on how to reformulate the food supply and promote eating behaviours that mitigate the risk of overconsumption. The talk will summarise evidence for several proposed mechanisms, before focusing on recent findings that demonstrate the combined impact of higher energy density (kcal/g) and faster consumption rates (g/min) on greater energy intake from processed foods. Softly textured energy dense foods promote higher energy intakes and these findings highlight new possibilities to moderate the flow of calories through our diets using sensory cues in combination with reduced energy density.

The debate on the benefits and controversies of food processing continues against a backdrop of an environmental crisis in food production and global food insecurity and current recommendations to avoid all processed foods pose a considerable challenge given that an estimated two thirds of our current food supply are classified as processed. Efforts to restrict access to processed foods are likely to be regressive, and would target the most vulnerable in society. Moving beyond 'ultra-processed', there is a need to better understand the drivers of energy intake, incentivise food reformulation and communicate the benefits of sustainable food processes to secure our food supply in the future. Addressing the serious public health and environmental challenges we face today will require changes in food production, formulation and intake behaviours. Using a food's sensory properties in combination with reformulation will make it possible to support successful behavioural and dietary strategies for the better management of diet related chronic disease.

Food for thought: can diet protect against cognitive decline during ageing?

Dr Claire McEvoy

SENIOR LECTURER, CENTRE FOR PUBLIC HEALTH, INSTITUTE FOR GLOBAL FOOD SECURITY, QUEEN'S UNIVERSITY BELFAST.

Dementia is a major public health challenge given its recognised impact on disability among older adults. Approximately 50 million people are living with dementia worldwide, and this figure is expected to triple by 2050. Modifying dietary behaviour could be a promising way to enhance cognition and delay or prevent dementia in later life. Several dietary factors including, vitamin E, B vitamins, omega-3 fatty acids and healthy dietary patterns, particularly the Mediterranean Diet, have been shown to be neuroprotective, but the evidence has not been entirely consistent. Given that the pathophysiological changes of dementia accumulate years before cognitive impairment becomes apparent, understanding the influence of diet and nutritional status on brain health across the life-course and in vulnerable populations is important to inform prevention strategies.

Undernutrition is emerging as a potentially modifiable risk factor for late life dementia. In prospective studies, weight loss increases dementia risk by 30-40% and precedes the onset of dementia by a decade or more, making it an intervention target that should be prioritised. A nutrient dense diet with adequate protein and energy intake are critical for preventing undernutrition in older adults. The PROtein enriched MEDiterranean Diet and EXercise (PROMED-EX) randomised controlled trial aims to determine the effects of a protein-enriched MedDiet, with and without exercise, in comparison to standard care, on nutritional status in adults at risk of undernutrition and cognitive decline. PROMED-EX is part of the European "PROMED-COG" project, funded under the Horizon Joint Programming Initiative 'a healthy diet for a healthy life' to establish evidence for the balance between diet and physical activity for preventing undernutrition and promoting healthy neurocognitive ageing

Dairy ingredients or dairy matrix: a role in dental health?

Dr Michael Crowe

ASSOCIATE PROFESSOR FOOD SCIENCE, NUTRITION AND ORAL HEALTH, DEPARTMENT OF RESTORATIVE DENTISTRY & PERIODONTOLOGY, DUBLIN DENTAL UNIVERSITY HOSPITAL

Dental caries is highly prevalent and permanent tooth decay occurs in approximately 2.5 billion people worldwide. In recent years there has been a recognition of the need to shift from a surgical to a minimal intervention and preventive approach. The basic dietary advice to prevent dental caries is simple, avoid fermentable carbohydrates, especially free sugars. However, while caries is a diet-mediated disease other factors affect substrate cariogenicity including tooth surface susceptibility, the virulence of the microbiome within the plaque matrix and the frequency and duration of exposure. Changes in the oral environment following organic acid production from the fermentation of sugars, creates a dysbiotic microbiome, leads to demineralisation of the hydroxapatite structure and, ultimately, cavitation. Recent research has moved the focus from demineralization to the broader view that includes remineralization of tooth structure. Particular dairy constituents or dairy foods have a potential therapeutic role in this regard as they are high in calcium, phosphate, casein and bioactives including lactoferrin, lactoperoxidase and proteose peptones. Fractions, such as glycomacropeptide, can also reduce bacterial adhesion and inhibit growth of cariogenic species. While epidemiological evidence is still equivocal, consumption of milk, cheese and possibly yoghurt has been consistently associated with a lower incidence of caries. The caries protective effect of cheese, especially hard cheeses, is thought to be mainly due to saliva stimulation and increasing the calcium concentration in the plaque biofilm.

Dental erosion which is the progressive dissolution of tooth structure in the absence of plaque appears to be increasing in prevalence. While the aetiology is multifactorial a high dietary intake of acidic food and drink is an important extrinsic factor which contributes to overall surface demineralisation of enamel and dentine. Unlike dental caries there is no critical pH for dental erosion as both the pH and concentration of calcium and phosphate ions in a food or drink determines the degree of saturation which directs the extent of dissolution of enamel and dentine. Patients with eating disorders tend to display an erosive pattern due to self-induced vomiting depending on the specific condition while a higher prevalence of erosion has been reported in endurance athletes due to frequent consumption of acidic sports drinks. Neutralisation of dietary acids by consumption of cheese and milk after acidic food and beverage can be beneficial.

Milk and dairy products provide a good source of proteins, calcium, vitamins B2 and B12 and has long been associated with the growth and development of a healthy dentition and supporting structures. Although lactose is a fermentable carbohydrate cow's milk it is considered to be non-cariogenic and may be anticariogenic. The effect of other food constituents within a matrix of cheese or yoghurt may inhibit any potential cariogenic effect of lactose. The effects of dairy ingredients or of a dairy matrix on caries reduction suggests that a detailed knowledge of the specific molecular basis for these effects would help our overall understanding of cariogenic foods.

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