



European
Commission

JRC SCIENCE FOR POLICY REPORT

Feasibility study on **dietary**
recommendations for **older adults**
in the European Union

Ispra, 23rd-24th October 2014

Tsz Ning Mak, Flaminia Mussio,
Sandra Caldeira

2015



Joint
Research
Centre

Report EUR 27227 EN

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JRC95676

EUR 27227 EN

PDF	ISBN 978-92-79-48080-5	ISSN 1831-9424	doi:10.2788/944766	LB-NA-27227-EN-N
Print	ISBN 978-92-79-48081-2	ISSN 1018-5593	doi:10.2788/755077	LB-NA-27227-EN-C

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How to cite: Tsz Ning Mak, Flaminia Mussio, Sandra Caldeira; Feasibility study on dietary recommendations for older adults in the European Union; EUR 27227 EN; doi:10.2788/944766.

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Abstract

Promoting better diet and reduce malnutrition in older adults

Despite mounting scientific evidence to support healthy and balanced diet in promoting active and healthy ageing, targeted, age-specific, and up-to-date dietary recommendations for older adults in Europe are not easy to find. On the 23-24 October 2014, the JRC organised an expert workshop 'Feasibility study on dietary recommendations for older adults in the European Union' to discuss the need for dietary recommendations targeting older adults in Europe, and to identify strategies to promote better diet to prevent malnutrition in the older population. Twenty-four experts from multiple disciplines related to nutrition and ageing from various European countries participated in the one and half day workshop. This report describes the workshop and its outcomes. In what regards the feasibility study, the overall consensus was that older adults who are healthy may not need additional specific dietary recommendations as the current general adult population recommendations are likely to be sufficient. It was added however that, even in healthy older adults, attention should be paid to vitamin D and protein intakes. Participants identified and developed points for action for three main strategies/working areas to promote better diet and reduce malnutrition in older adults. The strategies were 1) to develop targeted dietary guidelines for specific groups of older adults, 2) to implement general screening with a multi-disciplinary approach, and 3) to carry out additional research in a number of areas related to diet and ageing.



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Table of Contents

<i>Preface</i>	5
<i>Acknowledgments</i>	6
EXECUTIVE SUMMARY	7
1. Setting the scene	9
1.1. What is a feasibility study and why?	10
1.2. What are ‘dietary recommendations’ in the context of this workshop?	11
1.3. Aim and objectives of the workshop	12
1.4. Set up of the workshop	13
2. Plenary sessions	14
2.1. The role of individual nutrients in the prevention and treatment of age-related diseases	14
2.2. Dietary patterns and healthy ageing	14
2.3. Development of DRVs and dietary guidelines in Europe	16
2.4. Improving Health Literacy: an important route to Healthy Ageing	17
2.5. Research and innovation in food, health and ageing	18
2.6. Dietary recommendations implementation: an example from Denmark	19
3. Breakout sessions	21
Feasibility study on dietary recommendations for older adults in the European Union	21
<i>Breakout session 1.</i> Is there a need for dietary recommendations for older people in Europe?	22

<i>Breakout session 2.</i> What are the limitations and/or barriers to introduce or promote dietary recommendations?	24
<i>Breakout session 3.</i> Can we identify possible strategies to promote a better diet for the elderly to reduce or prevent malnutrition?	25
<i>Breakout session 4.</i> Three strategies to promote better diets and reduce malnutrition in older Europeans	27
To develop targeted dietary recommendations	27
To implement general screening from multi-disciplinary teams	29
To carry out additional research	29
4. Conclusion	31
<i>Annex I:</i> Workshop agenda (with web links to workshop presentations)	33
<i>Annex II:</i> Participants' biographies	37
<i>Annex III:</i> Evaluation	46

Preface

The Joint Research Centre (JRC) is the European Commission's in-house science service. The unit Public Health Policy Support, within the JRC's Institute for Health and Consumer Protection (IHCP), provides support to the Directorate-General for Health and Food Safety (DG SANTE) and other European Commission DGs. On the 23-24 October 2014, the JRC organised the workshop 'Feasibility study on dietary recommendations for older adults in the European Union' that brought together experts in ageing, nutrition, public health, health literacy, as well as health professionals and policymakers from various countries in Europe. The main aims of this workshop were to discuss the need for dietary recommendations targeting older Europeans, and to identify strategies to promote better diet to prevent undernutrition in the older population. The following workshop report summarises the presentations given by speakers and the exchanges that took place in the dedicated breakout sessions.

We would like to thank the participants for their valuable contribution during the plenary and breakout sessions, and for their enthusiasm and motivation that made this workshop a success.

Acknowledgments

Our sincere thanks go to:

- All our invited participants who took time out of their busy schedules to actively participate in the intense one and half day workshop.
- The JRC nutrition team – in particular Petros Maragkoudakis, Theodora Mouratidou, Stefan Storcksdieck and Jan Wollgast – for discussion, ideas and their support in the smooth running of the workshop and for documenting participants' ideas throughout.
- Public Health Policy Support secretariat Chiara Margagliano and Brigitte Westritschnig for their excellent support in the logistics and administrative aspects of the workshop.
- Tim Raemaekers and Estefania Custodio for critically reviewing this report.
- Manuel Florensa-Molist for graphic editing and layout.

Author contributions

Tsz Ning Mak developed the workshop content, organised and executed the workshop, co-authored the report and handled its editing and publication. Flaminia Mussio contributed to the development of the workshop and co-authored the report. Sandra Caldeira conceived the workshop idea, supervised its development, executed the workshop and co-authored the report.

EXECUTIVE SUMMARY

Despite mounting scientific evidence to support healthy and balanced diet in promoting active and healthy ageing (AHA), targeted, age-specific and up-to-date dietary recommendations for older adults in Europe are not easy to find. On the 23-24 October 2014, the JRC organised the expert workshop ‘Feasibility study on dietary recommendations for older adults in the European Union’ to discuss the need for dietary recommendations targeting older adults in Europe, and to identify strategies to promote better diet to prevent malnutrition in the older population. Twenty four experts from multiple disciplines related to nutrition and/or ageing from various European countries participated in the one and half day workshop. The workshop, which was organised into plenary presentations and breakout sessions, addressed three key questions:

- a. Is there a need for dietary recommendations for older people in Europe?
- b. What are the limitations or barriers to introduce and promote such recommendations?
- c. What are the possible strategies to promote better diet for older people to reduce or prevent malnutrition?

As for the first question, the overall consensus from the participants was that older adults who are healthy may not need additional specific dietary recommendations as the current recommendations for the general adult population are likely to be sufficient for this group. It was however argued that even in healthy older adults, attention should still be paid to certain key nutrients, specifically vitamin D and protein.

While there may be an additional need for promoting dietary recommendations for specific groups of older adults, there are limitations that hinder their development. The older adult population is highly heterogeneous and should not be viewed as one general group, and the ‘one size fits all’ recommendation approach is unlikely to work. It was suggested that the older population should be stratified according to subgroups depending on their varying functional status, disease

states, biological age, level of malnourishment, and stages of frailty. These subgroups may have different dietary needs and therefore require specific and targeted recommendations according to their conditions.

The discussions showed that additional research is needed to provide evidence to establish dietary recommendations for these specific subgroups of older adults. Firstly, the subgroups need to be well-defined. To enable this, there is a need for better (bio)markers or cut-off points to define such groups, whether by factors such as age or functional capabilities. The specific nutritional needs of each of these subgroups also need to be established. Particularly, little is known about the ‘very old’ population, such as those over age 85y. Longitudinal studies to follow healthy older populations into very old age to identify specific risks and outcomes associated with the ageing trajectory will be useful. The participants also called for more multidisciplinary approaches in research as well as in practice to tackle malnutrition, *i.e.* from screening, to detection, and to its management. Furthermore, better ways of communication between all stakeholders whose concern is the health of an older person (*e.g.* health professionals, carers, family) should be established. Increasing the stakeholders’ nutritional knowledge is also important to overcome the potential barriers when implementing dietary recommendations.

The following report summary provides a description of the content and discussions throughout the workshop. We hope it will inform all stakeholders who are actively working towards better nutrition and health for older people.

1. Setting the scene

Demographic ageing is a key societal and economic challenge in Europe. In the EU, over 20 million older people are at risk of undernutrition. Undernutrition, together with associated health complications, are costing European health and social care systems around EUR 120 billion per year.¹ The European Council recognises the importance of malnutrition in the elderly in the recent Council conclusions on nutrition and physical activity (June 2014), and it invites the European Commission to ‘promote actions and strategies on Active and Healthy Ageing, particularly as regards prevention, screening and assessment of malnutrition related to frailty and old age drawing on the good practices identified in the European Innovation Partnership on Active and Health Ageing’.²

Within this framework, the JRC, as the European Commission’s in-house science service, started activities in the area of active and healthy ageing. Our work aims to raise awareness of the importance of nutrition in ageing, to encourage more attention being given to diet and nutrition in policymaking to protect our older citizens, and to support the European Innovation Partnership on Active and Healthy Ageing.¹ Despite the mounting scientific evidence to support healthy diet in promoting active and healthy ageing (AHA), targeted, age-specific and up-to-date dietary recommendations for older adults in Europe are hard to find. On the 23-24 October 2014, the JRC organised the workshop ‘Feasibility study on dietary recommendations for older adults in the European Union’ to discuss the reasons for this apparent lack of targeted dietary recommendations, the dietary needs of older adults, and to identify strategies to promote better diet to prevent malnutrition in the older population.

1. http://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/steering-group/operational_plan.pdf#view=fit&pagemode=none.

2. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XG0708%2801%29&rid=14>.

Twenty four experts on ageing, nutrition, public health, health literacy, as well as health professionals and policymakers from various European countries participated in the one and half day workshop. The workshop was organised into plenary presentations and breakout sessions. The plenary presentations set the scene by highlighting 1) the importance of key nutrients and 2) dietary patterns in promoting active and healthy ageing, 3) the establishment of dietary reference values and guidelines in Europe, 4) ways to increase health literacy in older adults, 5) research and innovation in food and ageing, and 6) a case study from Denmark on implementation of dietary recommendations to promote better food for older people. The breakout sessions were group discussions addressing three key questions:

1. Is there a need for dietary recommendations for older people in Europe?
2. What are the limitations or barriers to introduce and promote such recommendations?
3. What are the possible strategies to promote better diet for older people to reduce or prevent malnutrition?

Lastly, to bring together the content of all the discussions and the ideas developed during the workshop, the participants were asked to work together to develop the content of the strategies further.

1.1. What is a feasibility study and why?

Feasibility study is an examination of a situation to decide if a suggested method, plan, or piece of work is possible or reasonable.³ In the context of public health, Bowen *et al.* described feasibility studies being those used to determine if an intervention idea is appropriate for further testing and the findings can be shaped to be relevant and sustainable. For instance, a feasibility study may be needed if the population or intervention target has been shown empirically to need unique consideration of the topic, method, or outcome in other research.⁴

3. <http://dictionary.cambridge.org/dictionary/british/feasibility-study>.

4. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2859314/>.

The JRC wishes to explore whether the older European population need special consideration regarding dietary recommendations or guidelines beyond those for the general adult population. For reasons such as functional decline, chronic diseases and long term use of medications, older people are at higher risk of under-nutrition than younger adults. Depending on their age, health and physical status, older people may have different dietary needs compared to their younger counterparts. Currently, there are very few examples of dietary recommendations for older adults at the European level (see *Chapter 3* for further information). Health promotion strategies targeting older adults appear to need further attention and therefore the JRC decided to conduct a feasibility study in a format of a workshop, to invite experts to explore the topic further.

1.2. What are ‘dietary recommendations’ in the context of this workshop?

The terms ‘dietary recommendations’ or ‘dietary/nutrition guidelines’ often refer to a set of established diet and food-related principles that is used to guide the public to achieve healthy and balanced diets, in order to prevent malnutrition and diet-related diseases. In the context of this workshop, the JRC asked the participants to consider the term *dietary recommendations* in a very broad sense that, 1) it may encompass any form of nutrition or dietary guidelines, advice or guidance from an authority, *e.g.* a national government, 2) it may be nutrient-based or food-based, and 3) its purpose is to promote better diet for older people in Europe and for the benefit of their overall health. Further information related to dietary recommendations/guidelines from various international organisations is summarised in *Table 1*.

Table 1. Definitions and further information on dietary recommendations from international organisations (FAO, EFSA, WHO).

Food-based dietary guidelines (also known as dietary guidelines) are intended to establish a basis for public food and nutrition, health and agricultural policies and nutrition education programmes to foster healthy eating habits and lifestyles. They provide advice on foods, food groups and dietary patterns to provide the required nutrients to the general public to promote overall health and prevent chronic diseases. (FAO, 2014).⁵

5. <http://www.fao.org/nutrition/nutrition-education/food-dietary-guidelines/en/>.

Table 1. (cont.)

Food-based dietary guidelines constitute science-based policy recommendations in the form of guidelines for healthy eating. They are primarily intended for consumer information and education, and as such, they should be appropriate for the region or country, culturally acceptable and practical to implement. Moreover, they should be consistent, easily understood and easily memorable. (EFSA, 2010).⁶

The paradigm shift from nutrient-based to food-based dietary guidelines is likely to make a significant contribution to human health, to help maintain cultural diversity and to optimize nutritional status in a sustainable environment. The aim of food-based dietary guidelines is to reduce chronic malnutrition, micronutrient malnutrition, and diet-related communicable and noncommunicable diseases. (WHO, 2002).⁷

1.3. Aim and objectives of the workshop

The workshop aimed to identify whether there is a need for dietary recommendations targeting older Europeans, and potential strategies to promote better diet to prevent malnutrition in the elderly.

It is important to emphasise that the intention of the workshop was not to establish new dietary reference values or references alike for the older adult population, nor to devise comprehensive research plans or to create panels to produce recommendations. Its goal was to discuss the need and feasibility of introducing targeted dietary recommendations that can be used by older adults in Europe to help them achieve healthier diets and prevent malnutrition.

The objectives of the workshop were:

- to provide a platform to exchange expert opinions and discuss if there is a need for dietary recommendations for older Europeans
- to discuss the barriers of having dietary recommendations in Europe for older adults
- to identify possible strategies to promote better diet to combat malnutrition in the elderly

6. <http://www.efsa.europa.eu/en/efsajournal/pub/1460.htm>.

7. http://whqlibdoc.who.int/publications/9241562102_annexes.pdf.

- if feasible, to propose roadmaps to move towards recommendations or alternative strategies to combat malnutrition in older Europeans.

1.4. Set up of the workshop

The workshop agenda⁸ and list of participants with short biographies can be found in *Annex I* of this report. The one and a half day workshop was organised into plenary sessions and group breakout sessions. *Plenary sessions* were a series of presentations given by several speakers, to provide the current state of knowledge in their expert areas related to nutrition, dietary recommendations and ageing. The content of the presentations is summarised in the next section of the report. *Breakout sessions* were dedicated to build further on the comments and discussions that took place in the plenary sessions and to exchange ideas and insights on specific questions prepared by the JRC. During each breakout session, the participants were divided into three groups, with each group addressing a specific question or idea. A rapporteur from each group then reported back to all participants at the end of each breakout session. The outcome of discussions is summarised in tables under section 3 of this report.

8. Workshop presentations are accessible through links embedded in the workshop agenda (*Annex I*, pp.35-36, *online version* of this report only).

2 . Plenary sessions

2.1. The role of individual nutrients in the prevention and treatment of age-related diseases

Tsz Ning Mak (JRC) opened the plenary sessions and presented on the role of nutrients in the prevention and treatment of age-related diseases.⁹ She illustrated the changing demographic structure in Europe and the potential burden on health and care systems with the ageing population. Tsz highlighted the issue of under-nutrition in older people, which is both a cause and a consequence of functional decline during the natural ageing process. A number of nutrients, including protein, n-3 fatty acids, vitamin D and calcium, vitamin B6, B12 and folic acid, antioxidant vitamins A, C and E, as well as selenium and zinc, are vital for normal body functions, *e.g.* musculoskeletal, cognitive and immune functions. Low intake or low blood levels of these nutrients are found to be associated with a number of degenerative diseases including dementia, sarcopenia, osteoporosis, and circulatory diseases. Tsz reviewed the evidence on the intakes of nutrient supplements and the prevention and treatment of age-related diseases, based on results from Cochrane reviews and recent systematic reviews and meta-analyses. At this stage, single vitamin or mineral supplementation trials have yielded inconclusive results regarding their effectiveness in prevention or treatment of diseases. As it stands, another approach to maximise the intake of essential vitamins and minerals in older people is from natural food sources, including the whole diet approach. To present on the evidence for the health benefits of such an approach, Tsz then handed the floor to Antonia Trichopoulou.

2.2. Dietary patterns and healthy ageing

Antonia Trichopoulou from the Athens Medical School and the Hellenic Health Foundation, presented on the topic of dietary patterns and healthy ageing, with a special focus on Mediterranean Diet. Dietary patterns have gained considerable

9. <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC90454/lbna26666enn.pdf>.

interest in recent years for assessing the impact of dietary intakes on the risk of diet-related chronic diseases and mortality. Examining dietary patterns instead of individual nutrients or foods has the advantage of capturing complex and synergistic effects of many dietary components within a diet. There are two ways to identify dietary patterns. The *a priori* approach, which is a hypothesis-driven technique that uses scoring systems to rank and discriminate ‘good’ or ‘bad’ foods, nutrients and eating behaviours that reflect the quality of diet, based on what is known in the literature or on dietary recommendations. An *a posteriori* approach uses collected dietary data to extract and characterise patterns via exploratory statistical methods such as principal component analysis, factor analysis and cluster analysis.

Antonia illustrated the evidence on dietary patterns and age-related diseases and mortality from a number of large prospective cohort studies, including EPIC (European Prospective Investigation into Cancer and Nutrition), and CHANCES (Consortium on Health and Ageing: Network of Cohorts in Europe and the United States). In the EPIC-elderly cohort, >74 000 older adults (age 60y+) from nine EU countries were studied. One study of the cohort identified two *a posteriori* dietary patterns that reflected the dietary habits of older adults; a ‘plant-based’ dietary pattern and a ‘sweet and fat dominated’ dietary pattern. The study showed that adhering to the ‘plant-based’ diet was associated with a lower overall mortality. Another study of the EPIC-elderly cohort examined specifically the effects of Mediterranean diet (MD) on mortality, and found that adherence to the MD, based on a MD scoring system (*a priori*), was associated with reduced overall mortality by 8% for every two-unit increase of the MD score. In a sub-sample of this cohort (n > 2600) where subjects had prevalent myocardial infarction but no stroke or cancer at enrolment, a two-unit increase in MD score was associated with 18% lower mortality rate. Similarly, the CHANCES project, which pooled together 15 cohorts covering more than one million older adults from 25 countries, showcased the importance of overall diet in healthy ageing. A study from CHANCES showed that for every 10-point increase in Healthy Diet Indicator¹⁰ scores (maximum 70 points) older adults at the age of 60y gained an extra two years of life expectancy.

10. The Healthy Diet Indicator (HDI) is an *a priori*-defined dietary score, based on adherence to WHO nutrient intake guidelines (2003). The study focused on seven HDI components: percentages of energy intake from saturated fatty acids, polyunsaturated fatty acids (PUFAs), mono- and disaccharides, and protein; and intakes of cholesterol (mg/day), fruits and vegetables combined (g/day), and either total dietary fiber or nonstarch polysaccharides (g/day).

2.3. Development of dietary reference values and dietary guidelines in Europe

To provide an idea on the work to develop dietary reference values (DRVs) and food-based dietary guidelines (FBDGs), **Anja Brönstrup** presented an overview on how the processes are conducted at the European Food Safety Authority's (EFSA). Firstly, Anja made the distinctions between DRVs and dietary recommendations. DRVs are scientific references based on health criteria, taking into account dietary requirements and health outcomes. They provide the basis to establish dietary recommendations including nutrient recommendations and FBDGs. Dietary recommendations may vary between countries, depending on nutritional status of the population, health needs and patterns of nutrient and food consumption in specific population groups.

As it stands, EFSA's Panel on Dietetic Products, Nutrition and Allergies (NDA) has established DRVs for all macronutrients (fats, energy, carbohydrates and dietary fibre, protein and water) and a number of micronutrients (vitamin A, vitamin C, niacin, biotin, pantothenic acid, zinc, selenium, iodine, magnesium, molybdenum, fluoride, folate, manganese and chromium) for the European population. With regard to older adults, there have been specific considerations for water, protein, and energy, and currently under review for iron and vitamin D. In terms of DRVs for water, after reviewing the evidence from a number of observational studies and taking into account factors such as decreases in renal concentrating capacity with age and in thirst sensitivity, in 2010 the Panel decided to follow the recommendation from the Institute of Medicine to set the adequate total intake of water for older adults at the same level as for younger adults, *i.e.* for women: 2.0 L/day; and men: 2.5 L/day. For protein, there are few and contradictory data available on the protein requirement of older adults compared to young and middle-aged adults. The Panel concluded in 2012 that the available data are insufficient to specifically determine the protein requirement in older adults but it states that they would at least require the same level of protein intake as for young adults, *i.e.* at 0.83 g/kg body weight per day.¹¹ For the DRVs for energy, adults have

11. <http://www.efsa.europa.eu/en/efsajournal/doc/2557.pdf>.

progressively lower energy requirements with age (see publication¹² for table on Average Requirements for energy for adults). Their requirements depend on physical wellbeing as well as a number of individual, social and cultural factors that may promote or limit their physical activity, which in turn partially determines energy requirement of an individual. Because of a lack of anthropometric data for those aged 80y+ in Europe, average requirements were not calculated for this age group. Insufficient data is also seen for other nutrients, where there is currently not enough evidence to set specific DRVs for older adults; these nutrients include fat, carbohydrates, dietary fibre, zinc, iodine, vitamin C, niacin and fluoride.

In relation to European FBDGs, Anja mentioned that food consumption patterns vary throughout Europe and although the hierarchy of disease burden is comparable across Europe, country-specific diet-related health issues may exist. On this basis, Anja recalled EFSA's publication – Scientific Opinion on establishing Food-Based Dietary Guidelines, which indicates that it would only be feasible to establish very broad FBDG at the European level. Detailed FBDGs ought to be developed by individual countries based on their country-specific diet-disease relationships, dietary pattern and other aspects. Furthermore, when developing these country-level FBDGs, a stepwise approach (referred in the Scientific Opinion¹³) is recommended.

2.4. Improving Health Literacy: an important route to Healthy Ageing

Health literacy is the ability of an individual to access, understand, appraise and apply health information. **Andrea de Winter's** presentation focused on health literacy in older adults. Low health literacy can be seen in many areas in health-care, including non-compliance with prescribed drugs, inadequate self-management and use of care, and low participation in health prevention programmes (*e.g.* vaccination and screening). Some consequences of low health literacy include lower quality of life, morbidity, higher mortality, and increasing healthcare costs. Furthermore, the literature suggests that very few individuals meet the recom-

12. <http://www.efsa.europa.eu/en/efsajournal/doc/3005.pdf> (see *Appendix 16* of this document for summary of Average Requirement (AR) for energy).

13. <http://www.efsa.europa.eu/it/search/doc/1460.pdf>.

recommendations for a healthy lifestyle. Adherence to multiple health behaviours (*e.g.* fruit and vegetable consumption, eating breakfast, being physically active, and not smoking) in adults and older adults is only around 5-12%; those with lower socio-economic status are even less likely to adhere to recommendations.

Andrea introduced the ongoing IROHLA project (Intervention Research on Health Literacy in the Ageing Population), which aims to develop evidence-based guidelines for policy and practice to improve health literacy of the ageing population in Europe through comprehensive multidisciplinary approach. She shared some of the lessons learned so far. Firstly, a comprehensive approach is needed: interventions are often solely targeted at older adults; however interventions targeting health professionals as well as the older individuals can reduce the negative outcomes associated with low health literacy. It is also important to ensure health professionals possess adequate knowledge and awareness to understand the health literacy level of the individual at hand and the different social and cultural factors that characterise individuals. Furthermore, the use of narrative formats of the dietary information, as well as to provide contextual or interpretive information,¹⁴ are effective strategies to increase the understanding of information in participants with low health literacy.

2.5. Research and innovation in food, health and ageing

Isabelle de Froidmont-Görtz (DG Research and Innovation) provided an insight into DG RTD's Horizon 2020 programme (H2020), which focuses primarily on health, food security, energy efficiency, climate, and secure societies. H2020 represents the biggest EU investment in Research and Innovation, aiming to tackle the complexities of both EU and global food chains. In this context, Isabelle focused on achieving food security for all European citizens, decreasing the burden of food and diet-related disease or promoting sustainable agriculture and reducing food waste. Tackling malnutrition in the elderly is an important point of H2020

14. The term 'contextual' refers to approaches that provide additional information, such as the recommended daily calories for an average adult, to help put the number of calories into context for consumers. 'Interpretive' describes approaches that offer an additional interpretation of the item. These include exercise equivalency labels that provide the number of minutes of exercise needed to burn the calories contained in the food item or traffic light labels, where green, amber, or red symbols are used to represent increasing calorie amounts. <http://www.sciencedirect.com/science/article/pii/S2212267214005991>.

within the sustainable food security framework. The scope is to promote a better understanding of the mechanisms involved in the ageing process, to develop dietary strategies and recommendations, in order to prevent functional decline, improve appetite, health and quality of life. Isabelle encouraged international cooperation and highlighted possibilities for participation for applicants from non-EU countries in H2020 calls as well as other forums, such as the KBBE forum (International Knowledge-Based Bio-Economy Forum).

Future research in this area should place additional focus on the early stages of ageing, on metabolic disease, factors influencing cognitive decline, lifestyle factors and premature ageing, as well as the importance of innovative markers to assess physiological and social wellbeing. In addition, there is a further need to better understand the role of nutrients in ageing (their benefits, risks, interaction with each other and external influences such as (poly)medication), whilst also helping older adults to understand the importance of a balanced diet. Lastly, a multidisciplinary approach that takes into account personal and environmental factors is essential in this area, as is the need to standardise methodologies and data sharing.

2.6. Dietary recommendations implementation: an example from Denmark

To demonstrate an example of developing and implementing dietary recommendations for the older population, **Susanne Gjedsted Bügel** from the University of Copenhagen shared her experience with such process in Denmark. The presentation addressed the development of Danish dietary guidelines for older adults, which are part of the Nordic Nutrition Recommendations. During the drafting of the guidelines, differentiations were made between healthy older adults and those with some degree of disability, primarily focusing on individuals with poor appetite (including individuals whose ability to eat is compromised, for example, because of decreased chewing ability). For healthy older adults in Denmark, the recommendations are the same as the 10 dietary guidelines used for all healthy adults. For those with poor appetite, more emphasis is placed on an energy-rich diet (50% energy from fats) complemented with slightly higher protein intakes. Moreover, the recommendations stress the importance of taking into consideration the needs of the individual, emphasising small portion sizes, frequent meals and the possible need for additional supplementation.

Susanne also talked about special local schemes available to older adults above the age of 65y in the city of Copenhagen. Dinner vouchers, food service delivery, food provision in day care centres, senior clubs and food clubs and dining in activity centres, are some examples to increase quality of life by improving social aspects and access to food. As much as 60% of the publicly offered foods in Denmark are produced in centralised kitchens. However, portion sizes, nutritional content and textures are aimed at healthy adults, which may not be suitable to the needs of many older adults. Susanne highlighted an example that counteracts this tendency—the ‘Delights of Herlev Hospital’. Here the focus was shifted towards providing a choice of small, nutritious and tasty meals, which are tailored to the nutritional needs and physical capacity of the patients; these are also more cost-effective and result in reduced food waste. Importantly, following this change in food provision, the hospital observed reductions in the length of hospitalisation and in mortality rates and infections. Although this is encouraging, there is a need for more scientific-based knowledge on costs and health effects of a good, nutritious, culinary public food service in general, not only in the hospital settings.

3 . Breakout sessions

Feasibility study on dietary recommendations for older adults in the European Union

Tsz Ning Mak welcomed the participants to the breakout sessions—the core of the feasibility analysis proposed. Tsz emphasised the importance of diet in healthy ageing, highlighting the Council conclusions on Nutrition and Physical Activity (2014),¹⁵ which have invited both Member States and the Commission to place special focus on older adults to combat malnutrition. Indeed, the exploratory exercise conducted and presented next by **Flaminia Mussio** showed that more can be done in relation to dietary recommendations targeting older adults across Europe. The exercise aimed to identify, where possible, the content of dietary recommendations (see definition on § 1.2, p. 11) from EU national sources, either as standalone recommendations for older adults or those embedded within those for the general adult population. Flaminia’s work showed that across Europe there are several sets of dietary recommendations that target older adults but there is room for improvement especially in translating nutrient-based guidelines into food-based targeted advice, as well as ensuring the recommendations can reach as many older adults as possible.

The breakout sessions were designed to engage with all participants to collectively assess the feasibility of having targeted dietary recommendations for older adults in the EU. They addressed issues including 1) whether there is a need for such recommendations for older adults, 2) the challenges and barriers in introducing or promoting dietary recommendations for older adults, 3) identify potential strategies to overcome these challenges and to promote better diet to combat malnutrition, and 4) to develop workable solutions for the selected strategies from the previous breakout session.

15. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/lisa/143285.pdf.

The following pages summarise the content of these sessions. It should be noted that the points detailed next reflect the opinion of one or more participants. The opinions were not always consensual and the summary presented here does not constitute a formal conclusion from the workshop or a position of the European Commission or any of its services.

Breakout session 1. Is there a need for dietary recommendations for older people in Europe?

Is there a need for specific dietary recommendations for older people in Europe?	Additional comments
<p>No. Existing dietary recommendations for the general adult population are likely to be sufficient for healthy older adults.</p>	<ul style="list-style-type: none"> • As it stands, there is not enough data indicating that healthy older adults would need different dietary recommendations than younger adults for most nutrients. • Although the new Nordic Nutrition Recommendations suggested increased protein and vitamin D intakes for healthy older adults. • The elderly of today are very different to those from 30 years ago: the emerging new wave of more educated people over 65y implies a greater percentage of older adults paying more attention to their diet, but evidence is needed to support this.
<p>Yes. There is a demand for dietary recommendations for specific groups of older adults.</p>	<ul style="list-style-type: none"> • Dietary recommendations can help health professionals by providing justification for making health/medical related decisions. • It is important to recognise that the older adult population is very heterogeneous. Simply referring to people aged 65y+ as one older population group is not appropriate. For example, the 'older' older adults, <i>i.e.</i> 85y+, are biologically very different from 'younger' older adults who have just entered retirement. • There is a need to stratify or separate the older adult population into specific groups both in research settings and in practice when developing further recommendations. • Stratification is complex and the process should consider a number of factors that affect nutritional status and intake of older adults. These may include age, functional status

Breakout session 1. (cont.)

Is there a need for specific dietary recommendations for older people in Europe?	Additional comments
	<p>(cognitive and physical capabilities), level of frailty, and comorbidities</p> <ul style="list-style-type: none"> • The social and cultural contexts, <i>e.g.</i> family, living alone, must also be considered when designing the targeted recommendations. It is also important to take into consideration the different cultures within Europe. • We also need recommendations as preventive measure to help older adults to stay close to a healthy ageing trajectory.
<p>Other considerations:</p> <p>The stratification process</p> <ul style="list-style-type: none"> • Development of a tool for screening that can be used in different settings (not just clinical) is crucial to assist the process. • It is important to consider morbidities and comorbidities in older people; consideration should also be given to biomarkers which are shared across several aged-related conditions in the stratification process. • Better evidence is needed to define ‘healthy’ vs. ‘unhealthy/diseased’ older adults; as well as those who are considered healthy but are at risk of developing a certain condition or disease. • Personalised nutrition may not be feasible at a large scale. • More longitudinal evidence is needed to help define contrasting features of these specific groups of older adults. <p>Using dietary recommendations</p> <ul style="list-style-type: none"> • There is a need to assess the impact of dietary recommendations on optimising nutrient or food intake. Research is also needed to identify the key users of dietary recommendations, whether for health professionals, carers or family members, or for older adults living at home. The content of the dietary recommendations would need to be adapted according to their users. • Infrastructure for food provision is needed, so that advice and recommendations can be turned into action. <p>Is it too late to target diet at age 65y and beyond?</p> <ul style="list-style-type: none"> • A life course approach to healthy ageing is ideal, as early life exposure will have a huge impact on health in later life. More evidence from prospective studies is needed on the impact of improving dietary habits in later life. 	

Breakout session 2. What are the limitations and/or barriers to introduce or promote dietary recommendations?

What are the limitations and/or barriers to prevent malnutrition or promote dietary recommendations?	Additional comments
<p>Nutrition education is often not part of medical training in many European countries.</p>	<ul style="list-style-type: none"> • Medical doctors (MDs), geriatricians and other health professionals need better nutritional knowledge; nutrition should be an essential part of medical training. • MDs can potentially include nutrition as treatment/therapy options for older people. • Staff responsible for the care of older adults also need to be trained in nutrition, particularly those working in institutions.
<p>Lack of multidisciplinary approaches from health professionals for the care of older adults.</p>	<ul style="list-style-type: none"> • It is important to identify all the active players who are involved in the care of older people on the outset, and create a multidisciplinary team. • The team may include MDs, nutritionists, geriatricians, social scientists, anthropologists, physiologists and health economists. The team should streamline the care provided for older people, from malnutrition screening to treatment. • Communications and collaborations between members of the multidisciplinary team are essential, need to create a culture to welcome these. • The cost to implement such approach was questioned.
<p>Lack of comprehensive detection/screening process for malnutrition to identify at risk groups of older adults, within and outside of clinical settings.</p>	<ul style="list-style-type: none"> • There is a need for a tool to screen individuals living in the community to identify their health status or risk of malnutrition (e.g. non-frail, pre-frail and frail, or nourished, at risk of malnutrition, or already malnourished). • Routine screening should not only be performed on patients admitted to hospitals. • It is important to identify disease-related malnutrition early. Often malnutrition is diagnosed as a secondary health condition. • Strategies to prevent cognitive decline as well as physical decline need to be considered as part of the malnutrition prevention process.

Breakout session 2. (cont.)

What are the limitations and/or barriers to prevent malnutrition or promote dietary recommendations?	Additional comments
Implementing dietary guidelines in clinical practice appears to be a challenge.	<ul style="list-style-type: none">• Even where health professionals are well-informed on guidelines, they may not adopt or apply them.• Poor guideline implementation warrants a change in the way new evidence-based guidance is promoted and implemented.• Clinicians may find existing guidelines complicated to implement in practice, they would appreciate simpler and concise recommendations to be conveyed to older patients and their family.• Making simple targeted recommendations for health professionals is crucial.• Accreditation schemes may be a useful way to ensure the adoption of guidelines in clinical settings.

Breakout session 3. Can we identify possible strategies to promote a better diet for the elderly to reduce or prevent malnutrition?

In this short breakout session, the participants were asked to identify a number of potential solutions to the barriers and limitations discussed in *session 2*, and/or propose additional strategies to promote better diet and combat malnutrition in older people.

In general, the participants agreed that one of the strategies should be to *develop targeted dietary guidelines for specific groups of older adults*, namely for those who are no longer considered to be ‘healthy’. The level of existing evidence available to establish such guidelines was questioned however; some argued that there is already enough evidence to implement recommendations at the population level, others felt that there is a lack of data and research to allow such specific groups to be defined, before the guidelines can be formulated. Following on from this, the participants referred to the strategy of *implementing comprehensive malnutrition screening* in order to identify groups of older adults at risk of malnutrition or those

already malnourished, and to intervene as early as possible. However, it was also questioned whether there are effective interventions that follow up from malnutrition screening to improve the diets of older adults. More research and evaluation is needed in this area. Besides identifying those at risk or already malnourished, it was considered crucial to take into account the functional status of older individuals and the specific contexts in which the targeted dietary recommendations will be implemented. Therefore the third strategy, building on from the previous two strategies, was to *implement general screening from a multi-disciplinary approach*. The argument was that malnutrition screening, which is normally conducted in hospital or care settings, may fail to identify those at risk outside of these settings. Furthermore, because malnutrition is so closely related to physical and cognitive decline, it was suggested that a more integrated approach of screening to identify early decline regardless of settings is needed, and involving a multi-disciplinary team such as experts in geriatrics, nutrition, social science, psychology, nursing, and physiotherapy. Reflecting on this idea, other participants called for more *person-centred public health interventions to be implemented* to enable individual older adults to age independently and healthily by maximising their functional capacity and capability across all domains including physical (including mobility), cognitive, social and psychological; and allowing the individuals to make their own informed decisions with support from family, carers and healthcare professionals.

Besides the four abovementioned strategies, the participants also called for attention in two areas that may hinder the promotion of better diet for older people.

Firstly, it was mentioned that the concept of health in all policies ought to be applied more consistently. There are often *conflicting policies both within and between countries* that make implementing (for policymakers) and following (for the public) recommendations difficult. For example, policies on food prices, trade or marketing may not be sufficiently aligned with dietary recommendations to improve people's health and wellbeing. Finally, a number of the participants also called for *additional research* in a range of areas related to ageing (see *Breakout session 4* for detailed description of research areas).

Breakout session 4. Three strategies to promote better diets and reduce malnutrition in older Europeans

Based on the previous breakout session, the participants collectively identified six strategies/working areas. The participants were asked to vote for three areas that they believed were the most important to be discussed within the context of our workshop. The three areas that had the highest votes (underlined below) were taken forward and each participant selected one of the three areas to focus on in this final breakout session.

Strategies to promote better diet for older adults (and total votes):

1. Develop targeted dietary guidelines (12 votes).
2. Implement comprehensive malnutrition screening (6 votes).
3. Implement general screening from a multi-disciplinary approach (9 votes).
4. Carry out additional research (9 votes).
5. Implement person-centred public health interventions (7 votes).
6. Address conflicting policies (both within and between countries) (3 votes).

To develop targeted dietary recommendations

The discussion for this strategy followed on from the *Breakout sessions 1-3* above. The expert opinions were not always consensual but it was agreed that before developing targeted dietary recommendations for specific groups of older adults, clearer and better definitions are needed to describe these groups of older adults and where the recommendations should focus. The discussion therefore centred on these aspects.

Points for action	Additional comments
To better define the focus of the dietary recommendations (for example public health vs. clinical recommendations).	<ul style="list-style-type: none">• The recommendations should differentiate between primary and secondary prevention, with primary focusing on healthy older adult populations and secondary on those suffering from diseases.• The recommendations should maintain a public health focus, rather than a clinical one. It is important to distinguish

To develop targeted dietary recommendations (cont.)

Points for action	Additional comments
	<p>between recommendations for healthcare settings and for prevention purposes.</p> <ul style="list-style-type: none"> • The focus should be on the promotion of eating (traditional) foods, not supplements. Although some argued that the possibility of new innovative functional food products made for older adults should not be ruled out. • The recommended foods should be affordable, accessible, sustainable, and age-friendly. • The recommendations should take into consideration packaging and labelling, which should be age-friendly, e.g. easy to see and read. • Social eating and age-friendly eating environments and structures should also be considered in the recommendations.
<p>To better define the different groups of older adults in need of targeted recommendations.</p>	<ul style="list-style-type: none"> • As already mentioned in previous discussions, it is essential to have clear definitions and quantifiable measures of 'healthy' vs. 'unhealthy' in older adults (e.g. active vs. frail, normal vs. poor appetite, and those mentioned in <i>Breakout session 1</i>), and develop recommendations according to these groups. • The recommendations should also target older individuals who start to deviate from general good health. The aim of the recommendations for this group would be to delay the worsening of conditions for as long as possible. • For healthy older adults, using adult dietary recommendations may be sufficient at this stage, except for vitamin D and protein recommendations, where they might need to be increased for older adults in general.
<p>To encourage stakeholder involvement in the development of recommendations.</p>	<ul style="list-style-type: none"> • Older adults, hospitals and health care institutions, medical personnel, catering staff, dieticians, carers and families should be involved as stakeholders throughout the process of developing recommendations.

To implement general screening from multi-disciplinary teams

Points for action	Additional comments
<p>Implement general screening to assess three functional domains that are compromised in accelerated ageing. A universal, core functional assessment of these domains is required. The domains are:</p> <ol style="list-style-type: none">1. physical assessment2. cognitive assessment3. nutritional assessment.	<ul style="list-style-type: none">• The screening is aimed at identifying individuals who deviate prematurely from the normal ageing trajectory (<i>i.e.</i> accelerated ageing) based on their physical function and capabilities.• Once individuals with early signs of accelerated ageing are identified, the key is to intervene and help them move back to the normal ageing trajectory.• The idea is to have an integrated general screening service implemented by a multidisciplinary team at a local level, to address issues across all three functional domains, covering the whole spectrum of elderly care and service—from medical doctors/geriatricians, nutritionists, social workers, to anthropologists, physiotherapists and health economists.• Such a team must work together and adapt to different socio-economic, cultural and anthropological settings and focus on microenvironment of the individual.• The general screening should be made available for all free living older adults. Similar to the idea of universal screening for breast and cervical cancers in women.• The potential cost benefit of implementing general screening should be assessed.

To carry out additional research

It was clear throughout the workshop discussions that more research is needed as there are still a number of knowledge gaps that prevent us from reaching workable solutions to some of the challenges in developing dietary recommendations. The participants were eager to dedicate a session to discuss research needs, which are summarised below. These will be considered by the European Commission's Directorate-General Research and Innovation for future research funding programmes.

To carry out additional research (cont.)

Areas where research is needed raised by participants

- More evidence is needed to identify the main health outcomes that affect older adults along the trajectory of ageing.
- Longitudinal studies are needed to follow healthy older adults into very old age to enable the identification of risk factors and outcomes of interest. They will also allow to identify early biomarkers associated with different metabolic diseases in previously healthy individuals.
- Identifying early biomarkers of future health risk can form a basis for interventions and prevention strategies.
- Results from longitudinal studies can help implement a life course approach on diet and health to prevent premature ageing/death.
- Longitudinal study data need to be complemented by studies on the epigenetics of older adults, which are lacking. The set-up of bio banks was suggested.
- Bio banks enable the use of omics technologies which are fast increasing. Enhancing use and knowledge of such technologies can enhance our understanding of the possible mechanisms that are impacting on the metabolic flexibility of older adults. The methods for collection, storage and management of biological samples for future use need further consideration.
- Research to better understand the role of nutrients in older adults (benefits, risks, bioavailability, interactions with each other and with medications) is needed. Based on this, more research on nutrient requirements of older people, particularly the very old, is needed before suitable recommendations can be established.
- Research needed on the development of new food products targeted at older adults, to address conditions commonly encountered by the elderly such as difficulty with chewing and swallowing.
- Research methodologies should be standardised and data sharing should be encouraged. The shared data should also be in disaggregated format, rather than aggregated or averaged data, which will be more useful to the research community.
- Studies need to be comprehensive and address biological, psychological and social aspects of ageing and their interactions, to allow a better understanding on compliance of dietary recommendations, and the key drivers for successful long-term dietary change.
- Stronger health economics research to support better decision making in policy for older people is needed, such as identifying the most cost-effective interventions to encourage better diets and physical activity in older adults.

4 . Conclusion

The workshop was a great success in that there were innovative ideas and exchanges between participants who were all eager to work towards better food and nutrition for older people in Europe. A number of key learning points were drawn. The first is that older people should not be generalised as one homogenous group, as often seen by the society. There are clear biological and metabolic differences between ‘younger’ older adults and ‘older’ older adults, the cut-off between younger vs. older is hard to establish; for example a cut-off based on age *e.g.* 65 years may be pragmatic but will also likely be arbitrary and unhelpful. Distinctions should be made between older adults who haven’t yet experienced functional decline compared to those who are declining; those who are malnourished vs. those who are nutritionally adequate and healthy; those who are on long-term medications vs. those who are not, etc. Undoubtedly, different health promotion strategies are required to cater for the different needs of specific groups of older adults. The general consensus of the workshop was that, older adults who are healthy, without major chronic conditions or illnesses, do not need specific dietary recommendations; for this group dietary recommendations for the general adult population may suffice to establish a healthy balanced diet and maintain good health for a period of time. Although some argue that attention should still be paid to certain key nutrients, including vitamin D and protein, in order to prevent early onset of musculoskeletal conditions and maintain physical independence.

There is however a need for dietary recommendations for specific groups of older people who are deviating from the ‘healthy older adults’ category, *i.e.* those who begin to experience age-related health conditions and beyond. There is not enough data or evidence currently to establish appropriate recommendations for such groups of older adults. The participants called for more research to allow better definitions of these specific groups of older adults, whether by age groups or by functional capabilities. Further research is also needed to establish the specific nutritional requirements of these subgroups, including the ‘very old’ population, *e.g.* 85y+. Longitudinal studies to follow healthy older adults into old age to identify specific risks and outcomes associated with the ageing trajectory will add to

the body of evidence, and will allow the development of evidence-based criteria to stratify older adults into subgroups. The participants also called for more multidisciplinary approaches in research as well as in practice to tackle malnutrition, *i.e.* from screening, to detection, and to its management. Furthermore, better ways of communication between all stakeholders concerning the health of an older individual such as their family, health and care professionals should be established, and increasing their nutritional knowledge are important aspects to overcome the potential barriers when implementing dietary recommendations.

The conclusion is that it is not yet feasible to establish targeted evidence-based dietary recommendations for specific groups of older adults (who are yet to be defined depending on their varying functional capabilities). On a positive note, the current dietary recommendations for the general adult population are likely to be sufficient to enable balanced diets and maintain good health for healthy older adults. More can be done to reinforce these dietary recommendations and adapt the information to be more user-friendly for older adults. Another encouraging outcome of the workshop is that many new research ideas and points for action established in the strategies above can serve as starting points to be put in practice at present. It is our hope that the results of this workshop can inspire researchers, health professionals, care and social workers to work together in creative and innovative ways, and help older people to eat better and stay healthy and independent for as long as possible.

Annex I: Workshop agenda



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE

Institute for Health and Consumer Protection
I.2 Public Health Policy Support

Feasibility study on dietary recommendations for older adults in the European Union

23-24th October 2014, JRC Ispra

Background and rationale

Demographic ageing is a key societal and economic challenge in Europe. Supporting active and healthy ageing is important to enable individuals to continue contributing to society as they grow older, improve the quality of life and to reduce unsustainable pressure on health systems.¹⁶

The Joint Research Centre (JRC), as the European Commission's in-house science service, has started activities in the areas of nutrition, ageing and public health. It aims to raise awareness of the importance of nutrition in ageing, to encourage more attention being given to diet and nutrition in policymaking to protect our older citizens, and to support the aims of the European Innovation Partnership on Active and Healthy Ageing.¹

The recent Council conclusions on nutrition and physical activity recognise the important issue of malnutrition in the elderly, and that the nutritional requirements for the elderly need further attention.¹⁷ Despite the mounting scientific evidence

16. http://ec.europa.eu/health/ageing/docs/com_2012_83_en.pdf.

17. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XG0708%02801%029&rid=14>.

to support adequate nutrition and active and healthy ageing (AHA), targeted, age-specific and up-to-date dietary recommendations for older adults in Europe are hard to find.¹⁸

This feasibility study aims to identify whether there is a need for dietary recommendations targeting older Europeans, or alternative strategies to promote better diet to prevent malnutrition in the elderly.

Objectives of the workshop

- To provide a platform to exchange expert opinions and discuss the demand for dietary recommendations for older Europeans.
- To discuss the barriers of having dietary recommendations in Europe for older adults.
- To identify possible strategies to promote better diet to combat malnutrition in the elderly.
- To discuss the readiness of acceptance and implementation of dietary recommendations in Europe, and if feasible, to propose roadmaps to move towards recommendations or alternative strategies to combat malnutrition in older Europeans.

¹⁸. <http://publications.jrc.ec.europa.eu/repository/bitstream/11111111/32095/1/lbna26666enn.pdf>.

23rd October		
Time		Speaker
09:00	Welcome Aims of workshop Participants introduction	Ciarán Nicholl Sandra Caldeira All
Plenary session 1: Promoting nutrition in active healthy ageing		
09:30	The role of nutrients in the prevention and treatment of age-related diseases	Tsz Ning Mak
10:00	Dietary patterns and healthy ageing	Antonia Trichopoulou
10:30	<i>Break</i>	
10:45	Development of DRVs and dietary guidelines in Europe	Anja Brönstrup
11:15	Health literacy in older people	Andrea de Winter
11:45	Questions	
12:15	<i>Lunch</i>	
Feasibility study: Introduction		
13:15	Feasibility study introduction Mapping of dietary recommendations for older adults in Europe	Tsz Ning Mak Flaminia Mussio
Feasibility study: Group discussions		
14:15	<i>Breakout session 1:</i> Is there a demand for dietary recommendations for older adults?	
14:50	<i>Breakout session 2:</i> What are the limitations and/or barriers to introduce or promote dietary recommendations?	
15:30	<i>Break</i>	
16:00	<i>Breakout session 3:</i> Can we identify possible strategies to promote better diet for the elderly?	
17:00	<i>End of day 1</i>	
19:30	<i>Workshop dinner</i>	

24th October		
Time		Speaker
09:15	Welcome to Day 2 and recap	Sandra Caldeira
Plenary session 1: Highlights in current nutrition and ageing activities		
09:30	Research & innovation in food, health and ageing	Isabelle de Froidmont-Görtz
10:00	Dietary recommendations implementation: An example from Denmark	Susanne Gjedsted Bügel
10:30	Questions	
11:00	<i>Break</i>	
Feasibility study: The way ahead		
11:15	<i>Breakout session 4: Roadmaps</i>	
12:30	Conclusion	
13:00	<i>Lunch and departure</i>	

Annex II: Participants' biographies

(In alphabetical order)



Cristina Andrés-Lacueva • *Nutrition and Food Science Department, Pharmacy School, University of Barcelona* • Cristina Andrés-Lacueva is the leader of 'Biomarkers and Nutritional & Food Metabolomics'. In the last seven years, Cristina has authored over 143 peer-reviewed papers in major international journals of high standard and 17 book chapters. Cristina is the coordinator of projects and contracts for research and development funded by the Spanish government, European and International Agencies. Member of the Steering Committee JRC Foresight study–Tomorrow's healthy society–research priorities for foods and diet; member of the Management Committee of the FA COST Action FA1403 Interindividual variation in response to consumption of plant food bioactives and determinants involved (POSITIVE); member of the European consortium FOODBALL_ EU-JPI-A Healthy Diet for a Healthy Life BioNH for Biomarkers in Nutrition and Health.



Elizabeth Archer • *British Dietetic Association* • Elizabeth Archer is a dietitian from the United Kingdom. She has specialist interest in nutrition within older people. She has over 21 years clinical practice within the NHS. Her research has involved looking at 'The Generic Screening of Older People'. She is an active committee member of NAGE (Nutrition Advisory Group Older Person) BDA (British Dietetic Association). She is also a member of ESDN (European Specialist Dietetic Network) Older People at EFAD (European Federation Association Dietetics).



Patrizia Brigidi • *Department of Pharmacy and Biotechnology, University of Bologna* • Patrizia is Full Professor in Fermentation Biotechnology, Director of the Institute of Advanced Studies, University of Bologna, Coordinator of Group of Experts of the University of Bologna working on the actions bridged to Horizon 2020 (KIC, JPI). Her major fields of studies concern the characterization of gut microbiota by molecular methods, in the perspective of its modulation and promotion of human gut health. Currently, she leads a number of European and national projects aimed at studying the relationship between lifestyle and diet on the human health via the compositional and functional modulation of the host intestinal microbiome.



Anja Brönstrup • *Nutrition Unit, European Food Safety Authority (EFSA)* • Anja Brönstrup holds an MSc equivalent in Nutrition and a PhD in Human Nutrition from Rheinische Friedrich Wilhelms University Bonn, Germany. After her PhD she was involved in a research project for the German Ministry of Health assessing risks and benefits of moderate alcohol consumption. Anja then worked in industry in the infant food sector before moving on to work with the German Nutrition Society. In 2010, Anja joined the European Food Safety Authority where she is working in the Nutrition Unit assisting the Panel on Dietetic Products, Nutrition and Allergies (NDA). She is coordinating the work on Dietary Reference Values for minerals and vitamins.



Susanne Bügel • *Department of Nutrition, Exercise and Sports, UniCPH* • Susanne Bügel is Professor in Nutrition at university of Copenhagen. She has been working in the area of nutrition since 1992. Susanne Bügel has an MSc degree from University of Southern Denmark and a PhD in Environmental health from the university of Southern Denmark. Her previous research experience and interests include bioavailability, function and metabolism of micronutrients and secondary metabolites. Susanne Bügel is president for The Danish Nutrition Society and presently chairing a working group preparing a white paper on Nutritious and gastronomic food service for older adults.



Sandra Caldeira • *Institute for Health and Consumer Protection (IHCP), JRC* • Sandra Caldeira is Project Manager at the European Commission (Joint Research Centre) where she works with an enthusiastic team on Nutrition and Health. Their research portfolio is focused on policy support to public health and covers present and future nutrition-related issues and their impact to the health of the European citizens, from childhood obesity to active and healthy ageing. Sandra holds degrees in Microbiology and in Biotechnology as well as a PhD in Biomedical Sciences. She worked as a postdoctoral researcher in the University of Lisbon (PT) and at Cambridge University (UK) and Stanford University (USA). Prior to joining the European Commission (in 2010) she held positions as an invited professor of Genetics at the University of Lisbon and as a Scientific Editor at the European Molecular Biology Organisation (EMBO) in Heidelberg (DE).



Neilé K. Edens • *Strategic Research, Abbott Nutrition Division of Abbott Laboratories* • Neilé Edens is Associate Research Fellow and Global Platform Lead at Abbott. She is a member of the Aging and Chronic Disease Research Interest Section of the American Society for Nutrition and the International Life Sciences North America Task Force on Nutrition and Aging. Prior to joining Abbott, Neilé held academic positions in the Nutrition Department at the University of Maryland, the Laboratory of Human Behavior and Metabolism at Rockefeller University, and was visiting scholar at the National Institutes of Health. Neilé earned her PhD from The University of Massachusetts and did post-doctoral training at Columbia University and Rockefeller University.



Claudio Franceschi • *Dept. of Experimental Pathology, University of Bologna* • Claudio Franceschi is a Professor of Immunology in the Dept. of Experimental Pathology, University of Bologna since 1999. He has previously worked in the same role at the University of Modena and Reggio Emilia, and was Associate Professor of Immunology in Padova. He was Scientific Director of the National Institute of Hospital Care for the Elderly (INRCA) of Ancona, Institute for Research, Hospitalization and Health Care (IRCCS) of the Ministry of Health from 1996 to 2005. In 2002, he founded the Interdepartmental Centre ‘L. Galvani’ for integrated studies on Bioinformatics, Biophysics and Biocomplexity of the University of Bologna, which he directed until 2006. Prof. Franceschi has made a fundamental contribution to the studies on the biology and genetics of aging and longevity in humans, and is the author of over 500 publications in international journals. He was the pioneer of studies on centenarians in Italy and in the world.



Isabelle de Froidmont-Görtz • *Agri-food chains, DG Research and Innovation* • Isabelle de Froidmont-Görtz is currently Scientific Officer in the unit Agri-Food Chain in the Commission Research and Innovation DG. She is working in the area of nutrition and food-related diseases. She joined the Commission in 1991, in the Agriculture DG in the unit of legislation relating to animal nutrition. She joined the Research DG in 1994 as a Scientific Officer in the unit 'Measurement & Testing' and worked in the area of food safety, agriculture and fight against fraud. Her precedent post was administrator at the Food and Veterinary Office (DG Health and Consumer Protection) in Dublin. Her duties included the coordination of the follow-up of inspections to develop strategy in the area of food safety, animal health, phytosanitary concerns and animal welfare. She started her professional career as an assistant at the Laboratories R. Debré working on a research project in forensic science using DNA. She holds a degree in agronomic engineering.



Mojca Gabrijelčič Blenkuš • *National Institute of Public Health of Slovenia* • Mojca Gabrijelčič Blenkuš is a medical doctor, specialist of public health. Her special interest is in health promotion, in the areas of nutrition, physical activity, children and adolescent, healthy and active ageing, using health in all policies approach and considering health inequalities. In those areas she has been mostly involved in policies and programs development and research projects. Since year 2000 she is WHO national counterpart for nutrition and she is actively involved in the work of the WHO action networks on nutrition. At the EU level she participates in the work of HLG on nutrition and physical activity and she is the member of the Eurohealthnet Board. She's a lecturer at the Medical faculty, University of Ljubljana.



Inés García-Sánchez • *Innovation and Health and Consumers Unit, DG SANCO* • Inés García-Sánchez (MSc; MD) studied Medicine at the Public University in Madrid, Spain. She has a degree in Public Health from Spain's Ministry of Education. She received postgraduate training in Public Health at the London School of Hygiene and Tropical Medicine, UK, and at the Centre for Disease Control in Atlanta, USA. She worked as primary health care physician for five years for the National Health Service in Spain, and then moved to research and public health domains. She has worked for the Regional Health Government in Andalucía, Spain, for over 15 years, as main researcher and coordinator for several health projects at European level. She currently works as Policy Officer for the Innovation and Health and Consumers Unit at DG Health and Consumer, which leads the European Innovation Partnership on Healthy and Active Ageing. She coordinates the Action Group on prevention of frailty.



Lisette CPGM de Groot • *Division of Human Nutrition, Wageningen University* • Lisette CPGM de Groot is Professor of Nutrition and Ageing at the Division of Human Nutrition at Wageningen University, the Netherlands. She was trained in Nutrition, physiology and epidemiology at the Wageningen University. With academic posts at several University departments she has gained twenty-five years of research experience in the field of nutrition and health of elderly people, both in nutritional epidemiology (including *e.g.* SENECA, Survey in Europe on Nutrition and the Elderly; EURRECA European micronutrient recommendations aligned; HALE; NuAge; Chances) and in intervention studies in old age. Her research interests center around the role of nutrition in the maintenance of health in old age with due attention for nutritional ways to slow down ageing related functional decline.



Susanna Kugelberg • *WHO Regional Office for Europe, Nutrition, Physical Activity and Obesity Programme* • Susanna Kugelberg is a Technical Officer in Nutrition, PA and Obesity at WHO/Euro/NAO. She has been working in the area of nutrition policy since joining in December 2013. Susanna has a MSc in Political Science from Lund's University, Sweden and a PhD in Public health nutrition from Karolinska Institutet, Sweden. Her previous work experience and interests include nutrition policy, governance and workforce development in a European context and she has been working with higher education policy at UNESCO/HQ.



Tsz Ning Mak • *Institute for Health and Consumer Protection (IHCP), JRC* • Tsz Ning Mak is a Scientific/Technical Project Officer in Nutrition and Health at the JRC-IHCP. She has been working in the area of nutrition in promoting active and healthy ageing since joining in March 2013. Tsz has a BSc in Nutrition from King's College London and a PhD in Public Health Nutrition from the University of Cambridge. Her previous research experience and interests include nutritional epidemiology, dietary assessment, food composition and the study of eating context and children's diet from the UK National Diet and Nutrition Survey Rolling Programme



Petros Achilleas Maragkoudakis • *Institute for Health and Consumer Protection (IHCP), JRC* • Petros has just returned to the Nutrition and Health group at the JRC-IHCP as a Scientific Officer. Petros holds a BSc in Microbial Biotechnology and an MSc in Medical Microbiology from the University of Liverpool, while he obtained his PhD in Food Science from the Agricultural University of Athens. During his academic career, Petros worked as a post-doctoral researcher in various national and EU funded research projects, before joining the European Commission's Joint Research Centre as a Scientific/Technical Project Officer in Nutrition and Health from 2010 to 2013. Petros has also worked as a freelance writer and consultant in the field of food and nutrition policies as well as a manager in a company specializing in software & regulatory solutions for the food industry.



Theodora Mouratidou • *Institute for Health and Consumer Protection (IHCP), JRC* • Theodora Mouratidou is a Scientific/Technical Project Officer at the JRC-IHCP focusing on policy support in the field of Nutrition and Public Health. She holds a degree in Human Nutrition and in 2007 obtained her PhD from the University of Sheffield on dietary assessment of pregnant women. Since then she held positions as a post-doctoral researcher at the University of Sheffield and at the University of Zaragoza, Spain, where she worked in several obesity related projects such as the FP7-funded HELENA, IDEFICS and ToyBox.



Flaminia Mussio • *Institute for Health and Consumer Protection (IHCP), JRC* • Flaminia Mussio graduated from the University of Surrey in Nutrition and obtained her MSc in Nutrition, Physical Activity and Public Health from the University of Bristol. She is currently working as a trainee in the Nutrition and Health team, within the Public Health Policy Support unit, Institute for Health and Consumer Protection, where she is working on the impact of school-based interventions on the dietary and physical activity behaviours of European children. Her interests include nutritional epidemiology and childhood obesity.



Monika Neuhäuser-Berthold • *Institute of Nutritional Science, Justus Liebig University, Giessen* • Monika Neuhäuser-Berthold is professor and head of the department of Human Nutrition at the Justus Liebig University since 1992, where she is directing a long-term study on nutrition and health status in an elderly population. She obtained her educational and academic background in nutritional science and physiological chemistry at the Justus Liebig University in Giessen, the Karolinska Institute in Stockholm, the Health Science Center in Louisville, and the Johannes Gutenberg University in Mainz. Her major research interests are the interrelations between nutrition, aging and health status.



Elisabet Rothenberg • *Kristianstad University* • Associate professor and Assistant professor Kristianstad University 2014. Research interest body composition, nutritional status and food and nutrient intake in older adults. President of the association of clinical dietitians in Sweden 2000-, leader of the European Specialist Network of Older Adults EFAD (European Federation of Associations of Dietitians), member of the Expert group on nutrition and public health, National food administration 2008-, the Expert group on Senior alert quality register, Swedish Association of Local Authorities and Regions 2010-, and SWESPEN (the Swedish Association of Clinical Nutrition and Metabolism). Supervisor in the Nordic Nutrition Academy.



Giuseppe Sergi • *European Union Geriatric Medicine Society* • Giuseppe Sergi is a member of the Healthy Brain Ageing and Nutrition Working Group of EUGMS from 2013. After the specialization in Geriatrics and Nutrition Sciences, he obtained a PhD in Experimental and Clinical Geriatrics at the University of Padova, Italy. He is author of more than 140 research articles focused on problems related on nutrition, body composition, metabolism, and osteoporosis in healthy and ill older people. Since March 2014 he is Academic Editor of Plos One.



Stefan Storcksdieck genannt Bonsmann • *Institute for Health and Consumer Protection (IHCP), JRC* • In May 2013, Stefan Storcksdieck joined the Nutrition team within the Public Health Policy Support Unit as Scientific Project Officer. Stefan holds an MSc equivalent in Nutrition and Household Economics from Justus-Liebig-University Giessen, Germany, and a PhD in Human Nutrition from ETH Zurich, Switzerland. From 2008 to 2013, he was employed first as Nutrition Communications Manager and then as Nutrition & Health Projects Manager at the European Food Information Council (EUFIC) in Brussels. At the JRC, Stefan is focussing on school food standards across Europe, coordinating the JRC input to the EU project PATHWAY-27, and supporting other projects of the Nutrition group.



Antonia Trichopoulou • *Hellenic Health Foundation* • Antonia Trichopoulou, MD, PhD is Vice President, Hellenic Health Foundation, and Professor Emeritus, University of Athens Medical School. She served as President of the Federation of the European Nutrition Societies (FENS) and as chairperson or key member of numerous Greek, European Commission and World Health Organization Committees. She received numerous honors and awards and was decorated by the President of Greece with the Golden Cross of Honor. She also received the FENS Award for outstanding career. Her scientific work focused on public health nutrition and nutrition epidemiology, with emphasis on the health effects of the Mediterranean diet and traditional foods.



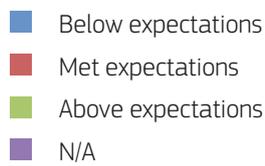
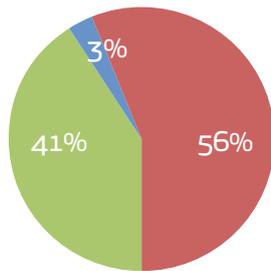
Andrea de Winter • *Department of Health sciences, University Medical Center Groningen* • Andrea de Winter is assistant professor in the field of health sciences at the University Medical Center Groningen and as coordinating researcher involved in the IROHLA project. The IROHLA-project (Intervention Research On Health Literacy among Ageing population) focuses on improving health literacy for the ageing population in different European contexts by improving competencies and empowerment of older adults and their social context and providing innovative tools for health workers and health services. The main objective is to introduce in EU Member States evidence-based guidelines for policy and practice for a comprehensive approach improving health literacy of the ageing population



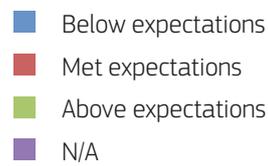
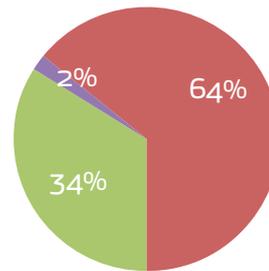
Jan Wollgast • *Institute for Health and Consumer Protection (IHCP), JRC* • Jan Wollgast graduated in nutrition and household economics from Justus Liebig University, Giessen, Germany in 1998. He subsequently carried out research on the health effects of polyphenols in chocolate and concluded this project by obtaining his PhD at Giessen University in 2005. Since 2002 he has been working as a scientific officer in the JRC's Institute for Environment and Sustainability (until 2009) and Institute for Health and Consumer Protection, where he is currently working in the area of nutrition and health providing scientific and technical support to EU policy makers in the field.

Annex III: Evaluation

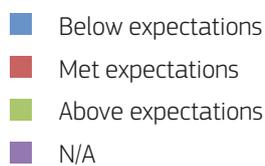
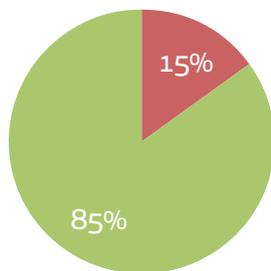
Event's preparation



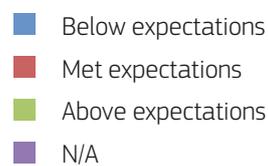
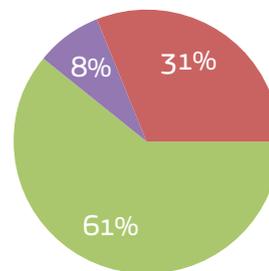
Event's delivery



Organisation and Logistics



Overall evaluation



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*Serving society
Stimulating innovation
Supporting legislation*

