

Scottish Section Conference 2025

Undernutrition in later life: Current understanding and advances

1-2 April 2025 - Dundee, Scotland

CONFERENCE PROGRAMME

Contents

Welcome Letter	2
Programme Day One	4
Original Communications Running Order	6
Programme Day Two	9
Speaker Summaries	10

Dear Colleague,

This year the Scottish Section of The Nutrition Society is hosting the Scottish Section Conference titled *Undernutrition in later life: Current understanding and advances* at the University of Dundee.

Malnutrition in this context refers to the inadequate nutrient intake leading to a reduction in body mass and function (undernutrition). When this occurs in later life, it is associated with sarcopenia, frailty, a decline in physical capacity and quality of life, and increased risk of mortality. The subsequent increased healthcare utilisation is substantial, with annual health and social care costs estimated to be three times greater for undernourished older adults, compared with those adequately nourished. The prevalence of severe undernutrition is reported to be up to 55% in hospitalised older adults and up to 45% in those in residential care. Additionally, over one third of community-dwelling older adults suffer from milder undernutrition, nutrition risk and nutritional deficiencies. With an ageing global population, undernutrition in later life is an imposing challenge for current and future healthcare provisions.

This conference consists of presentations from internationally invited speakers followed by live discussions. Over the 1.5 days, you will hear leading experts discuss the causes of undernutrition in later life, including appetite loss, protein-energy deficiency and food insecurity, and the latest innovations in the identification and monitoring of undernutrition during ageing. Interventions designed to optimise the prevention and management of undernutrition in older adults will be presented by early career researchers at the forefront of discovery within this field. In addition to the core scientific programme, we are excited that there will be original communications delivered as oral and poster presentations.

We are so grateful to all speakers for accepting our invitation to contribute, sharing their considerable knowledge, expertise, and various perspectives.

If you use social media, please use and follow the hashtag #NSScottish25 and tag The Nutrition Society on X (@NutritionSoc), Instagram (@the_nutrition_society) and LinkedIn (@The Nutrition Society). Nutrition Society members can also make use of Member-Connect to network, exchange views and discuss the latest research around the topic of undernutrition in later life.

We hope that you will find each session highly stimulating and enjoyable. There will be opportunities to provide feedback, and we encourage you to do so as it will help us improve future conferences. We look forward to welcoming you to #NSScottish25.

Yours sincerely,

Ms Caroline Litts, Robert Gordon University, Scotland & Dr Daniel Crabtree, Aberdeen City Council, Scotland *Scientific Organisers*

DAY ONE TUESDAY 1 APRIL 2025

09:00 Registration Foyer Area

09:50 Welcome Dr Daniel Crabtree, Aberdeen City Council, UK Dr Caroline Litts, Robert Gordon University, UK Lecture Theatre One

Plenary Lecture One Lecture Theatre One

10:00 The prevalence, causes and consequences of undernutrition in later life Professor Marjolein Visser, Vrije Universiteit Amsterdam, The Netherlands

Symposium One: Ageing diet and appetite Lecture Theatre One

- 10:45 Dysregulated gut hormone responses to nutrient ingestion in older adults with low appetite: a mechanism of anorexia of ageing? Dr Adrian Holliday, Newcastle University, UK
- 11:15Strategies to mitigate protein-energy undernutrition in later life
Dr Miriam Clegg, University College Cork, Ireland
- 11:45Food insecurity in later life: Could a food security framework support
preventative action?
Dr Angela Dickinson, University of Hertfordshire, UK
- 12:15 Panel Discussion
- **12:30** Lunch *Room 2G12*
- **13:30** Original Communication Session One OC01 – OC04, Lecture Theatre One OC05 – OC14, Room 2G12
- 14:40 Refreshment Break

Symposium Two: Identifying and monitoring undernutrition *Lecture Theatre One*

- **15:00** Detecting undernutrition in older community dwelling adults Dr Claire McEvoy, Queen's University Belfast, Northern Ireland
- 15:30 The future of nutritional monitoring? exploring intrinsic capacity as a population tool Dr Yuwei Qi, Amsterdam University Medical Center, The Netherlands
- **16:00** The use of AI technology in food monitoring in older adults in Scotland Dr Jenni Connelly, University of Stirling, UK
- 16:30 Panel Discussion
- 16:45 Closing Remarks
- 17:00 Scottish Section Annual General Meeting Lecture Theatre One The Annual General Meeting is open to all members of the Scottish Section of The Nutrition Society

17:30 Welcome Reception

Foyer Area

All delegates are welcome to attend this complimentary reception as part of their registration fee.

ORIGINAL COMMUNICATIONS SESSION - RUNNING ORDER

Oral Session One Room: Lecture Theatre One Time: 13:30 – 14:40

13:30 OC01 The impact of ultra-processed food consumption on energy and nutrient intake in the very old: The Newcastle 85+ Study. F. A. Shahatah¹,T. R. Hill¹, A. Fairley^{1,2}, C. Neal1, A. Adamson¹, L. Robinson¹, A. Granic³ and A. W. Watson^{1,2}
 1. Population Health Sciences Institute, Faculty of Medical Sciences, Newcastle University, Newcastle upon Tyne, NE2 4HH, UK, 2. School of Biomedical, Nutritional and Sports Sciences, Faculty of Medical Sciences, Newcastle University, Newcastle upon Tyne, NE2 4HH, UK and 3. AGE Research Group, Biomedical Research Building, Campus for Ageing and Vitality, Newcastle University, Newcastle upon Tyne NE4 5PL, UK.
 Student Competition

13:45 OC02 The acceptability of vertically farmed food products in older adults in the United Kingdom: a consumer insight survey. D. I. Morecroft¹, A. Bucky¹, and A. M. Johnstone¹ 1. The Rowett Institute, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Aberdeen, AB25 2ZD, UK.

14:00 OC03 Comparing oral processing characteristics, sensory attributes and expected satiation of easier and more difficult food textures across age groups: 18-35, 70-74 and 75+ years. D. Zannidi¹, M. E. Clegg², J. V. Woodside³, G. McKenna³, C. G. Forde⁴, A. Pao¹, L. Methven¹ 1. Department of Food and Nutritional Sciences, University of Reading, Reading, UK 2. School of Food and Nutritional Sciences, University College Cork, Cork, Ireland 3. Centre for Public Health, School of Medicine, Dentistry and Biomedical Sciences, Queen's University Belfast, Belfast, UK and 4. Division of Human Nutrition and Health, Wageningen University and Research, Wageningen, Wageningen, the Netherlands.
 Student Competition

14:15 OC04 Patients with early Parkinson's disease report reduced fluid intake compared to controls. Isobel J Sleeman^{1*}, Angus D MacLeod¹, Clare Tarr², Collette McGhee², Claire Fyfe³, Carrie Stewart¹, Karen Scott³, Phyo Kyaw Myint¹, Alexandra M Johnstone^{3b}1. School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Foresterhill, Aberdeen, United Kingdom, AB25 2ZD, 2. Speech and Language Therapy Department, Aberdeen Royal Infirmary, Foresterhill, Aberdeen, United Kingdom, AB25 2ZN and 3. Rowett Institute, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Foresterhill, Aberdeen, United Kingdom, AB25 2ZD
 Student Competition

ORIGINAL COMMUNICATIONS SESSION - RUNNING ORDER

Poster Session One Room: Room 2G12 Time: 13:30 – 14:40

13:30 OC05 Postoperative acute dietary intake of older adults following hip fracture repair: a weighed food diary pilot observational study. H. Lloyd^{1,4}, N.Burn², S.Allison³, V.Zohoori⁴, J.D.Franklin⁴ 1. School of Science, Technology and Health, York St. John University, York, UK, 2. University of South Australia Online, Adelaide, Australia, 3. Department of Sport, Exercise and Rehabilitation, Northumbria University, Newcastle upon Tyne, UK and 4. School of Health and Life Sciences, Teesside University, Middlesbrough, UK. Student Competition

13:37 OC06 Development of the ZOE diet score, and associations with dietary diversity. AC. Creedon^{1,2}, J. Capdevila², M. Wallace², L. Francis², E. Bakker², A. Roomans Ledo², A. Platts², P. Pantelides², K. Groves², KM. Bermingham^{1,2}, J. Wolf², TD. Spector^{1,3}, SE. Berry^{1,2}1. Department of Nutritional Sciences, King's College London, London, UK, 2. Zoe Ltd, London, UK and 3. Department of Twins Research and Genetic Epidemiology, King's College London, London, UK.

13:44 OC07 Impact of community- focussed interventions, policies and programmes on growth and anaemia in children under five in low- and middle-income countries: a systematic review of systematic reviews. U. Ghimire1, A. Guntupalli¹, J. Kyle¹, and S. Gaihre¹ 1. Institute of Applied Health Sciences, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Aberdeen, UK.
 Student Competition

13:51 OC08 Wheat flour fortification for post-covid nutrition nutritional support to vulnerable segments through food distribution networks in Pakistan. M.U. Arshad^{1*}, F. Vasta², Farrah Naz³, F. Rasool³, A. Imran¹, T. Sadaf³, H. Babar³ 1. Department of Food Science, Government College University, Faisalabad, Pakistan, 2. Global Alliance for Improved Nutrition, Regional Office, USA and 2. Global Alliance for Improved Nutrition, Pakistan.

13:58 OC09 Moving past ultra-processed foods (UPFs): insights from the PREDICT 1 Study. Lucy J. McCann^{1,2}, Kate M. Bermingham^{2,3}, Lucy Francis², Alice C. Creedon^{2,3}, Federica Amati^{1,2}, Jonathan Wolf², Tim D. Spector^{1,2}, Sarah E. Berry^{2,3} 1. Department of Twins Research and Genetic Epidemiology, King's College London, London, UK, 2. Zoe Ltd, London, UK and 3. Department of Nutritional Sciences, King's College London, London, UK.

- 14:05 OC10 Use of food aid by pensioner age households in the UK: A scoping review. A. Dickinson¹, E. Barnes¹, C. Thompson¹, E. Tylenda¹ and I. McClelland²
 1. Centre for Research in Primary and Community Care, University of Hertfordshire, Hatfield, UK. 2 Torbay and South Devon NHS Foundation Trust, Plymouth, UK.
- 14:12 OC11 Assessing the reliability and repeatability of a portable bio-impedance device in early Parkinson's disease. Isobel J Sleeman^{1*}, Katrina Paley¹, Anna Pollock1, Angus D MacLeod¹, Phyo Kyaw Myint¹ 1. School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Foresterhill, Aberdeen, United Kingdom, AB25 2ZD.
- 14:19 OC12 Modifiable determinants of protein consumption amongst community dwelling older adults: A systematic review. K. Taylor^{1,2}, N. Shaw³, S. Long¹, R. Dholakia¹, U. Badakhshan¹, A. Nassrallah¹, T. Adesuyi¹, S. Hope^{1,2}, V. Goodwin¹ 1. University of Exeter, Exeter, UK, 2. Royal Devon University Healthcare NHS Trust, Exeter, UK and 3. University of Plymouth, Plymouth, UK.
- 14:26 OC13 The influence of flavour enhancement and protein fortification of pureed meals on perceived palatability, appetite and food intake in older people. T. Ibitoye¹, L.Methven¹, Clegg², Kelly Fortune³ and Tim Charles³ 1. Department of Food and Nutritional Sciences, University of Reading, Reading, UK, 2. School of Food and Nutritional Sciences, University College Cork, Ireland and 3. Apetito, Trowbridge, UK. Student Competition
- 14:33 OC14 Exploring the Role of Deprivation in a School-Based Food Intervention Study: Impact on Diet Diversity and Quality in Primary School Children. D. Olgacher¹, C. Wallace¹, S. F. Brennan^{1,2}, F. Lavelle³, S. E. Moore^{1,2}, M. Dean², M. C. McKinley^{1,2}, P. McCole⁴, R. F. Hunter¹, L. Dunne⁵, N. E. O'Connell², C. R. Cardwell¹, C. T. Elliot², D. McCarthy², and J. V. Woodside^{1,2} 1. Centre for Public Health, Queen's University Belfast, Belfast, UK, 2. Institute for Global Food Security, Queen's University Belfast, Belfast, UK, 3. Department of Nutritional Sciences, King's College London, London, UK 4. School of Business, Maynooth University, Maynooth, Co. Kildare, Ireland, 5. Centre for Evidence and Social Innovation, Queen's University Belfast, Belfast, UK

DAY TWO WEDNESDAY 2 APRIL 2025

Symposium Three: Managing and preventing undernutrition *Lecture Theatre One*

- 09:30 Efficacy of a protein-enriched Mediterranean diet, with and without exercise, on nutritional status and cognitive performance in older adults at risk of undernutrition and cognitive decline Dr Nicola Ann Ward, Queen's University Belfast, Northern Ireland
- 10:00 Focussing on appetite decline to optimise management of undernutrition in later life Dr Natalie Cox, University of Southampton, UK
- 10:30 Influencing change in ward practice to improve food and nutritional care for hospitalised older adults: insights from a multidisciplinary action research study. Dr Gladys Yinusa, Bournemouth University, UK

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- 11:00 Panel Discussion
- 11:15Refreshment BreakRoom 2G12

Plenary Lecture Two Lecture One Theatre One

- **11:30** Appetite loss as a clinical marker of loss of function during ageing Professor Philipe de Souto Barreto, University of Toulouse III, France
- 12:15 Close of Conference

SPEAKER PRESENTATION SUMMARIES AND BIOGRAPHIES

*Speaker presentation summaries and biographies are published as submitted.

The prevalence, causes and consequences of undernutrition in later life Professor Marjolein Visser, Vrije Universiteit Amsterdam, The Netherlands

PRESENTATION SUMMARY

During this presentation, an overview is presented on the prevalence of undernutrition, its causes and its consequences in older adults, with a main focus on community-dwelling older adults. Prevalence data based on malnutrition screening tools as well as the Global Leadership in Malnutrition (GLIM) criteria will be presented. The development of malnutrition will be discussed, using the Determinants of Malnutrition in Aged Persons (DoMAP) model as way to structure the different potential determinants. The level of malnutrition awareness among primary care health professionals as well as older adults themselves will be briefly addressed. The presentation will close with an overview of the negative health consequences associated with malnutrition in older adults.

BIOGRAPHY

Marjolein Visser is a nutrition scientist and epidemiologist and currently holds a position as professor of *Healthy Aging* at the Department of Health Sciences of the Vrije Universiteit Amsterdam, where she leads the Nutrition and Health group. She is also chair of the Standing Committee Nutrition of the Health Council of the Netherlands, and board member of the Dutch Academy of Nutrition Sciences.

She obtained her MSc degree in Wageningen (Human Nutrition), where she also obtained her PhD in 1995. During her PhD she worked for 5 months at the Obesity Research Center at Columbia University, New York, USA. She continued with a 2-year postdoc at the National Institute on Aging, National Institutes of Health, Bethesda MD, USA, during which she obtained a research grant on sarcopenia in older adults. She embedded this research in the EMGO+ research institute of the VU Medical Center in Amsterdam, the Netherlands. She continued her research on sarcopenia for another 5 years by obtaining a fellowship from the Royal Netherlands Academy of Arts and Sciences. In 2003, she moved part-time to the Vrije Universiteit Amsterdam when the department of Health Sciences was launched, and works there fulltime since 2017.

Her research focuses on lifestyle determinants of healthy aging, with a main focus on nutrition and physical activity. Important topics in her research and teaching are sarcopenia, malnutrition and obesity in old age. She has coordinated several large EU research consortia (MooDFOOD, MaNuEL and PROMISS). She has published over 400 peer-reviewed scientific articles.

Dysregulated gut hormone responses to nutrient ingestion in older adults with low appetite: a mechanism of anorexia of ageing?

Dr Adrian Holliday, Newcastle University, UK

PRESENTATION SUMMARY

The A loss of appetite in later life, termed anorexia of ageing, is experienced by approximately 30% of free-living older adults and over half of those in residential care. Anorexia of ageing is associated with increased risk of undernutrition, sarcopenia, and morbidity, culminating in an 83% greater risk of mortality. Additionally, health and social care costs are estimated to be three times greater for undernourished older adults compared to those who are adequately nourished. With an ageing population, addressing this issue presents a significant challenge for current and future healthcare systems. The mechanisms underpinning anorexia of ageing are poorly understood. Appetite control is complex and multifaceted, influenced by both hedonic and homeostatic inputs. As individuals age, physiological changes and shifts in the social environment likely interact to affect appetite and eating behaviour.

One potential physiological factor is an altered endocrine response to feeding. There is evidence that the profile of appetite-related gut hormones changes with age towards a more anorexigenic state, and that this may impact eating behaviour. However, to date, it has not been explained why such an age-related change causes some older adults to eat less, while others retain a healthy appetite. Exploring this further will form the basis of this talk. Our research group recently determined appetite-related gut hormone responses to feeding in older adults with a healthy appetite and those exhibiting appetite suppression. For the first time, we evidenced augmented gut hormone responses to feeding in those exhibiting appetite suppression, but not those with a healthy appetite. This suggests that dysregulated gut-nutrient interactions may play a causal role in anorexia of ageing. In this talk, I shall share our findings, discuss potential mechanisms for this altered hormonal response to nutrients, and contemplate the next steps in this field of research.

Finally, I will conclude by considering the practical implications for the management of anorexia of ageing. Enhancing our understanding of its aetiology is essential as we develop strategies to support older adults with low appetite, helping them to eating well for good health in later life.

BIOGRAPHY

Dr Adrian Holliday is a lecturer in Exercise Physiology and Nutrition at in the School of Biomedical, Nutritional, and Sport Sciences at Newcastle University. His research interests lie in appetite control and food intake. He completed his PhD at the University of Birmingham, where he investigated appetite responses to exercise. Since then, Adrian has studied appetite regulation in response to both exercise and feeding across various populations.

Now an active member of the Human Nutrition and Exercise Research Centre at Newcastle University, Adrian's current research explores appetite regulation and dysregulation in

anorexia of ageing, with particular interest in nutrient-gut interactions in older adults.

Supported by research awards from the UKRI-funded *Ageing and Nutrient Sensing* and *Food 4 Years* networks, Adrian, along with collaborators at Imperial College London and the University of Aberdeen, has recently shown that older adults with low appetite exhibit amplified gut hormone responses to nutrient ingestion.

Strategies to mitigate protein-energy undernutrition in later life

Dr Miriam Clegg, University College Cork, Ireland

PRESENTATION SUMMARY

Research suggests that as we age, adequate protein consumption minimises common physical complications associated ageing, such as reduced fracture risk (Groenendijk et al., 2019), frailty (Mendonca et al., 2020) and sarcopenia, a progressive and generalised loss of muscle mass. It is also responsible for reducing cognitive decline (Fernando et al., 2018) and improving immune function (Li et al., 2007). In protecting the individual from these ailments, protein aids in maintain independence and a good quality of life (Hunter et al., 2019). Decreased food intake, combined with age-related eating complications is a major determinant of protein undernutrition. Dietary recommendations for older adults vary considerably between countries, with some countries more recently recommending higher protein intakes and introducing tailored food-based dietary guidelines specifically to meet older adult's dietary needs. These recommendations acknowledge that with age, muscle becomes susceptible to anabolic resistance, so requires greater amounts of amino acids to stimulate muscle anabolism. Assessments of older adult's diets consistently reveal that protein intake falls short of these recommendations (Fleury et al., 2021; Lonnie et al., 2018; Mendonça et al., 2018; Morris et al., 2020; Roberts et al., 2018; Smith et al., 2022). A key driver of protein-energy undernutrition is poor appetite, as older adults typically consume small portion sizes, which decreases the opportunities to consume the necessary nutrients. As such, there is great value in finding alternative methods to improve appetite or fortify older adults' diets with protein without increasing portion size. Protein-fortification, that is incorporating high quality protein ingredients into a meal to increase the overall protein content, without substantially changing the portion size, is one potential solution (Smith et al., 2022; Smith et al., 2024). However, often when high-protein products are developed, they are not co-created with older adults or they have been targeted at younger adults such as athletes and may not have the attributes required by older adults such as being low in saturated fat, micronutrient dense or easy to open and consume. Additionally, foods needed to be enjoyable and fit with the lifestyles of older adults for them to be consumes and for benefits to be achieved (Geny et al., 2024). As such, it should be recognised that older adults are the experts of their diets and behaviours, and culturally and contextually appropriate research should be undertaken, by engaging with older adults in the development of nutrient rich diets that meet their needs.

BIOGRAPHY

Miriam's areas of research interest include examining the role of food and diet on appetite, incorporating markers of food intake, eating behaviours and nutritional status including gastrointestinal transit, energy expenditure and hormones related to appetite. At present, her work focuses strongly on exploring healthy and sustainable diets and foods across the lifespan, particularly investigating mechanisms for improving foods, diets and appetite control, and increasing protein intake in older adults.

Dr Miriam Clegg has a BSc in Sports and Exercise Sciences, PhD in Nutrition and is a Registered Nutritionist with the Association for Nutrition. Miriam's current research is

funded by grants obtained from the UK Research and Innovation (UKRI) Biotechnology and Biological Sciences Research Council (BBSRC) and Medical Research Council (MRC), and the Joint Programming Initiative "A Healthy Diet for a Healthy Life". She established the BBSRC and MRC funded Food4Years Ageing Network, which brought together a community of over 300 individuals from diverse backgrounds committed to the development, integration and communication of healthy, affordable foods and specific diets for all older adults across our food landscape. She currently co-Chairs the Nutrition Society Special Interest Group in Healthy Ageing, is a Trustee for the Association for Nutrition and is Assistant Editor for the British Journal of Nutrition and Journal of Nutritional Sciences.

Food insecurity in later life: Could a food security framework support preventative action?

Dr Angela Dickinson, University of Hertfordshire, UK

PRESENTATION SUMMARY

Until fairly recently the UK food system was relatively stable, however over the past five years, a number of events including the pandemic, exit of the UK from the European Union, geopolitical conflicts (particularly the war in Ukraine), and the cost of living crisis have had an adverse impact. At the same time, over a decade of austerity has resulted in major declines in services that have historically supported the food security of older people, including meals on wheels and lunch clubs. Many lunch clubs that traditionally provided hot meals and companionship for older adults failed to reopen after the pandemic. Meals on wheels services were described in 2023 by the National Association of Care Catering as being devasted and on the verge of collapse, with only 29% of the UK's local authorities now offering a 'meals on wheels' type service and considerable geographical variation in service availability.

Food insecurity is experienced differently by older adults compared to younger people. For older people, food insecurity is the outcome of an accumulation of adverse factors, including a decline in functional ability and reduction in social networks, not just financial threats and public spending cuts. Other factors can disproportionately affect older people and impact on food security, for example, lack of car access, poor public transport, living in an urban vs. rural environment, bereavement, social isolation, and lack of attention to inclusive design. In addition, older people are at increased risk of food-borne illness due to a deterioration in sensory perception. If people can no longer prepare their own food, the associated loss of autonomy can amplify feelings of vulnerability. However, a number of assets including individual capacities, formal support and social networks can protect against food insecurity.

Prolonged food insecurity in later life can lead to malnutrition. In the UK, an estimated 1.3 million older people are malnourished or at risk of malnutrition. With an ageing population and around two thirds of those aged over 85 experiencing a disability or limiting long-term illness; addressing food insecurity should be a public health priority. However, recently, food aid providers report increasing numbers of older adults seeking support, and given the association between prolonged food insecurity and an increased risk of malnutrition/undernutrition this is a worrying trend pointing towards a potential public health crisis if action is not taken. Vulnerability is socially constructed and thus inherently unequal regarding who is at harm, thus paying closer attention to food insecurity from the perspectives of older people themselves is required.

This paper will draw on findings from a number of studies to explore how a Food Security Framework could help policy makers and other stakeholders to determine how to prevent and reverse food insecurity in later life.

BIOGRAPHY

Angela Dickinson is an experienced academic with over 25 years experience in undertaking health and social care research with older people. She has a long standing interest in research focusing on food and food insecurity in pensioner age households and is currently undertaking work exploring the use of food aid by older adults.

Angela has extensive expertise in a range of research methods including ethnographic qualitative research, visual methods, interviewing, focus groups, survey, diaries, mixed methods and documentary analysis. The theoretical underpinnings of much of this work is social practice theory, which, with colleagues, she has operationalised to deepen our understanding of vulnerabilities in relation to food practices. She has expertise in public engagement in research and participatory, creative methods along with creative methods of public engagement/impact generation including exhibitions and serious game development. She has led and worked on a large number of studies and evaluations funded by UK Research Councils, NIHR, local government, Food Standards Agency and voluntary organisations. Angela particularly enjoys working as part of interdisciplinary teams and has been recently involved in the UKRI funded study 'Beanmeals' which introduced UK-grown beans into school meals, where she led the ethnographic work exploring bean use in household meals.

Detecting undernutrition in older community dwelling adults

Dr Claire McEvoy, Queen's University Belfast, Northern Ireland

PRESENTATION SUMMARY

This talk will give an overview of current screening and detection of undernutrition risk in community dwelling older adults.

BIOGRAPHY

Dr Claire McEvoy is a Senior Lecturer at Queen's University Belfast, School of Medicine, Dentistry and Biomedical Sciences, whose research investigates the potential of plantbased diets for preventing or slowing progression of frailty and dementia. She conducts epidemiological investigations of dietary patterns and disease risk across the life-course, and community-based interventions targeting dietary behaviour change to improve nutritional status and age-related health outcomes. She was project co-ordinator for the European Healthy Life Healthy Diet (HDHL) Joint Programming Initiative 'PROMED-COG' consortium to understand the balance between diet and exercise to combat undernutrition and promote healthy neurocognitive ageing (2020-2024). Dr McEvoy is Alumni Beeson-CARDI Career Development Fellow (American Federation for Aging Research) and Alumni Atlantic Fellow for Equity in Brain Health at the Global Brain Health Institute, University of California, San Francisco and Trinity College Dublin. The future of nutritional monitoring? exploring intrinsic capacity as a population tool Dr Yuwei Qi, Amsterdam University Medical Center, The Netherlands

PRESENTATION SUMMARY

Healthy ageing is not just about preventing diseases; it is about maintaining the ability to engage in meaningful activities and remain independent. The World Health Organization introduced the concept of intrinsic capacity as a way to better understand and measure ageing beyond the presence of disease. Intrinsic capacity refers to an individual's overall physical and mental abilities, highlighting the importance of maintaining function rather than simply avoiding illness. This approach recognizes that ageing is highly variable. Some 80-year-olds remain active and cognitively sharp, while others experience significant declines much earlier. Understanding what contributes to these differences can help guide research, policy, and interventions aimed at promoting healthy ageing.

In our research, we use data from the Longitudinal Aging Study Amsterdam (LASA) to develop and validate measures of intrinsic capacity across five key domains: vitality, sensory, cognition, psychology, and locomotion. These measures provide insight into how different aspects of capacity evolve over time and how they relate to daily functioning. Our findings indicate that higher intrinsic capacity scores are associated with fewer limitations, emphasizing the importance of maintaining various capacity throughout ageing. By tracking changes over time, we have identified distinct ageing trajectories. Some individuals maintain stable mobility and cognitive function, while others show patterns of decline or even improvement. These insights are valuable for understanding how different health factors interact and how we might better support older adults in maintaining independence.

One particularly relevant area for nutrition research is the vitality domain. The term vitality was initially used to describe the body's ability to metabolize dietary intake to produce energy, ensuring the maintenance of optimal homeostasis. Over time, it has evolved to describe the biophysiological status of an individual, referring to their ability to maintain homeostasis in response to both daily exposures and unexpected challenges such as injury or infection.

There has been growing interest in whether nutritional status should be included as an indicator of vitality, given its role in maintaining physical function, energy levels, and overall health. Nutrition also influences multiple aspects of intrinsic capacity, including muscle strength, metabolism, and cognitive function. However, incorporating nutrition into the measurement of intrinsic capacity is not straightforward. We have attempted to explore this connection in our research, but so far, the only proxy for nutritional status in our dataset is calf circumference. While calf circumference is a commonly used indicator of muscle mass in older adults, it does not fully capture the complexity of nutritional status. Other potential markers, such as dietary intake, body composition, or metabolic health, could provide a more comprehensive picture, but these are not always available in large-scale datasets. This highlights both the potential and the challenges of using intrinsic capacity to track nutrition at the population level.

While intrinsic capacity offers a promising framework for assessing functional health, more work is needed to refine how we measure nutritional status within this model. Future research could explore alternative indicators, data sources, and methods to ensure that intrinsic capacity reflects the true impact of nutrition on ageing.

BIOGRAPHY

I am an epidemiologist with an interest in methodology and statistics, particularly in using large-scale data to study health and ageing. My work involves analysing biobank, cohort, and national registry data to examine long-term health trends and outcomes. I am particularly interested in how different statistical approaches can improve the measurement and interpretation of complex health indicators, making research findings more robust and applicable in real-world settings.

As an early career researcher, I have been involved in ageing research since 2023, with a focus on intrinsic capacity. This concept looks beyond specific diseases to assess overall functional abilities in older adults, providing a more comprehensive picture of health in later life. My work includes developing and validating measures of intrinsic capacity over time, identifying patterns of change, and exploring their relevance in different research and clinical contexts. By refining these measures, I aim to contribute to a better understanding of ageing trajectories and support efforts to promote healthy ageing at the population level.

The use of AI technology in food monitoring in older adults in Scotland

Dr Jenni Connelly, University of Stirling, UK

PRESENTATION SUMMARY

Introduction: Positive food consumption remains one of the most common challenges among older adults in the UK with at least 10% in community settings and up to 45% in care homes affected by malnutrition. It is strongly associated with frailty, functional and health decline. Tracking and understanding the impact of diet is not easy. There are problems with monitoring diet and malnutrition screening such as difficulty remembering, lack of time, or needing a dietician to interpret the results. Computerised tailored education may be a positive solution to these issues. The current project co-developed a prototype app using automated food classification to monitor dietary intake, food intolerances and food preferences for use in older adults living in both community and care home settings.

Methods: This project involved co-development methodologies to design and test the prototype app. First, this involved an advisory group of key stakeholders (2 older adults, care staff and care management, health professionals, app designers and a dietician). Data from this group was fed into digital brief for the app developers, *GameDr*, regarding the different features it would need to incorporate. A prototype was developed and demonstrated in a second advisory group for prototype concept testing. Verbal and written feedback from this fed into developing a second build of the prototype. The app was tested in three phases;

1) With 10 community-dwelling older adults living in an urban area of Scotland for two weeks. Usability feedback from testing and further written feedback from the advisory group was used to refine a further prototype build.

2) In four care homes for two weeks recording food intake and food related symptoms for a minimum of three days during that period. Follow-up semi-structured interviews with residents and staff were used to identify barriers to usability and features to enhance uptake and value.

3) It was then shown to 14 older adults living in a remote area of Scotland as part of a 2 hour focus group who were encouraged to use the app and give feedback on its use.

Results: This testing indicated key features that would be useful in both community and care home settings. In care home settings key features ranged from self-ratings of mood, and gastrointestinal symptoms that could be associated with eating specific foods, as well as a traffic light system to indicate risk of malnutrition in the resident but also of the food itself for care staff who were new. In urban community settings most feedback was around accuracy and speed of using the tool and its identification of the food and its nutritional value. In rural community settings users wanted the app to include more around food availability, menu sharing and a social component. All users stated the usefulness of the app in monitoring nutritional intake.

Conclusion: This project co-developed a prototype using automated food classification to monitor dietary intake and food preferences and tested with older adults. Key design improvements to make it more usable, quicker and more accurate were suggested.

BIOGRAPHY

Dr Jenni Connelly is a Senior Lecturer and British Psychological Society Chartered Psychologist, working at the Faculty of Health Science in Sport at the University of Stirling. Jenni has a key interest in how we can utilise technology to promote health behaviour change in different populations whilst maintaining a person-centred approach. Her interest in how we can use technology started during her PhD, where she developed an online tool to encourage physical activity behaviour change in older adults with type 2 diabetes living in remote and rural areas of Scotland. During this project older adults suggested a calorie conversion of all exercise they performed into a food example being shown- to their great disappointment when it converted into a banana. This is where her interest in calorie conversion and food monitoring began. Jenni met Professor Kevin Swingler, who has an interest in machine learning, at a Stirling Crucible event where they received funding for developing a tool which identifies foods from pictures. Through this, alongside Professor Anna Whittaker and Dr Nidia Rodriguez-Sanchez, they secured further ESRC funding to codesign a photo food app tool for use by older adults or care support staff to monitor food intake, nutritional status and a range of food related symptoms. This has been tested in both community and care settings with positive feedback.

Efficacy of a protein-enriched Mediterranean diet, with and without exercise, on nutritional status and cognitive performance in older adults at risk of undernutrition and cognitive decline.

Dr Nicola Ann Ward, Queen's University Belfast, Northern Ireland

PRESENTATION SUMMARY

Background & Rationale

Undernutrition is highly prevalent among older adults and increases significantly with age. It is associated with reduced muscle mass, frailty, institutionalisation, and mortality. Recent evidence indicates that undernutrition, defined by the Global Leadership Initiative on Malnutrition (GLIM) criteria, is linked to a 20% higher risk of cognitive decline and a 57% increased risk of dementia. Prospective studies have also shown that weight loss, a consequence of undernutrition, can occur a decade or more before the onset of dementia, highlighting an opportunity for early intervention to address undernutrition and potentially delay cognitive impairment.

There has been limited research on targeted interventions for undernutrition and cognition. The Mediterranean diet (MedDiet), known for its anti-inflammatory properties and associations with slower cognitive decline, may help prevent undernutrition and muscle loss in older adults. Furthermore, exercise is recognised to enhance cognitive function, neurogenesis, and muscle mass. However, the combined effects of a protein-enriched Mediterranean diet and exercise for neuroprotection remain unexplored, warranting further investigation.

The PROMED-EX Trial; ClinicalTrials.gov Registry (NCT05166564).

The PROMED-EX trial (approved by the UK Office for Research Ethics Committee ref: 21/NW/0215), was conducted as part of the European PROMED-COG consortium project and funded under the Horizon Joint Programming Initiative 'A Healthy Diet for a Healthy Life.' PROMED-EX was designed to evaluate the impact of a protein-enriched Mediterranean diet, with and without exercise, on nutritional status and cognitive performance in community dwelling older adults in Northern Ireland. One hundred five participants aged 60 years and older, at risk of undernutrition and cognitive decline, were enrolled in a 6-month, single-blind, parallel-group randomised controlled trial. Participants were randomised into one of three groups: Group 1. PROMED-EX: Protein-enriched Mediterranean diet and home-based exercise program; Group 2. PROMED: the Protein-enriched Mediterranean diet only; or, Group 3. (Control): standard care general healthy eating diet sheet. The first three months consisted of an intensive intervention phase which included personalised dietary counselling and/or a home-based exercise prescription as well as grocery deliveries, recipes, and written support materials. This was followed by a 3-month self-directed period.

Outcomes & Findings

The primary outcome measured was nutritional status, which was assessed using the Mini Nutritional Assessment score. Secondary outcomes included cognitive function, nutritional intake, body composition, physical function, and quality of life.

Mechanistic pathways were also explored by measuring inflammatory, metabolic, nutritional, and metabolomic biomarkers.

The Talk + Next Steps

The Talk will share findings of the early intervention using a personalised, nutrient-dense Mediterranean diet and provide a deeper discussion into the research challenges faced regarding recruitment, COVID-19 and intervention compliance. The next steps and future research plans will be outlined.

BIOGRAPHY

Dr Nicola Ann Ward is a Research Fellow at the Centre for Public Health, Queen's University Belfast, within the Nutrition and Ageing research groups. Her research explores the impact of dietary patterns, particularly the Mediterranean diet, Eat Well Guide and DASH diet, on cognitive and cardiovascular ageing, physical function, and fall prevention. She is especially interested in modifiable dementia risk factors, including undernutrition (aligning with this year's conference theme) and how healthful plant-based diets may mitigate sensory impairments—such as hearing and vision loss—that contribute to dementia risk.

Currently, Dr Ward is leading the analysis to develop an algorithm estimating dementia prevalence in Northern Ireland within the Harmonised Cognitive Assessment Protocol (HCAP), a sub study of the Northern Ireland Cohort for the Longitudinal Study of Ageing (NICOLA).

Dr Ward's doctoral research focused on the PROMED-EX randomised controlled trial (RCT), which investigated the effects of a high-protein Mediterranean diet combined with exercise on nutritional status, cognitive function, and quality of life in at-risk older adults. She has extensive experience conducting RCTs, including those assessing weight-loss technologies, exercise strategies, and dietary supplementation for glycaemic control, obesity management, and exercise performance.

Beyond academia, Dr Ward has over 10 years of experience in the fitness and wellness industry and collaborates with international research networks. She engages in public health initiatives and science communication, sharing her research through media outreach, including presentations to MPs and the Parliamentary and Science Committee at the Houses of Parliament.

For collaborations, reach her via X:@NicolaAnnWard, LinkedIn, or Email n.ward@qub.ac.uk

Focussing on appetite decline to optimise management of undernutrition in later life Dr Natalie Cox, University of Southampton, UK

PRESENTATION SUMMARY

Appetite decline is common in later life, affecting 1 in 5 of older community dwellers, with higher rates in long-term and acute care settings. Poor appetite can be due to medical conditions and treatment or primarily related to the ageing process, termed the anorexia of ageing.

Appetite decline is linked to reduced dietary diversity and overall intake and is a predictor of undernutrition in older populations. As such, timely identification and intervention on poor appetite could delay onset or progression of undernutrition. In addition, management of undernutrition ultimately requires the individual to meet their nutritional requirements. However, unless attention is paid to appetite decline and whether this needs mitigation, strategies to improve intake are likely to be ineffective.

Approaches to improve or mitigate appetite decline are therefore key in both prevention and treatment for undernutrition in the older population. Yet, treating appetite decline is challenging due to the multiple and complex underlying mechanisms that drive the anorexia of ageing. These include recognised alterations in the physiology of energy balance, reward-based eating behaviours, and wider socio-environmental cues, as well as a growing interest in the role of age-related inflammation. These alterations produce reductions in hunger or desire to eat and increase feelings of satiety, ultimately shifting dietary choices and overall intake in an adverse way.

Current evidence for treatment of anorexia of ageing is limited. Amongst the few trials targeting older people, flavour enhancement and fortification or supplementation have been trialled with mixed results. Lifestyle measures such as increasing physical activity and social interaction are of note but there is a paucity of intervention studies. Progress on treatments for anorexia of ageing has been hampered by a lack of distinction from undernutrition, but also perhaps the approach to it as a concept. The diverse, individualised and complex mechanisms that underpin the anorexia of ageing signify utility in categorising it as a geriatric syndrome. As such, treatment strategies are likely to be most effective when in multicomponent form and underpinned by the principles of Comprehensive Geriatric Assessment (CGA). CGA is a multi-dimensional and multi-disciplinary process to identify physical, psychological, social and functional problems of older people and develop an individualised and integrated treatment plan. It is the recognised gold standard of care to address geriatric syndromes and thus could be a useful conduit to structure novel treatments for the anorexia of ageing.

A focus on decline in appetite is key if we are to enhance both prevention and treatment for undernutrition in the older population. Given its importance, efforts should be directed to identifying those with poor appetite at greatest risk of developing undernutrition, as well as multicomponent treatments for anorexia, aligned with the principles of individualised care.

BIOGRAPHY

Dr Natalie Cox is a NIHR Academic Clinical Lecturer in Geriatric Medicine at the University of Southampton and Specialist Registrar in Geriatric and General Internal Medicine. Natalie qualified in Medicine from Brighton and Sussex Medical School, following a degree in Biochemistry. She completed her PhD on exploring appetite in ageing at the NIHR Southampton Biomedical Research Centre.

Alongside clinical work, Natalie continues in her research interest of taking mixed methods approaches to understand appetite and nutrition in later life, combined with optimising care pathways for older people. She is part of a national collaborative that aims to increase research capacity in Geriatric Medicine and is secretary of the nutrition special interest group of the British Geriatrics Society. Influencing change in ward practice to improve food and nutritional care for hospitalised older adults: insights from a multidisciplinary action research study *Dr Gladys Yinusa, Bournemouth University, UK*

PRESENTATION SUMMARY

The presentation, "*Influencing Change in Ward Practice to Improve Food and Nutritional Care for Hospitalised Older Adults: Insights from a Multidisciplinary Action Research Study*," will discuss the role of organisational culture in shaping the provision of food and nutritional care in hospitals. It will highlight how a multidisciplinary action research (AR) approach was used to influence positive change in ward practice.

Providing optimal nutritional care is essential for patient recovery and plays a crucial role in reducing complications associated with malnutrition (undernutrition). Despite ongoing research efforts and policy initiatives, malnutrition remains a significant health concern in UK hospitals, particularly among older adult inpatients. Studies indicate that many adults aged 65 and over are either with or at risk of malnutrition upon hospital admission.

However, there has been limited focus on how organisational culture influences the delivery of food and nutritional care. Findings from a scoping review by Yinusa et al. (2021) suggest that improving nutritional outcomes requires a multidisciplinary and participatory approach, engaging staff, volunteers, patients, and relatives in meaningful ways. To address this need, this study utilised an Action Research (AR) approach, a collaborative and iterative research method that actively involved stakeholders in driving changes in practice. The research was conducted in an acute NHS hospital in Southwest England, focusing on two different wards—a longer-stay and a shorter-stay acute ward. A multidisciplinary AR team, consisting of both clinical and non-clinical staff, worked together to explore current ward practice and develop context-specific solutions to improve food and nutritional care.

This approach enabled a deeper exploration of the barriers and facilitators influencing nutritional care at the ward level. During the presentation, the research process and methods will be outlined, and key findings from the study will be shared, providing insights into the role of leadership in shaping food and nutritional care. The presentation will also highlight the challenges faced in implementing change, particularly in different ward settings, and discuss the practical interventions introduced to enhance mealtime practice and patient support.

The session will conclude by discussing the wider implications of the study. Attendees will gain a deeper understanding of how a collaborative, research-driven approach can lead to meaningful improvements in hospital ward practice. The presentation will also explore how these insights can inform future change initiatives in inpatient nutritional care and overall quality of care.

BIOGRAPHY

Dr Gladys Yinusa is a Post-Doctoral Research Fellow with Bournemouth University. She currently holds a fellowship as part of the National DEM-COMM Programme focused on dementia research capacity building through Dementia Research Fellows, and funded by the National Institute of Health and Care Research (NIHR) (NIHR ARC Wessex) and the Alzheimer's Society. She co-leads the DEM-COMM *Research and Practice in Home Care* Special Interest Group.

Her background is in hospital and health services management (MBA). Gladys' research focuses on food and nutritional care, organisational culture, multidisciplinary collaborative working, participatory action research, and learning to advance practice.

Gladys is committed to addressing key nutrition-related challenges in older adults and enhancing the provision of nutritional care. Drawing on her experience in consulting and conducting research within the NHS and care home settings, she has now expanded her focus to the home care sector, recognising its vital role in supporting people living with dementia and other long-term conditions. Through her current research, collaborating with providers across the country, she is dedicated to working with family carers, friends, and home care professionals to support people living with dementia at home in receipt of home care.

She is committed to bridging the gap between research and practice, informing professional practice through her work, and contributing to change and improvements in health and social care, ultimately leading to better health outcomes and improved quality of life for older adults.

Appetite loss as a clinical marker of loss of function during aging

Professor Philipe de Souto Barreto, University of Toulouse III, France

PRESENTATION SUMMARY

Loss of appetite or anorexia of aging is an important clinical condition in older adults, with a prevalence often comprised between 15% and 30% although higher prevalence can be found in specific populations (eg., hospitalized people, nursing home residents). Despite that, loss of appetite is often overlooked, under-assessed and, consequently, undertreated in clinical practice. The objective of this presentation is to show the prevalence of appetite loss in a large sample of users of primary care services in France (the ICOPE Care cohort), examine how appetite loss associates cross-sectionally and longitudinally with important geriatric functions, such as mobility, cognitive function, and depressive symptoms, and discuss about potential appetite-related phenotypes in older adults. In another vein, I will also show current appetite-related investigations undertaken in the domain of Geroscience, in particular using data from the Inspire research platform.

BIOGRAPHY

Philipe de Souto Barreto is full Professor at Université de Toulouse, Director of the Institute on Aging at the Gerontopole of the Toulouse University Hospital (WHO Collaborating Center on Frailty, Clinical & Geroscience Research & Geriatric Training), and member of the Management Board of the IHU HealthAge (an Institute dedicated to Geroscience and Healthy Longevity). PhD in Bio-cultural Anthropology, Professor Barreto's main fields of expertise are on physical activity and exercise as well as intrinsic capacity during aging, having headed and participated in the elaboration of international guidelines, task forces and consensus papers on these topics. Philipe contributed to several national and international research projects as PI, local PI, and co-investigator (including the INSPIRE platform on Geroscience and the Institute IHU HealthAge). Dr Barreto has been invited speaker at national and international congresses and has published more than 250 peerreviewed papers in prestigious Journals, including JAMA Int Med, BMJ, Nat Aging, Lancet Healthy Longev. He currently serves as co-Editor-in-Chief of the Journal of Nutrition, Health & Aging (Q1 in both Geriatrics & Nutrition).