EGEA edition 8
International conference

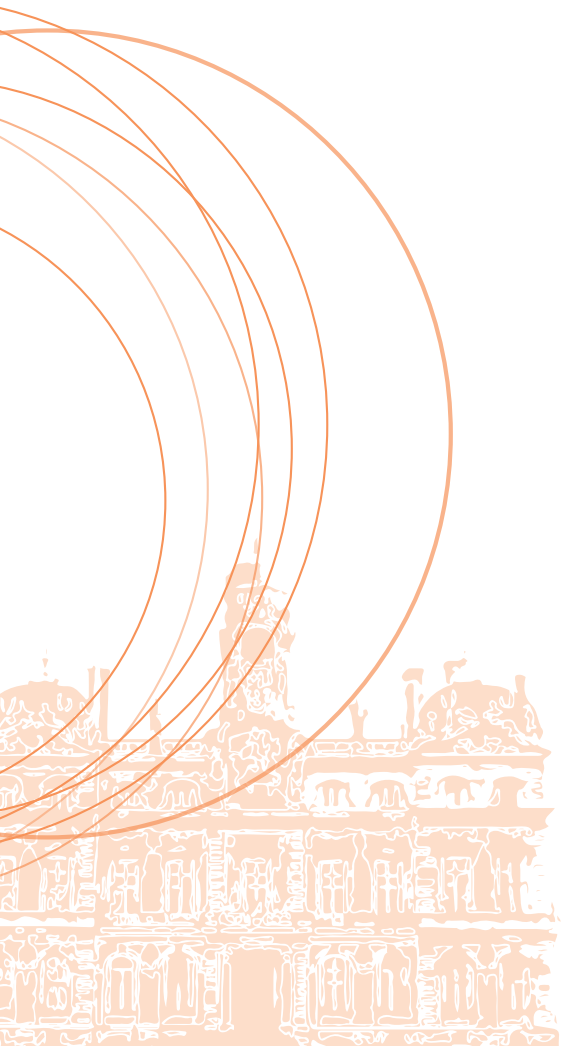
NUTRITION & HEALTH

FROM SCIENCE TO PRACTICE

EGEA 2018

November 7th-9th

Marriott Hotel, Lyon - FRANCE



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E. Riboli & M. Laville

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MJ. Amiot-Carlin, J. Breda, M. Caroli, ML. Frelut, J. Halford, P. James, M. Laville, JM. Lecerf, L. Letrilliart, K. Lock, A. Martin, T. Norat, E. Riboli, S. Storcksdieck Genannt Bonsmann, D. Weghuber

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S. Barnat

EGEA 2018 is part of the European program "FRUIT & VEG 4 HEALTH", aimed at extending good food practices through a healthy diet and adequate consumption of fruit and vegetables.

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Vytenis
ANDRIUKAITIS
European Commissioner
for Health and Food Safety
Juncker Commission

Phil **HOGAN**
European Commissioner
for Agriculture and
Rural Development

PREFACE

We are honoured to introduce the booklet for EGEA's 8th international conference, particularly as this year's focus on "*Nutrition & Health: from science to practice*" is very timely. Our society is increasingly aware of the role good nutrition plays in maintaining good health, preventing diseases and hence keeping not only our population healthier but also our economy more resilient. We are responsible for Health and Food Safety and for Agriculture and Rural Development, respectively, therefore we are acutely aware of just how intricately connected these areas are.

We are happy that this unique international conference on nutrition and health is, once again, focusing on fostering multidisciplinary knowledge and strategies for evidence-based policy making. By bringing together scientists, medical professionals, producers, whole and retail sellers, foodservice and policy makers, EGEA is facilitating the discussion on how to keep our agriculture sustainable, our food nutritious and safe and our population healthy.

Nutrition is one of the most important health determinants. A balanced, nutritious diet helps to prevent a number of chronic diseases, extend life expectancy and improve people's overall quality of life at every stage. This is why the European Commission promotes the ''health in all policies'' approach, bringing together all sectors and all levels of government.

One child out of three is overweight or obese in the EU – this is a very alarming situation that requires urgent action. We are particularly aware and focused on linking children's nutrition to the European Pillar of Social Rights, together with education, equal opportunities and social inclusion. Our farmers and food producers are working on improving the nutritional quality of food and making healthier food options – with less salt, sugar and fat – easily available and affordable.

Together with EU governments, we are discussing the ways that will help us to apply all possible tools, such as food labelling, taxation, marketing, education, empowering families and increasing physical activity, particularly in children.

We are moving increasingly towards nutrition-sensitive agriculture and promoting good eating habits more broadly. The EU School Fruit, Vegetables and Milk Scheme is an excellent example of how the EU and our agricultural producers can support Member States to promote healthier eating habits in children. In addition a Teachers Resource Pack has been created to help young people learn more about food production and the wider role played by farmers. Public procurement of food in schools is another tool that Member States can use to improve children's nutrition. Already more than a decade ago, the European Commission launched the European platform for action on diet, physical activity and health. The platform led to more than 300 initiatives designed to promote better nutrition and physical activity in the EU, including a Thematic Network on „Stimulating fresh fruit and vegetable consumption for healthier European consumers„ as part of the European Commission's EU Health Policy Platform. And, as recently as June 2018, the Council of the European Union adopted conclusions on "Healthy nutrition for children: the healthy future of Europe".

All these programmes and initiatives, including EGEA's 8th conference, provide a robust framework to address the issue of healthy nutrition and support Member States' efforts to reach the UN Sustainable Development Goals and promote healthy lifestyles. We know that this is a formidable task that requires everyone to work together. It now depends on all of us to put this to use, discuss, cooperate, exchange best practices, learn from our successes and mistakes alike, and achieve sustainable change. Healthy nutrition is definitely one of the best investments we can make together in our future generations.

Vytenis **ANDRIUKAITIS** and Phil **HOGAN**
European commissioners

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S. Barnat – EGEA Scientific Coordinator – Aprifel – FR

C. Faurie-Gauthier – Representative of Lyon City Hall – FR

E. Riboli – Imperial Coll. London – UK – Keynote lecture: The role of F&V in disease prevention & health promotion

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Co-chairs: **P. James & M. Laville**

- Health workforce for better nutrition – **K. Wickramasinghe** – WHO Europe – RU
- The primary care professional: an agent for healthy eating? – **A. Stavdal** – WONCA Europe – NO
- Health promotion in primary healthcare: how well are French clinicians prepared? – **M. Laville** – C. Bernard Lyon 1 Univ. – FR

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- Food security, food safety & healthy nutrition: are they compatible?- **H. Walls** – LSHTM – UK

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NOVEMBER 8TH 2018

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NOVEMBER 9TH 2018

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  A. Linos – Athens Medical School – GR
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  G. Medico – EC – DG AGRI – BE
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  S. Berni Canani – CREA – IT
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  S. Storcksdieck Genannt Bonsmann – EC – DG JRC – IT

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Animated by **K. Lock & P. James**

- Introduction: Global benefits of F&V to health and sustainable development
  K. Lock – LSHTM – UK
- Panel:
  A. Delahaye – European Parliament – FR
  M. Devaux – OECD – FR
  G. Golfidis – EC – DG AGRI – BE
  W. Kalamarz – EC – DG SANTE – LU
  D. Sauvaitre – F&V Sector – FR
  A. Stavdal – WONCA Europe – NO

15:45 / 16:00 **Closing session**
E. Riboli & H. Walls

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D1

DAY 1

Official opening - Welcome

Elio **RIBOLI**
Imperial Coll. – UK
Humanitas Univ. – IT

Martine **LAVILLE**
C. Bernard Lyon 1 Univ. – FR
E. Herriot Hosp. of Lyon – FR

Saïda **BARNAT**
EGEA Scientific Coordinator –
Aprifel – FR

Céline
FAURIE-GAUTHIER
Representative of Lyon
City Hall – FR

Keynote lecture

The role of F&V in disease prevention & health promotion

E. **RIBOLI** – Imperial College London – UK

Over the past decades, very large population based prospective cohort studies have been established to investigate the association of diet, body fatness, physical activity, other lifestyle factors and related metabolic conditions with the risk of developing cardiovascular diseases, cancer, type 2 diabetes, and other chronic diseases. Most cohort studies have reported a consistent association between fruit and vegetable consumption, and reduced risk of coronary heart disease and stroke, and a statistically significant but comparatively less strong association with a reduction of cancer risk. In addition, the results of several cohort studies support a protective effect of fruit and vegetable consumption on all-cause mortality, particularly on the reduction of premature death in middle aged and older adults.

Epidemiological studies have also found that several major lifestyle factors including being physically active and maintaining a lean body mass, avoiding smoking and consuming alcohol in moderation if at all, play a major role in promoting health, preventing chronic disease and reducing premature death. Laboratory studies based on the biosamples collected at baseline in prospective cohorts have shown that these lifestyle factors influence epigenetic changes, hormonal balance, insulin metabolism, antioxidant activity and other pathways of diseases. The application in epidemiologic studies of new methods based on "-omics" is paving the way to a better understanding of the mechanisms underlying the observed associations.

These results have provided the bases for public health recommendations. Current recommendations on fruit and vegetable consumption vary from country to country from 400 g/day (equivalent to five-a-day) in the UK, to 500 to 800 grams per day in Denmark, Norway and USA. The World Health Organization and the World Cancer Research Fund both recommend at least 400 g/day. However, a recent meta-analysis has suggested that the health benefit could increase with levels of consumption even higher than those indicated in current recommendations. This meta-analysis included 142 publications from 95 cohort studies from all over the world and found a significant reduction in the risk of coronary heart disease, stroke, cardiovascular disease, total cancer and all-cause mortality with increase in intake of fruit or vegetables, and fruit and vegetables combined.

While the debate remains open on how much extra benefit can be provided by even higher levels of fruit and vegetable consumption, it is essential from a public health point of view to underlie that decades of epidemiological studies on nutrition and health have shown that low fruit and vegetable consumption is associated with higher risk of several chronic diseases and of premature death and that further health benefits and no detrimental effects have been found for diets characterised by fruit and vegetable consumptions above the currently recommended levels.

S1 HEALTH PROMOTION IN MEDICAL EDUCATION: FROM RHETORIC TO ACTION

Co-chairs: P. **JAMES** & M. **LAVILLE**

Health workforce for better nutrition

K. WICKRAMASINGHE & J. JEWELL & J. BREDA – WHO Europe – RU

This presentation aims to briefly describe the WHO/Europe workshop series for healthcare workers for nutrition promotion and to provide a summary of a recent WHO review of evidence on integrating nutrition promotion activities in primary healthcare.

Primary care plays a critical role in the provision of services to promote healthy diets, engage individuals in physical activity and assist patients in weight management. A recent review of evidence by WHO/Europe shows that these services are effective in reducing weight, increasing levels of physical activity and shifting to healthier diets. The most effective mix of interventions is strongly associated with context, so that interventions should be tailored to patients' needs and barriers. Services that simultaneously address diet and physical activity are the most effective; initial referral by a primary care physician and routine follow-up by nurses and allied health professionals result in better health outcomes. Many studies reported lack of clear guidance in clinical recommendations; outdated knowledge and competence of primary care providers, including the skills to assess and address patient resistance; unclear scope of practice; and limited work in interdisciplinary teams, misalignment of incentives and insufficient information technology support.

WHO/Europe initiated capacity building programme for nutrition promotion among health professionals working in primary health care, schools and community health centres. Participants had expertise in family medicine, nutrition and dietetics, cardiology, endocrinology and oncology, as well as pediatrics.

Based on this examples, objectives of capacity building programme could be to familiarize health professionals with the important evidence and guidance from WHO on the links between nutrition, physical activity, body composition and weight, and health outcomes. These training workshops can demonstrate, through practical exercises, existing techniques and approaches to: identify important target groups (e.g. pregnant and breastfeeding women, children) and at-risk individuals; monitor dietary intake and levels of physical activity; and monitor child growth and nutrition status in children and adults.

A crucial component of such training is providing an opportunity for participants to learn and experiment with several approaches to brief motivational interviewing through case studies and group workshops. It allows to understand the importance of patients setting realistic goals for themselves and agreeing indicators of success with patients.

Building a health workforce for better nutrition is a long term, challenging task. It requires to identify, discuss and debate potential system changes that could act as enablers, such as the development of new tools or more collaborative working methods. Prioritizing these services in the national health agenda, updating the curricula of health professionals and aligning payment mechanisms for primary care providers will require consideration in order to ensure sustainability and reforms at scale.

The primary care professional: an agent for healthy eating ?

A. **STAVDAL** – WONCA Europe – NO

Health promotion is most often about making changes in the daily routine, in which eating habits often play a major role.

There is a common understanding that a person`s eating habits reflect both societal factors and the individual context.

The family doctor meets people at all stages of life, in continuous relationships with patients over time. In the work of diagnosing and treating, the doctor is an interpreter of signs and symptoms on the basis of the patient's individual context, besides being a teacher and a witness in the course of the patient's life. In the longstanding relationship between doctor and patient, golden moments will occur. Moments when the doctor can give valuable input and be a facilitator for needed change in lifestyle behavior. To achieve that, trust is needed. Trust builds on respect of, and understanding of, the patient's resources and life challenges. When the patient has experienced that the doctor holds this respect and is responsive to his or her needs, change can be a part of the conversation.

There is a lot of information about healthy lifestyle available and the public is often well informed about the basic principles. The hard part is to transform knowledge into action. The person centered approach, the working method in family medicine, is the key to help this transformation come true.

The primary care setting offers an incentive for both parties to reach a mutual understanding of what is at stake, identifying when a crossroad is reached, and agreeing that change is advisable. The patient must feel convinced that reward by a change away from unhealthy habits, will outweigh the prize to be paid and sacrifices made. The doctor must understand what situation the patient finds himself in, and making a judgement whether the moment for introducing a plan for lifestyle change is the right one. The physician must advice the patient not to set the bar too high, be ready for support when setbacks and disappointment occur, helping and nudging the patient to uphold motivation and to stay on track over time.

This talk will focus on how the family doctor can give inspiration and support in the transformation process linked to nutrition and healthy eating.

Health promotion in primary healthcare: how well are French clinicians prepared?

M. LAVILLE – Claude Bernard Lyon 1 University – FR

Medical studies in France are mostly devoted to disease and very few to health promotion. Nutrition, for example, is taught only few hours during the medical courses and is not always taken very seriously by the future physician. However, the need for health promotion is obvious: 80% of adults have sedentary habits, 25% of young over 17y are smokers and 12% take alcohol several times a week. Thus, there was awareness at the government level with prevention of diseases and inequity as main goal.

It has been decided, this year, to add to the medical studies a specific course called "health service" that should be mandatory for all the students working in the medical field (MDs, pharmacists, dentists, nurses...). During these courses they will be trained on promotion of health according to the type of population. They will also have a real life exercise by group going to school, nursing home... to discuss about a health problem. For this first year, nutrition and lifestyle has been chosen as main theme. 50000 students should be trained this year.

S2 PERSISTENCY OF UNHEALTHY HABITS. NEED AND RIGHT FOR A HEALTHY DIET WORLDWIDE

Co-chairs: E. **RIBOLI** & M. **LAVILLE**

Why it took so long to define a healthy diet?

P. JAMES – London School of Hygiene & Tropical Medicine – UK

Nutritional thinking was dominated for most of the last century by concepts of vitamin and mineral deficiency but the issue of trying to put this into practical terms for everyday use was left to dietitians and nutritionists. Advising people to eat fruit and vegetables (F&Vs) was based on minimising vitamin C deficiency (scurvy) so very little F&V was required. Then in the early 1980s new policies for preventing coronary heart disease (CHD) by reducing saturated and total fat were introduced with much discussion about the value of F&Vs in CHD prevention because of F&Vs' anti-oxidant properties. Then in 1990 a new approach was taken to develop practical dietary goals for the prevention of major adult chronic diseases. Colon cancer was thought to be partially prevented by more fibre from more whole grain cereal and F&Vs. It was proposed that the average person should eat at least 400g daily of F&Vs to not only prevent constipation but also CHD and colon cancer. This 400 g/d in USA terms was 5 portions since a portion equalled 80g. The amount chosen was based on a) specific Scandinavian and international analyses of diet and colon cancer b) metabolic studies of how much F&V and whole grain cereals were needed for an effective laxative effect c) estimated national Mediterranean F&V intakes, d) continuing evidence that F&Vs could well help prevent CHD and, e) F&Vs' potassium content, helps reduce high blood pressure.

The recent special focus on the effect of sugar in increasing obesity and dental caries means that we should severely limit all sugar intake but this does not include the sugar in F&Vs. Continuing analyses of a wide range of cancers continue

to suggest that F&Vs are beneficial so the challenge is how best to induce substantial increases in F&Vs intake in both children and adults of all ages. Policies geared to population change not only involve changing government agricultural/food policies but also substantial changes in the pricing and availability in all catering facilities funded in any way by government. General practitioners have a role both in terms of individual patient advice and in the way they advise and promote local societal changes.

Recommendations for general practitioners:

1. Ensure you understand what 400g daily of F&Vs means in practice recognising that this is an average figure and adult men should probably be on >600+grams/day; children over 5 years can handle 400 g/d.
2. When asking about a patient's intake it is best to enquire about a household's weekly shop rather than ask about yesterday's intake. Develop 5 practical steps with variety of vegetable and fruit options.
3. Combine some GPs' long standing practice of a health centre displaying a weekly notice about the cheapest F&V options in particular shops/supermarkets and promote changes in providing "free" vegetables and salad bar in local businesses and local government catering by hiding the price in the main meal cost as in the remarkable successful Finland approach.

Food security, food safety & healthy nutrition: are they compatible?

H. WALLS – London School of Hygiene & Tropical Medicine - UK

Food safety, healthy nutrition and food security are each key aspects of food systems with implications for population health. Food safety addresses foodborne illness, and covers the handling, preparation and storage of food. Healthy nutrition is about the nutritional quality of diets, with implications for malnutrition in all its forms, both underweight and associated micronutrient deficiencies, as well as overweight, obesity and associated non-communicable diseases. Food security covers food safety and healthy nutrition, but also relates to what have been described by the Food and Agriculture Organization as the four 'pillars' of food security: availability, access, utilization and stability. This presentation addresses how food security, food safety and healthy nutrition are in one sense absolutely compatible, and in another sense, absolutely not compatible.

Food systems have been conceptualized in various ways, with food safety, healthy nutrition and food security each component of most conceptualizations. The three issues are clearly components of recent conceptualizations of food systems – e.g. a framework of the High Level Panel of Experts on Food Security and Nutrition (2017), the other from the Agriculture, Nutrition and Health Food Environments Working Group (2018). Conceptually, as necessary components of a healthy food system, they are compatible. Thus, the answer to the question posed in the title of this presentation would be 'yes, absolutely'.

However, whilst conceptually compatible, addressing these issues is fundamentally a political issue, and their different characteristics mean that they are considered differently by policymakers. Thus, from the perspective of food system politics, the answer to the question posed in the title of the presentation would be 'absolutely not'.

Addressing these issues on the political agenda requires their political prioritization – which is the extent to which political leaders pay attention to addressing the issue, and back that with resources (financial, technical and human resources). However, rather than being a rational and evidence-based process whereby policymakers prioritise issues based on their importance and act accordingly, policymaking is instead often complex and non-linear, with issues addressed based on stakeholder values and the resonance of them as ideas. Policymakers respond very differently to immediate issues – such as food safety, with its acute implications for food-related health and wellbeing – than longer-term or more chronic issues, such as healthy nutrition. Characteristics of food security such as the emphasis on availability, access and system stability are again different to those of the other two issues – characteristics with different resonance to different stakeholders.

Thus, in terms of their conceptualization, the three issues are absolutely compatible, and in terms of their politics, they are absolutely not. The challenge here for food systems researchers and advocates is to find ways to improve the compatibility of food safety, healthy nutrition and food security from a political perspective, and increase the tractability on the political agenda of all three of these important aspects of a healthy food system.

Recommendations for application in daily practice:

1. Raise awareness in the community of the importance of all three of food security, food safety and healthy nutrition for healthy food systems and population nutrition and wellbeing.
2. Be cognizant that policymaking is not a rationale process with decisions often not based on evidence of burden of disease or other impact.
3. Contribute to increasing the political prioritization of more neglected aspects of healthy food systems through, for example: leadership and advocacy that understands political contexts, improved (resonant) issue framing and portrayal, and developing credible measures of the problem (and communicating it in compelling ways).

Parallel session

S3 "THE EARLIER THE BETTER": FROM PREGNANCY TO BREASTFEEDING, TO...

Co-chairs: M. **CAROLI** & D. **WEGHUBER**

Parallel session

S4 "IT IS NEVER TOO LATE": FOOD AND HEALTH IN ADULTHOOD

Co-chairs: M. **LAVILLE** & A. **STAVDAL**

Epigenetics and Pregnancy

U. SIMEONI – Lausanne University – CH

Next to our genetic make-up, our environment and lifestyle exert a great influence on our health status. This is especially intuitive for chronic, noncommunicable diseases, such as diabetes and cardiovascular disorders, which are major causes for early mortality. In recent years, more and more data are being published suggesting that chronic diseases at adulthood have early origins during development. Especially, early interactions between the environment and the genome have been shown to shape lifelong trajectories which translate into a healthy life course or an increased risk for chronic disease in the offspring. During the key window of sensitivity constituted by the peri-conceptional period, pregnancy and infancy – the so-called first 1000 days of life -, environmental stimuli such as nutrition, exposure to toxicants or stress, determine lifelong lasting, trans-generationally heritable effects, possibly due to epigenetic imprinting. This concept has been described as developmental or fetal programming, within the general frame of the developmental origins of health and disease (DOHaD). Accordingly, during the sensitive and vulnerable period of early development, stimuli related particularly to stress, nutrition and toxicants do not only have short term effects, but may also influence lifelong and trans-generational health.

Increasing evidence shows that early epigenetic imprinting, which memorizes early interactions between genes and the environment, and translates them into durable changes in gene expression, without affecting the gene sequence, is strongly influenced by the early environment. This is not as surprising as epigenetics are key mechanisms in normal cell differentiation, therefore in organ and function development, by silencing part of the genome which is not involved in the differentiated cell functions, and enhancing the expression of the genes specifically involved in such functions. Arrested development and altered developmental programming, in association with the leveraging effect of the cycle of reproduction are considered as possible factors and may rely on epigenetic changes of genes regulation as a molecular support. Converging findings show that epigenetic imprinting is associated with the level of expression and activity of specific genes involved during development and in the long term setting of the regulation of biologic systems functions, such as those involved in metabolic and cardio-vascular physiology.

Epigenetics molecular mechanisms involved in the early determinants of health and the risk of chronic disease over the life course are based on three principal mechanisms, that involve DNA modifications (e.g. methylation and hydroxymethylation), histones' post-translational modifications (e.g. acetylation, methylation, and ubiquitination) and non-coding RNAs (e.g. micro-RNAs, lnc-RNAs, pi-RNAs). These mechanisms orchestrate genes expression throughout development and at a lower level over the life course without changes in DNA sequence, under the effect of the environment.

The implications for individual and public health promotion are that:

1. Early prevention during the window of opportunity opened by the pre-conception period, pregnancy and early infancy, i.e. oriented toward future parents, pregnant women and infants, is the most efficient and cost-effective public and global health approach to reducing the burden of chronic, noncommunicable diseases;
2. Early prevention should be focused on lifestyle measures, including a healthy nutrition, exercise, exposure to stress and to environmental toxicants such as endocrine disrupting compounds;
3. Personalized or precision approaches should be based on the epigenetic diversity induced by early environmental exposure (epigenome-wide association studies) in addition to genome-wide associations;

Dietary diversification: a natural need

ML. FRELUT – ECOG – FR

Weaning and dietary diversification are key periods in early life. Between 4 and 6 months of age foods will be *added* to milk, but not substituted to it. Energy content, nutrients intakes, tastes will change. Understanding the issues behind these changes is of paramount importance in order to reach nutritional balance and allow adequate growth and development on a short and long term basis.

Milk as a unique food provides both water and nutrients. As a consequence, babies feeling thirsty have to eat while those who are hungry will also be provided water. In breastfed babies (BF), the composition and taste of milk changes over time and are adapted to the most likely requirements: its shifts from a watery consistence when starting to suckle to a fat bulk at the end of the feeding. Hydration is provided before energy needs are fully covered. In non BF babies the composition of the milk, provided as an adapted formula, is constant preventing the baby from such adaptation and fine tune.

Vegetables and fruit are introduced between 4 and 6 months of age in non premature babies. The impact of the complementary food may have opposite effects. Two extreme situations can be observed during the first weeks of diversification: an increase in energy intakes (EI) from new foods while the amount of formula or equivalent as dairies remains stable. In contrary, transitory decrease in EI can take place when vegetables given as starter at lunch time induce satiety and milk or dairies intakes slightly decrease. Providing fruits at the end of the meal or as a starter in the afternoon meal is another way to satisfy the child needs without increasing milk or dairies intakes beyond requirements.

The peak of fatness, as evidenced by BMI curves, is reached between 6 and 12 months of age. Babies also start moving significantly and enhance energy expenditure allowing spontaneous regulation of body composition. In fat babies, vegetable and fruit consumption will provide high bulk low calorie foods and allow limiting milk intakes at their upper level, i.e. 240 ml X 4/day.

Postponing the introduction of sources of starch proves helpful in this case. In lean babies which have not reached the upper limit of milk intakes and have a moderate appetite, new foods may enhance the pleasure to eat and increase energy intakes. In this case, the introduction of vegetables, fruits and carbohydrates from starch and the addition of fat allow enhancing nutritional density of the meal.

Dietary diversification is a necessary and natural process which can be adjusted in order to maintain an adequate growth pattern.

Complementary feeding: which model?

M. CAROLI – ASL Brindisi – IT

Between 6 and 24 months all the infants start to consume solid foods. This period, previously called "weaning", is now defined as "complementary feeding". This is an important variation as complementary feeding takes into account the main source of energy in the first year of age: human milk or formula.

Until few years ago paediatricians didn't use to differentiate foods recommendation between infants breast-fed or formula-fed, but this behavior didn't consider the deep and strong difference in human milk and formula formulation. Until milk is the main source of energy, which usually ends at the end of the first year of life, the two groups of infants must be fed in a different way, according the nutritional content of human milk and formula.

Recently, it has been recognized that the nutrition of the first 1000 days of life can have effects until adulthood and, thus, we must be very careful when we recommend complementary feeding.

Weaning is heavily influenced by the habits and culture of the place, but new scientific information must be the basis of choices for the respect of the right to health of children.

Nutrition consists of two branches: one is given by the nutritional and metabolic aspects and the other by the relational aspects. The development of taste is also fundamental to build healthy eating habits since the very early age. Finally, to get a healthy and proper diet for infants we have to know what, when and how much food is right to offer to them.

When. For many years, children have been weaned too early, in contrast with the WHO recommendation which advises to start solid foods at 6 months of age that means 180 days of life.

What and how much. Again, for many years the paediatricians' prescriptions have been very restrictive, giving too many useless rules regarding the order of foods' introduction and portions' size.

In contrast with the previous excess of rules, nowadays a new model of weaning is taking place, the so called "Baby-led-weaning (BLW)". The BLW affirms that infants since 6 months can eat whatever they decide to eat, from their parents table, as far as they assume by their little fingers, without any limitation in terms of food's kind and serving, as they instinctively know what and how much eating. This is true when we consider the amount of foods, but infants cannot differentiate among protein, fat and sugar foods' content and, thus, they cannot protect themselves from a too high protein or salt or sugar intake. Moreover, many studies have shown that this model cannot satisfy infants' need of iron, calcium, whereas there is an excess of proteins, salt, and often sugar intakes.

This model, furthermore, doesn't take into account the long term effects of the early diet. The other principle on which BLW is based is that this model favours a healthier development of eating habits and that protect from obesity development, but studies on this topic have been conducted with questionable methodology and show conflicting results.

In summary, if we want consider the antique wisdom which says that: "virtue lies in the middle" we could recommend to families who have an infant who has to begin assuming solid foods:

1. Start solid foods at 6 full months: 180 days, according the WHO recommendations;
2. Start with different solid foods considering whether the baby is breastfed or formula;
3. Remember what the baby eats has the same importance as how the baby is fed;
4. Note that the future health of the infant is programmed between 6 and 24 months.

Early chemosensory experiences and subsequent food choices

L. **MARLIER** – CNRS – FR

Some food preferences are shaped very early during ontogenesis. The perinatal period could even be a key period in building the foundations of our food history. This presentation contains data on the emergence of chemosensory systems, on the traces left by initial gustatory and olfactory experiences, and on the mechanisms that may lead to the channelling of taste in children.

The anatomical data first show that the chemico-sensory systems involved in the perception of foods develop during prenatal life and that gustatory and olfactory receptors in particular are mature at the end of the first trimester of gestation. Moreover, an examination of the chemical composition of amniotic fluid reveals that this fluid contains numerous chemical molecules capable of activating the olfactory and gustatory receptors of the foetus. Some of these molecules, such as sugarcane scented glycolic acid or milky scented lactic acid, are part of its basic composition. Other smells and flavours are transferred to the amniotic fluid according to maternal food choices.

Therefore, many food flavours "colour" the amniotic fluid, and more generally, each meal taken by the mother results in a palette of aromas transferred to the amniotic fluid and to the child.

One of the experimental strategies used to examine the possibility of sensory impressions left by foetal life has been to examine a newly born child's responses to odours extracted from the amniotic environment. Therefore, children exposed in utero to the aroma of aniseed, carrot or garlic demonstrate positive facial responses (smiles, relaxation of the facial muscles) and appetitive oral responses (sucking movements, licking, attempt to seize) towards these same flavours after birth. Such familiarisation processes will continue during breastfeeding, since milk also carries the aromas contained in the maternal diet. Studies show that this early appetence for certain flavours could persist during childhood, even up until adult life.

These perceptual signposts could be acquired through several mechanisms. Firstly, amniotic chemistry could differentially channel the development of certain categories of neuroreceptors, select synaptic connections that are more often activated than others, or skew the expression of certain receptor proteins. Data obtained on animal models show for example that the dominant odour note of amniotic fluid (obtained by aromatising a pregnant female's food) causes the newborn to both a preference and en increased sensitivity towards this aroma compared to a new aroma.

In addition to these peripheral mechanisms, a variety of associative or non-associative cognitive mechanisms could intervene as early as prenatal life. The foetus and the newborn can indeed attribute a positive and appetitive value to an aroma simply by having been exposed to it (mere exposure). But an aroma can also be made aversive by negative conditioning (by intraperitoneal injection of a substance triggering discomfort or by performing an temporary anoxia) as has been demonstrated in animals. This defensive mechanism is reflected later in selective food avoidances. Such mechanisms are not excluded in our own species.

These sensory traces formed during foetal and neonatal life will channel the child's tastes, and are therefore important to allow the child to select their food efficiently, and to open up to a certain dietary diversity, especially in terms of fruits and vegetables, thus promoting their long-term health.

Parallel session

S3 "THE EARLIER THE BETTER": FROM PREGNANCY TO BREASTFEEDING, TO...

Co-chairs: M. **CAROLI** & D. **WEGHUBER**

Parallel session

S4 "IT IS NEVER TOO LATE": FOOD AND HEALTH IN ADULTHOOD

Co-chairs: M. **LAVILLE** & A. **STAVDAL**

Prevention of premature mortality related to chronic diseases and fruit and vegetable intake

T. NORAT – Imperial College London – UK

Fruits and vegetables are part of "healthy" dietary patterns and dietary recommendations or guidelines emphasize the importance of consuming fruits and vegetables. Depending on the country, the recommended amounts vary from 400 grams to 800 grams per day. Cancer and cardiovascular diseases are the main causes of death worldwide. There is evidence that fruits and vegetables can reduce cardiovascular disease risk. However, the evidence that fruits and vegetables can have a role in the prevention of cancers has weakened in the last decades. The most recent and complete evaluation of the scientific data was published by the World Cancer Research Fund (WCRF) in 2018. The WCRF experts concluded that there is strong evidence of a preventive effect of fruits and vegetables against cancers of the mouth, pharynx and larynx but the evidence is weaker for most frequent cancers. For other cancers, the data suggests a protective effect of fruit and vegetable intake on breast cancer (oestrogen-receptor negative) and oesophageal cancers, and of citrus fruits in gastric cancer (cardia). The studies suggest that the risk of lung cancer tend to be lower in smokers with higher fruit and vegetable intake compared to smokers with lower intake, and that low intake of fruits and vegetables may increase the risk of colorectal cancer. Therefore, it is important to examine what could be the influence of fruits and vegetables intake on all-cause mortality in large population studies. A systematic literature review of 95 prospective studies published up to 2016 showed that people with the higher consumption of fruits and vegetables in the studies experienced 18% lower risk of dying than those with the lowest intakes. Similar results were observed for fruits and vegetables when analysed separately. Most of the observed benefit could be attributed to a decrease risk of death for stroke and coronary heart disease during follow-up, although whereas for cancers a 7% lower mortality was observed among higher compared to lower fruit and vegetable consumers. The review also showed a decrease of all-cause mortality with increasing levels of fruit and vegetable intake up to the highest observed intake of 800 grams per day, suggesting that intakes higher than the recommended values of 5 portions a day (approximately 400-500 grams) could contribute to reduce premature deaths.

Fruit and vegetable consumption and cardiovascular disease prevention

M. VERSCHUREN – RIVM – NL

What is the evidence regarding the role of fruits and vegetables in cardiovascular disease prevention? The evidence for dietary recommendations is based mainly on prospective cohort studies. More and more the focus in dietary research is shifting from single nutrients to foods and food groups and to the totality of our diets (dietary patterns). Also with respect to making recommendations to the public, it is easier to formulate an advice based on foods than it is to give advice on the amount of nutrients. People buy and eat foods, and they do not go to the supermarket to buy nutrients. The European Guidelines for Cardiovascular Disease Prevention recommend to eat 200 grams of fruit and 200 grams of vegetable per day.

Prospective cohort studies have shown a protective effect of consumption of fruits and vegetables on cardiovascular diseases. A recent meta-analysis showed that with each 200 g/day increase in fruit and vegetable intake, the risk for coronary heart disease was lowered by 8% (RR 0.92; 95% CI 0.90-0.94), the risk for stroke by 16% (RR 0.84; 95% CI 0.76-0.92) and the risk for cardiovascular disease by 8% (RR 0.0.92; 95% CI 0.90-0.95). When looking at fruits and vegetables separately, risk reductions were more or less similar. The protective effect of fruits and vegetables was observed up to intakes of 800 grams per day, which indicates that eating more than the current recommendations yields additional health benefits. With respect to fruit, dietary guidelines across the world differ with respect to the recommendation on pure fruit juice. The 2016 UK dietary guidelines state that one portion of the recommended 'five a day' can be replaced by pure fruit juice. Replacing fruit by pure fruit juice might be a practical solution for people to meet the recommendation for fruit consumption when for any reason more fruit consumption is difficult. In contrast, in the Dutch dietary guidelines of 2015 pure fruit juice is classified in the same category as 'sugar-containing-beverages' because of its comparable sugar-content. Therefore, the advice is to keep consumption of pure fruit juice to a minimum. Pure fruit juice contains less dietary fiber and vitamin C than whole fruits. However, pure fruit juice still contains a high concentration of polyphenols, which might reduce the risk of CVD (13-16). A number of mechanisms are known by which fruit and vegetables reduce the risk of cardiovascular diseases. These include anti-oxidative and anti-inflammatory effects, as well as effects on blood pressure. Fruit and vegetables are a rich source of potassium, vitamins and bioactive compounds. Research is ongoing to unravel pathways by which (different components of) fruits and vegetables influence disease risk.

For dietary advice to prevent cardiovascular disease in every day practice the recommendations are:

1. Eat at least 200 gram fruits per day and 200 gram vegetables;
2. A higher consumption will further reduce cardiovascular risk;
3. Eat a wide variety of fruits and vegetables;
4. Do not replace fruit by fruit juice .

Modulating the gut microbiota by fiber-rich vegetables: a promising therapeutic approach in obesity?

N. DELZENNE – Louvain Drug Research Institute – BE

The gut microbiota composition and functions can be altered in several pathological conditions including obesity and related metabolic alterations, malnutrition, or psychological disorders. In mice models of obesity, we have shown that dietary fibers with prebiotic properties (fructans, arabinoxylans...) lessen adiposity, steatosis, vascular dysfunction and inflammation, namely by modulating the gut endocrine function (differentiation of L cells, production of glucagon-like peptides). Most of the data relating the effect of prebiotics on obesity in humans have been obtained upon dietary supplementation with isolated inulin, either synthetized from sucrose, or extracted and purified from non-edible sources, such as chicory roots. In the context of a multidisciplinary project (Food4Gut project https://sites.uclouvain.be/FOOD4GUT/), we have shown that some vegetables locally cultivated in Wallonia (Belgium), contain substantial amount of inulin-type fructans. We have tested the impact of a food-based intervention with those vegetables in healthy volunteers on gastro-intestinal tolerance, behavior, and appetite sensation. The data presented will show how the changes in the dietary habit with such vegetables for two weeks can modulate the gut microbiota composition and activity. This nutritional approach has also been tested in a cohort of obese patients. The data obtained by us and others suggest that the individual response towards nutrition intervention in obesity is namely dependent on the gut microbiota composition. As practical issues, we can propose that 1) some vegetables are particularly rich in dietary fibers with prebiotic properties 2) such food products might be interesting in the management of microbial dysbiosis associated with metabolic disorders and to promote dietary fibers intake and 3) some progresses can be made in the elaboration of adequate intervention studies and in the development of new biomarkers related to microbiota-nutrition interactions. The last objective fits with the ones of the JPI FiberTAG project that will be presented during the meeting (https://www.fibertag.eu/).

F&V consumption and mental health

S. STRANGES & K. ANDERSON – Western University – CA

Positive mental health or mental wellbeing has recently emerged as an important predictor of overall health and longevity. Mental wellbeing is more than the absence of mental illness or psychiatric pathology. It implies 'feeling good' and 'functioning well' and includes aspects such as optimism, happiness, self-esteem, resilience, agency autonomy and good relationships with others. Arguments have been advanced that mental wellbeing and mental illness may represent two different but correlated continua. The case for the promotion of mental wellbeing has been advocated on both health and economic grounds, because mental illness is hugely costly to the individual and to society, and lack of mental wellbeing underpins many physical diseases, unhealthy lifestyles and social inequalities in health. As a consequence, mental wellbeing now assumes an important place in mental health and public health policy.

A large body of epidemiological and trial evidence supports the beneficial role of fruit and vegetable intake in general wellbeing and prevention of major chronic diseases across several populations and age groups, including positive effects in the prevention and management of common mental disorders, such as depression and anxiety.

Epidemiological evidence on the behavioural correlates/determinants of positive mental health, as opposed to mental illness, is now emerging. Recent findings from population-based studies suggest that higher intake of fruit and vegetable may be associated with increased odds of high mental wellbeing and reduced odds of low mental wellbeing. Specifically, in cross-sectional analyses from the Health Survey for England on a large nationally representative sample, fruit and vegetable consumption was the health-related behaviour most consistently associated with low and high mental wellbeing; these novel findings suggest that fruit and vegetable intake may play a potential role as a driver not just of physical but also of mental wellbeing in the general population. In addition, several antioxidants found in fruit and vegetables have been shown to be associated with optimism and positive mental wellbeing in middle aged adults. Studies have also reported a dose-response relationship of fruit and vegetable intake with mental health, up to seven portions a day. Fruit and vegetable consumption might also be acting as a proxy for a complex set of highly correlated dietary exposures, including fish and whole grains, which might contribute to the observed associations with mental wellbeing. As most of the epidemiological data is based on cross-sectional studies and given the lack of definitive evidence on potential mechanisms linking fruit and vegetable intake with mental wellbeing, further prospective studies and randomized clinical trials should be carried out to corroborate the causality of the epidemiological data.

In terms of recommendations for the application in daily practice:

1. People should strive to meet recommended dietary guidelines (at least 5 portions, 400g/day); fill their plate with fruits and veggies during every snack or meal;
2. Add more color and variety to diet by trying new types of produce, which will enhance nutritional diversity;
3. Improve home environment by placing fruits and veggies in prominent places;
4. Integrate fruit and vegetables intake within an overall healthy lifestyle.

S5 FOR A HEALTHY DIET WORLDWIDE: ROLE OF GENERAL PRACTITIONNERS (GPS) IN THE WIN-WIN SOLUTION

Co-chairs: A. **MARTIN** & D. **DURRER-SCHUTZ**

F&V consumption & chronic disease prevention: What are the possible "wins-wins"?

M. DEVAUX – OECD – FR

Obesity and its related non-communicable diseases (NCDs) such as cardio-vascular diseases, diabetes, and certain cancers, have a high cost for societies. Treatment cost for obesity-related diseases represents about 10% of total health expenditure in OECD countries, and productivity losses due to obesity-related diseases (e.g. worked hours, absenteeism, early retirement) approximate below than 1% of GDP (Gross Domestic Product).

Unhealthy food consumption, including inadequate consumption of fruit and vegetables (F&V), is a major risk factor for obesity and related NCDs. However, only 12% of European adults report having five portions of F&V daily as recommended by WHO guidelines.

OECD analyses show that low F&V consumption, poor diet and insufficient physical activity tend to cluster in specific population groups, especially among individuals with lower socioeconomic status or lower education level. People-centred public health actions as those targeting individuals at high risk of NCDs, children and younger adult, have the potential to be efficient interventions to promote a healthy lifestyle and decrease the likelihood of obesity.

To tackle NCDs and reduce poor nutrition, countries have adopted a range of policy options, including regulatory policies, communication policies, school-based and worksite interventions, interventions in the primary care setting, reformulation of products, and changes in portion sizes. In particular, a number of policies in place have shown to be effective and cost-effective to reduce the burden of NCDs.

- The most effective policy intervention – but also with the highest implementation cost - is the counselling by a primary care physician and a dietician to people at high risk. OECD analysis shows that the implementation of this intervention in Europe would produce a gain of one year of life in good health in one person every ten. The intervention would become cost-effective in about 10 years after its implementation.
- Mass media campaigns to increase F&V consumption through broadcasts on television and radio channels at national and local levels are common in OECD countries (such as the "5 a day" campaign in Chile, Estonia, Germany, Mexico, New Zealand, Spain, among the others). Mass media campaigns can increase F&V consumption by 18 grams per day, and show positive return on investment a few years after their implementation.
- Food labelling -in store or at restaurant- nudge people towards healthier food choices. For instance, easy-to-understand interpretative labels put in front of packaged food can significantly improve people's food choices and diet.

Such labels are in place (on a voluntary basis) in Australia and New Zealand (Health Star Rating), Denmark, Norway and Sweden (KeyHole), England (Traffic Light system), and France (Nutri-Score). Likewise, food labelling is effective and cost-effective in tackling NCDs.

- School-based interventions to promote F&V consumption through F&V provision and nutritional education to children, such as the EU School Fruit and Vegetables Scheme, effectively promotes healthier diets and, by having a higher impact on children from families with a low socioeconomic status, contribute to reducing social inequalities among children.

Insufficient consumption of F&V is only one aspect of the obesity and NCDs problem, with high consumption of fat, salt, and sugar, lack of physical activity, and high rates of sedentarity as the other main drivers. The problem needs to be addressed globally because of its multiple dimensions. Key sectors of the economy –beyond the health sector-, such as agriculture, environment, finance, transport, and sport, as well as all stakeholders, have a role to play in obesity and NCDs prevention.

Promoting a healthy diet through counselling in primary care

D. DURRER-SCHUTZ – EUROPREV – CH

A plethora of information (sometimes contradictory) is available, coming from different heterogeneous sources, on the type of diets recommended to remain in good health. This is somehow confusing for the patient. The EUROPREV group (network of EUROpean of GPs involved in global PREVention) has performed a study in 200 centers from 22 European countries to evaluate several issue: 1/ The patients' own judgment about their eating pattern and their physical activity; 2/ The attitude of their GP's regarding nutritional prevention; 3/ What do the patients need to learn about healthy nutrition and how and where to get the information.

The results of the survey were disparate. Considering the global analysis and taking the extreme results, it was found that in France for example, most patients considered to eat a healthy diet, whereas in Lithuania, it was the reverse. Patients confirmed that they want to receive pertinent information directly from their GP's, through leaflets or individual counseling. Recently, we have produced a practical, well-illustrated leporello on obesity issue (which includes nutrition & physical activity), tailored for GPs and entitled: *"Practical visual guide for Obesity Management in Primary Care"*, freely available. Practical recommendations are important for GPs' and patients. According to EUROPREV's view, these can be summarized into 5 points:

1. To promote the Mediterranean diet in primary prevention: a classical meta-analysis has shown a significant reduction averaging 9% in total and cardiovascular mortality , a reduction in cancer mortality of 6% and a large decrease in the incidence of Parkinson and Alzheimer diseases of 13%;

2. To decrease the total sugar intake (saccharose, glucose and fructose) in particular in liquid form (sodas) ; sugar drinks are considered as "empty calories", are at risks for weight (fat) gain and hepatic net *de novo* lipogenesis. Ultimately this leads to metabolic disorders, in particular when sugars are consumed chronically, in excess of total carbohydrate oxidation;

3. To decrease the consumption of industrialized products: most of these products contain hidden (saturated) fat and sugar and excess added salt. They also can be a source of hydrogenated or trans-fatty acids and are often "polluted" by exogenous food additives;

4. To eat in full consciousness, following the physiological sensation of hunger and satiety i.e. to eat slowly by chewing (masticating) a long time in order to be aware of the different flavors released from the food as well as to ingest food with pleasure and without stress;

5. To stimulate daily life physical activity (not necessarily by being involved in structured and intense sporting activities). As a matter of fact the key message is that we should not dissociate the nutritional aspect from the physical activity one. The reason is that the physiological control of food intake to maintain body weight is much more efficient when the individuals are physically active rather than sedentary;

Finally, let's recall that a WHO Experts Committee (2010) has recommended that both nutrition and physical activity could be "prescribed" by GPs in primary care medicine, reinforcing their important role which goes much beyond the prescription of drugs.

Importance of F&V in the prescriptions of general practitioners – Feedback from the pre-Egea symposium.

A. MARTIN – Claude Bernard Lyon 1 University – FR

In opinion surveys, general practitioners receive a high degree of trust in food and nutrition counselling. But, what is the place of these topics (and especially concerning the role of F&V on health) in their daily medical consultation? What is the influence of their own dietary habits on this counselling? How future practitioners integrate these recommendations into their daily life during their medical studies? What are the expectations of their patients in this area, especially when they want to follow some special regimen? It is this type of questions which have been addressed during the pre-Egea symposium through the presentation of qualitative or quantitative researches carried out by medical residents of the Lyon 1 Medical School during their internship in GP offices, in the context of their initiation to research and the preparation of their thesis of medicine. A better knowledge of the practical realities and of the barriers to the diffusion and use of recommendations of the Nutrition Health Policy Program (PNNS) will help in the future to design adapted tools and communication for assisting GP in nutrition counselling.

DAY 2

D2

Parallel session

S6 HOW TO MAKE CHILDHOOD LIFESTYLE HEALTHIER?

Co-chairs: M. **NICOLINO** & D. **WEGHUBER**

Parallel session

S7 HOW TO PREVENT UNDESIRABLE WEIGHT GAIN IN ADULTS?

Co-chairs: P. **OUVRARD** & L. **LETRILLIART**

Children & adolescents obesity: evolution of prevalence in Europe

A. **RITO** – INSA - PT

The WHO Childhood Obesity Surveillance Initiative (COSI/WHO Europe) is an ongoing, systematic process of collection, analysis, interpretation and dissemination of descriptive information for monitoring childhood nutritional status and measuring trends in overweight and obesity in primary school children (6-10). A surveillance initiative which produces comparable data between European countries and allows the follow up of childhood obesity every 3 years. The first data collection took place in the school year 2007/2008 where 13 countries participated. The second round of the study (2009/2010) comprised 17 countries and in the third round 2 more countries joined the study making a total of 19 participating countries. The fourth round had 35 countries from the WHO European Region participating, out of the 40 already enrolled in the study. After almost a decade of its launch, COSI/WHO Europe is now the WHO largest European study with about 300 000 participating children.

COSI involves taking standardized weight and height measurement and the collection of social, family, school environment, diet and physical activity variables through a methodology which follows the common protocol and approach, developed by WHO Europe.

During the last 10 years, COSI data has suggested a presence of an increasing north–south gradient, with the highest prevalence of overweight and obesity found in Southern European countries.

In the last round (4th- 2016) the highest prevalence of overweight in boys was shown in Cyprus (43%), Greece, Italy and Spain (42%) whereas the lowest prevalence of overweight boys was found in Tajikistan (9%); Turkmenistan (11%); Kazakhstan (17%) and Denmark (18%).

Nevertheless, since 2008, a significant decrease in the prevalence of both overweight and obesity was recorded in Greece, Italy, Portugal and Slovenia. Portugal alone showed a downward trend from 37,9% in 2008 to 30,7% in 2016 in overweight children. A decreasing tendency was also observed in Ireland and Spain. Belgium, Czech and Norway have stable prevalences; whereas the picture is less definite in Bulgaria, Latvia and Lithuania. An increasing tendency in obesity was observed among Latvian girls and Bulgarian boys. A similar pattern has been recorded among Lithuanian boys for both overweight and obesity.

Data were also collected on eating habits and physical activity patterns, since these are closely linked to the energy imbalance that results in children becoming overweight and obese. There was considerable variation between countries in relation to frequency of consumption of healthier food items and of less healthy food items, with some countries showing low prevalence of overweight with the poorest healthy food habits (eg. Kazakhstan showing that only 49% of the children had breakfast every day)

There was also considerable variation between countries in indicators of physical activity (going to school by foot or by bike, attending a sports or dance club, and time spent playing outside), media consumption and sleep duration. Walking or cycling to school seemed to be associated with parents' perceptions of the safety of the route and the distance to school.

Little bests in town: how environment and urbanization can drive children's health

D. VAN KANN – Fontys University - NL

Unhealthy lifestyle behaviors and subsequent health risks are still increasing and have reached epidemic proportions. It is expected that approximately 60-70 percent of the population will live in cities. These populous areas tend to increase multiple risk factors for unhealthy lifestyles, such as decreased exposure to green space and increased access to unhealthy food. Contrary, these populous areas provide a range of opportunities which are not present in rural and remote areas, such as increased access to walk and cycle facilities. Further, impact is the result of effectiveness of an intervention multiplied by its reach. However, in many (school-based) health promotion interventions reach is problematic. Recognizing and acting on the opportunities provided by the reach urbanization causes, can transform the challenges in unexpected advantages.

Lifestyle patterns are formed in childhood. As children are 'packed' within broader systems, the school, home, and neighborhood environment, focusing on multiple actors and settings simultaneously is needed. In the home environment, parental practices and modeling behavior are important determinants of fruit and vegetable (F&V) intake. A recent meta-analysis, however, showed only very small increases in F&V intake in successful interventions. School policies to encourage healthy dietary behaviors are also identified as influencing factor, in which direct provision was indicated as strongest associate of higher F&V intake, underlined by a recent meta-analysis that indicated availability as the strongest predictor of F&V intake. Evidence on the effectiveness of exposure to environmental characteristics in the neighborhood on F&V is limited, though a higher density of healthy food outlets seems to affect healthy nutrition positively. Contrary, fast food exposure in the environment is positively associated with BMI. Integrating evidence on environmental characteristics and school

policies would suggest that creating F&V-supportive urbanized environments have the potential to affect children's F&V intake. Environmental changes further enable people to break (un)healthy habits, which have been identified as inhibitor of desired, healthy changes in adolescents.

Considering the broader system in which a child operates and allow interactions between different settings may be key in successfully design health-supportive environments. Successfully designing health-supportive environments is further enhanced by a combined top-down, bottom-up approach. In such a co-design approach, both empirical evidence on environmental influences and local needs by end-users and other stakeholders can fully interact with each other leading to a better fit in the local environment. Integration of needs of end-users further implies customizing interventions (e.g. low SES families), rather than implementing one-size-fits-all interventions. In this strategy, useful generic principles are used which are translated to the needs of the target population, leading to unique urban environments in which it becomes more easy for children and their families to adopt a healthy lifestyle, such as sufficient F&V intake and sufficient physical activity.

Recommendations:

1. Urbanization can be considered as a major chance for creating sufficient impact by F&V and other lifestyle interventions;
2. The creation of health-supportive (urban) environments contain changes in multiple types of environment and should be tailored to the needs of vulnerable populations;
3. Environments in which healthy alternatives take less effort than current unhealthy patterns are most likely to be successful in changing lifestyle behaviors;
4. Supportive environments should be co-designed by end-users to become effective;
5. Focus on the broader system in which children operate; Children are exposed to multiple settings throughout the day. Integrative programs are needed, such as providing healthy alternatives to children in the environment in combination with a supportive (urban) social environment, e.g. role modeling by parents and GP's.

Adolescence "the revolution age": How to make a healthy revolution?

A. **VANIA** – Sapienza University of Rome - IT

Adolescence is a well-known pivot of human development. In contrast with the literal meaning, this "pivot" is not a single point or moment but a quite long period of time, going from the first signs of pubertal changes to the end of height growth and cognitive development. This is why adolescence has been divided into three phases: pre-adolescence, adolescence (or intermediate a.), and late adolescence; each of them has different characteristics. During all its duration many aspects of a single person's life are going to change, some of them dramatically. The youth is not the only one facing and coping with them: parents and family, peers, teachers and doctors share the same task. All of them must cooperate, in accordance with their role/age/responsibility, to give rise to the adult which, in embryo, the adolescent contains, and to transform a possibly devastating revolution into a healthy one.

My personal field of interest is, since ever, human nutrition. Supposedly, adolescence does not affect this aspect: a child eats, a teen eats, an adult eats... always the same process, and with the same purpose, isn't it? Actually not. Nutrition is not the same as eating. It includes at least as many relational aspects as biochemical and physiologic ones.

Relational aspects, during adolescence, may outdistance all the others, thus becoming the most important ones, those which may drive the feeding behaviour with such a power as never seen before, and possibly not even after. Let's make some examples, although with a generalisation that does not apply to every single adolescent: as an adolescent, (1) what my family eats easily becomes one more point of friction with my parents, and at the same time one more point to defy. (2) What my peers eat is likely to become "my" model of eating, and (3) what they think of "me" eating something, in turn, can become an unbearable burden. Similarly, (4) what teachers and doctors say about food, proper eating behaviour, and so on, is readily as stupid as all the other topics "adults" are used to speak about, while I start (5) to realise that my eating behaviours can modify my physical aspect, and (6) imagine that I can control any aspect of it, almost in a magical way.

While it is difficult to tell what can make such a revolution a healthy one, it is easier to identify aspects most likely unsuccessful. Adults – including many physicians and health personnel – tend to transfer "their" way of seeing life to the adolescent instead of trying to understand the latter's way of thinking. Picturing frightening scenarios about future health, actively stimulating the adolescent to follow sage adults' example, pointing to a more "adequate" peer (usually not the most popular one), are all examples of unsuccessful approaches. Invert them can be easy to dictate, not as much their (inverted) application.

In my presentation I will try to clarify how using the appropriate communicative register, staying at the same "eyelevel" with the youth, being an influencer, on the contrary, can be more helpful. The final goal of any person dealing with adolescents should be to put themselves at a level where they can grasp what we try to transmit.

Diet in pregnancy in relation to subsequent maternal and neonatal health

F. MCAULIFFE – University College Dublin - IE

Pregnancy is a unique time in the lifecourse where the short and longterm health of mother and baby can be influenced. The increased physiological demands of pregnancy can act as a biological stress test for life to predict a woman's future health. Pregnancy is considered a "diabetogenic state" of insulin resistance, exposure to which may result in long-term alterations of normal glucose metabolism. Gestational diabetes increases the risk of type 2 diabetes in later life, and fasting glucose below levels used to diagnose gestational diabetes are associated with increased adverse maternal outcomes. These effects are more marked in the setting of increased gestational weight gain.

Whether the immediate and lasting effects of pregnancy on a woman's metabolic health and body composition can be influenced through dietary or environmental manipulation is pertinent for all women, but requires further study. Multiple studies have found that maternal dietary intakes are suboptimal both in terms of macro and micronutrients.

In a longitudinal study with longterm follow up of mother and baby following a dietary intervention in pregnancy (ROLO study and ROLO kids) it was noted that mothers' HbA1c at 5 years' post-intervention was associated with early-pregnancy fasting glucose.

Postnatal maternal weight retention was associated gestational weight gain and dietary glycaemic index at 5 years postpartum.

Additionally the *in-utero* environment influences fetal development and may have a lasting impact on offspring and their future disease risk. Nutrition during pregnancy and the maternal environment have been associated with altered body composition at birth and health later in life. Inadequate energy or protein intakes in pregnancy have also been linked with increased risk of non-communicable diseases such as type-two diabetes and obesity.

The ROLO study noted that maternal dietary, glycaemic index, saturated fat intake and lipids associated with childhood adiposity at 2 years of age and that maternal protein intake in pregnancy was related to child weight and length up to 5 years of age.

Recommendations for clinical practice:

1. Improving maternal nutrition in pregnancy requires input from all healthcare professionals involved in maternity care;
2. Improvements in maternal dietary glycaemic index may reduce excessive gestational weight gain and improve maternal glucose homeostasis;
3. A focus on maternal saturated fat intake may be an additional approach to reduce excessive fetal and infant growth and childhood obesity.

Parallel session

S6 HOW TO MAKE CHILDHOOD LIFESTYLE HEALTHIER?

Co-chairs: M. **NICOLINO** & D. **WEGHUBER**

Parallel session

S7 HOW TO PREVENT UNDESIRABLE WEIGHT GAIN IN ADULTS?

Co-chairs: P. OUVRARD & L. LETRILLIART

Combining physical activity and healthy diet

S. CZERNICHOW – Georges Pompidou European Hospital - FR

According to the World Health Organization, excess weight affects 1.9 billion adults worldwide, of whom 650 million are obese. The obesity classification is based on the body mass index (kg / m^2), which classifies individuals at population level. While this criterion does not make it possible to classify individuals at individual level, it does serve to compare populations with each other and to define risk levels.

Several population studies have shown the role played by the urban environment on the prevalence rate of obesity. For example, a Canadian study has found that in neighbourhoods with more areas where walking was possible, the obesity rate increased at a lower rate over the years. This highlights that accessibility to physical activity is important in terms of ability to change behaviours. Similarly, an intervention study showed that neighbourhood poverty levels influenced the prevalence of obesity in the neighbourhood. Finally, the implementation of several public health programmes, for example the National Health Nutrition Programme (PNNS) in France, are important elements in accommodating lasting behavioural changes at population level.

At individual level, there are now many intervention studies highlighting the role of dietetics and physical activity in weight control. Beyond simply reducing calories in a moderate, controlled manner over several months, controlling portion sizes and reducing the energy density of food has been shown to be important in weight control.

Finally, the latest American recommendations recall the essential role of frequent and regular consultation and follow-up, at least every 15 days at the beginning of care, in order to provide effective dietary advice and monitor weight changes over several months. This highlights the importance of nutritional treatment compliance but also the difficulty of successfully achieving it over the long term. New technologies may help to provide this type of monitoring for both patients and physicians.

How state of the art technology can help people maintain weight loss?

S. STUBBS & C. DUARTE – Leeds University - UK

Predictors of weight loss maintenance (WLM) can be either physiological or psychological characteristics of subjects, processes of behaviour change or intervention components with which participants engage during attempted weight loss (WL) and WLM. Almost half the adult population make a weight loss attempt (WLA) each year; 80% of such attempts are subject to weight regain, largely due to eating rather than physical activity behaviours.

Predictors and correlates of outcomes vary between individuals and can change between phases of WL and attempted WLM. In many models of WL and WLM: (i) predictors explain relatively little (~ 20-30% of the variance in longer-term weight outcomes; (ii) many predictors are the sum of several small constituent variables, each accounting for a small proportion of the variance; (iii) inter-individual variability in predictors and correlates of outcomes is high (iv) most of the variance remains unexplained.

Initial weight loss is achievable in the short term but it leads to changes in physiological and emotional systems, which can increase the probability of weight relapse. Ultimately we need a better understanding of the interplay between physiology and behaviour to develop adaptive strategies of long-term weight loss. It is currently unclear how rate, extent or specific WL approaches predict subsequent WLM. Behaviour change techniques associated with self-regulation of activity and eating behaviour (e.g. goal setting, action plans, self-monitoring, relapse prevention plans) and aspects of motivation are important for WLM. Evidence that stress management and emotion regulation may be important for relapse prevention is strongly suggestive but less concrete.

Greater standardisation of predictive constructs and measures of energy balance behaviours, in more clearly defined study populations, tracked longitudinally would improve prediction of who is likely to maintain weight loss or relapse. Modelling within and between-subject patterns of variability in behaviour, and identifying effective mediators of both sustained behaviour change and relapse are central to understanding and improving longer-term WLM. Such studies require multidisciplinary collaborations that link mechanistic research to innovative interventions and knowledge exchange to have an impact on the weight and health of the population.

Recommendations and applications:

1. There are now standardised behavioural change taxonomies to characterise and quantify the active components of behavioural interventions, but there is a need to develop an equivalent framework to profile appetitive, psychological and behavioural energy balance characteristics of participants entering weight management programmes;
2. Eating behavior profiles will help us better match WL intervention components to specific energy balance behaviours of individuals;
3. Tracking technologies should be used routinely used to accurately track energy balance behaviours throughout WM interventions;
4. By combining state of the art digital tracking technologies and data aggregation capabilities it will be possible to develop a Behavioral Energy Balance Framework that will greatly enhance personalised self-monitoring of energy balance behaviours during WMAs;
5. Analytical and predictive frameworks specifying how energy balance behaviours change over time will lead to the next generation of WLM interventions using novel screening, tracking and personalised-navigation tools.

How should nutritional advice be administered during a routine consultation?

J.M. LECERF – Pasteur Institute of Lille - FR

Patients do not consult a practitioner on the grounds of prevention. Apart from vaccination, prevention is not considered a medical act by the practitioner. Yet there are many opportunities to approach prevention: either the doctor can prompt the patient or he can take advantage of health problems raised by the patient. Nutrition is an ideal subject on which to engage in dialogue and give advice.

1. The patient comes about an acute pathology, an infection for example. He can be reminded of the importance of diet and lifestyle for the immune system, the need to stay well hydrated and consume fruits and vegetables.
2. The patient comes about a chronic pathology (e.g. coronary heart disease, high blood pressure, cholesterol, diabetes). This opportunity can be used to remind him that drugs do not replace nutrition.
3. The patient comes for a prescription renewal, a vaccine or an "administrative" consultation (certificate). It is also an opportunity to check his weight or blood pressure and tell him that people are on hand to give dietary advice.
4. It is also possible to approach prevention by advising other people in the family, especially regarding the diet of a child or elderly person.
5. Sometimes the patient spontaneously asks a question about diet or weight. You must always answer him. Potentially offer a longer consultation on another occasion.

Advice should not be given in excess. It must not be judgmental. It must not be too categorical. It must take into account the patient's habits and therefore may not be standard. It must be cautious, "positive" and caring. You must be able to repeat it. It must be precise and accurate. If the doctor does not know the answer to a question, he must make enquiries. The patient's readiness to listen must be taken into account.

All in all, some recommendations:

1. Every opportunity to address a prevention issue should be taken;
2. The doctor is doing his job when he spends time on prevention. It is a medical act;
3. He must be personally convinced of the importance of food and healthy living;
4. It is important to explain to the patient how and why this recommendation affects his health.

Fostering collaboration between General Practitioners and Dietitians to improve nutritional patient care

T. LIBERT – EFAD - FR & E. NEWMANN - EFAD - FR

Improving the nutritional status of the population is a major challenge for Public Health policies in Europe and worldwide. Dietitians are experts in providing nutritional and dietetic care and are employed in different health care settings. Nutritional care in the community and primary care will become more important. This is caused by ageing of the population and associated prevalence of diseases in older adults. In addition, there is a growth of outpatient surgery and decreased length of stay in hospitals, which accentuates the need for patient nutritional care outside the hospital. To provide optimal nutritional care outside the hospital, dietitians and general practitioners (GPs) need to collaborate. In the present study, the current situation in different European countries regarding collaboration between GPs and dietitians was investigated.

A survey was conducted among the 27 European national associations of dietitians, all EFAD members, to clarify the current situation regarding the cooperation between GPs and dietitians.

All the associations that responded (N=18) find that general practitioners do not make optimal use of the expertise of dietitians in their country. There is a lack of awareness of the profession of dietitian, as well as its added value for the nutritional monitoring of patients. On the other hand, dietary counseling is not reimbursed in most of the countries surveyed, which is also one of the reasons why GPs do not refer to dietitians. According to dietitians, collaboration between GPs and dietitians should be improved in order to provide optimal nutritional care. How this collaboration could be improved needs to be studied.

Parallel session

S8 CHILDHOOD OBESITY CARE

Co-chairs: M. **NICOLINO** & D. **WEGHUBER**

Parallel session

S9 PREVENTING OBESITY RELATED DISEASES & BRAIN DECLINE

Co-chairs: M. **MCCARTHY** & L. **LETRILLIART**

Psychological profile to become and to stay obese ?

A. TANGHE – Zeepreventorium De Haan - BE

The presentation will successively deal with the psychological models to explain for the onset or maintenance of child obesity.

Five psychological perspectives on childhood obesity are selected. The boundary model of Herman & Polivy (1980) was brought forward as an explanation model for understanding the overeating behaviour in obese people. Others describe obese children as overresponsive to external cues and this overresponsiveness is seen as a personality trait. Learning theories put forward how (dysfunctional) learning mechanisms can explain also why obese people eat in front of food cues, without feeling hungry. Finally, obesity can be seen as an expression of a family pathology or an emotional problem.

Psychological explanation models are still subject of discussion. Personality variables, eating behaviour, restraint attitudes, psychopathlogy and emotional factors, learning mechanisms as well as the role of the family are to be considered in an assessment process. It may help to better empathise with both parent and child. Furthermore, it can help to tailor the treatment program to the individual needs of an obese child. Further research is needed to find out whether already during the intake psychological indicators can be found that are predictors of negative therapy outcome.

Dietary approach to treat obese children

D. WEGHUBER – Paracelsus Medical School - AT

Dietary patterns learnt early in life track into later childhood and adulthood and form the basis for future eating patterns. Meta-analyses have clearly demonstrated that multidisciplinary interventions for the treatment of children who are overweight or obese are more effective the younger the child is. The main objective of treatment is a permanent change in the child´s eating habits and lifestyle, rather than attaining rapid weight loss through low-calorie diets. It is pivotal to involve the whole family and set realistic goals.

Starting point of the educational process is the assessment of the child´s and the family´s dietary habits by means of the assessment of meal composition, portions, frequency of food intake, food preferences or aversions, use of condiments, cooking methods and food presentation as well as drinking habits.

Dietary advice includes to eat five meals a day (three meals and no more than two snacks), to have adequate breakfast, to avoid eating between meals, to avoid high-energy and low nutrient density foods (e.g. sweetened or energizing drinks, fruit juices, fast food, high energy snack) to increase the intake of fruit, vegetables and fiber rich cereals and to limit portions.

Currently, there are no randomized controlled trials examining the effects of different diets on child´s or weight and body composition, regardless of potential confounders such as treatment intensity, behavioural or physical activity strategies. A hypocaloric diet can be considered as initial step within a long-term strategy, but needs to fulfil recommended minimal energy and macro- and micronutrient intake levels based on sex, age, and ideal weight for stature, and warrants close medical surveillance in specialized paediatric centers. Replacement meals are not recommended due to lack of evidence of efficacy and safety. No significant lasting effect has been demonstrated for diets with specific macronutrient composition. This includes diets with low glycemic index and load. Traffic light and modified traffic light diets are used to achieve reduced caloric intake through categories of foods grouped by nutrient density and might be effective even in the long-term.

Given the fact that obesity is a chronic disease and the limited effect of treatment in the long-term, the development and validation of chronic care models is mandatory. A system-wide approach for screening and early identification of children who are overweight or obese with clear referral pathways for further assessment and treatment is the foundation for efficient multi-disciplinary concepts of weight management service delivery.

Recommendations for the application in daily practice:

1. It is pivotal to involve the whole family and set realistic goals. Starting point of the educational process is the assessment of the child´s and the family´s dietary habits.
2. Dietary advice includes to eat five meals a day (three meals and no more than two snacks), to have adequate breakfast, to avoid eating between meals, to avoid high-energy and low nutrient density foods (e.g. sweetened or energizing drinks, fruit juices, fast food, high energy snack), to increase the intake of fruit, vegetables and fiber rich cereals and to limit portions;
3. No significant lasting effect has been demonstrated for diets with specific macronutrient composition. This includes diets with low glycemic index and load;
4. Traffic light and modified traffic light diets are used to achieve reduced caloric intake through categories of foods grouped by nutrient density and might be effective even in the long-term.

From physical activity to physical fitness

D. THIVEL – Clermont Auvergne University - FR

Exercise interventions (combined with dietary restrictions) are first line strategies to treat pediatric obesity and the promotion of active lifestyle from the youngest age is essential to prevent its development. While encouraging adults to exercise and engage into physical activities remains difficult, this is particularly true when it comes to children and adolescents, especially overweight and obese ones. Physical abilities and capacities evolve over childhood and each step is crucial to properly develop adults' physical fitness that will be determinant for physical activity level.

While the lack of physical activity is most of the time incriminated for its role in the development of overweight and obesity in youth, practitioners have to consider the physical impairments and limitations induced by obesity that limit the children and adolescents' engagement into activities.

Practically, practitioners have to structure their clinical assessment in order to:

1. Identify simple and clear indicators of the patient's physical activity level (active transportation, physical education, etc.);
2. Determine the nature and time devoted to sedentary behaviors.
3. Determine whether there are barriers to movement (does the patient report difficulties in performing activities of daily living such as climbing stairs, tying shoe lace, showering, jumping, skipping, etc.);
4. Identify whether additional assessment and treatment will be required (identify indication that the child has physical or psychosocial barriers that might limit participation in physical play?) and refer to an adapted physical activity specialist if needed.

After a brief presentation of the main physical activity guidelines and first necessary steps that must be considered by practitioners, this presentation will try to identify the main physical limitations induced by obesity in youth.

Parallel session

S8 CHILDHOOD OBESITY CARE

Co-chairs: M. **NICOLINO** & D. **WEGHUBER**

Parallel session

S9 PREVENTING OBESITY RELATED DISEASES & BRAIN DECLINE

Co-chairs: M. **MCCARTHY** & L. **LETRILLIART**

Improvement F&V intake in weight management in adults with morbid obesity

G. DE PERGOLA – University of Bari – IT

Multiple lifestyle strategies may reduce the incidence of obesity, and one of them includes an increase in fruit and vegetable (F&V) consumption, even though the findings regarding the benefits of F&V on weight control are still inconsistent. Some studies reported that higher F&V consumption reduced weight and BMI, whereas others did not find such relationship. A meta-analysis of human randomized controlled trials concluded that there was no empirical evidence that increasing F&V would have a discernable effect on body weight. Another systematic review suggested that the inverse relationship between F&V consumption and adiposity among overweight adults was weak. However, a recent meta-analysis showed that high intake of fruit was inversely associated with weight change; although no significant changes were observed for vegetable or combined F&V consumption. The most recent epidemiological study on this topic (China Health and Nutrition Survey) examined prospectively the relationship between change in F&V consumption, weight, and change in BMI in a total of 4357 adults. The authors showed that, independently of potential confounding factors (age, BMI, education level, total energy intake, physical activity, alcohol and smoking), an increase in F&V consumption by 100 g was associated to significant weight loss (211 g) and decrease in BMI (0.94 kg/m2) in men ($P < 0.001$), whereas the changes did not reach the significance in women. Potential reasons for sex difference might be explained by less vegetable consumption in women compared with men. Moreover, different socio-economic factors and hormone level between genders could also influence weight gain. There are several hypothetical mechanisms by which F&V may be protective against obesity. One potential explanation for weight reduction by F&V consumption may be a decrease in the total energy intake. Furthermore, several components of F&V, such as fiber content, glycemic load (GL) and polyphenols, might also be responsible for their anti-obesity effects. Fibers in F&V increase satiety, reduce hunger feeling and energy intake, and prevent weight gain. In addition, lower-GL of F&V produces fewer and smaller postprandial glucose spikes that may decrease subsequent insulin levels and hunger. Also, diets with low-GL or low-glycemic index (GI) may increase resting energy expenditure, promoting weight maintenance. Moreover, polyphenols may influence insulin sensitivity, gut microbiome, and adipose tissue metabolism.

On the basis of the above data and previous information, I would suggest the following recommendations to apply in daily practice:

1. To eat not less than 5 daily portions of F&V, 3 of vegetables and 2 of fruits;

2. To eat F&V of different color;

3. To keep in mind that juice is not fruit: fruit juice is a sweet drink;

4. To eat whole grains and legumes.

Improved lifestyle & decreased diabetes risk over 13 years: the Finnish experience

M. UUSITUPA – University of Eastern Finland - FI

The prevalence of type 2 diabetes (T2D) is increasing worldwide. The main risk factors for T2D are overweight and obesity and sedentary lifestyle. Furthermore, the quality of diet may play a role in the development of T2D. Interest for prevention of T2D aroused already in 1980s, and the first controlled prevention trial, the Chinese Da Qing IGT and diabetes study with three intervention clinics arms and a control arm was published in 1997. In that study both diet and exercise and diet + exercise combined decreased the incidence of T2D among individuals with impaired glucose tolerance (IGT). The Finnish Diabetes Prevention Study was started in 1993 in five centers in Finland. Altogether 522 middle-aged obese individuals with IGT were randomized into intervention or control groups. The main goals of the intervention were weight loss, improving the quality of diet (more dietary fiber and less total and saturated fats) and increasing exercise. Dietary counselling was intensive with seven sessions during the first year of the intervention. Control group received general instructions about healthy diet and lifestyle. The original study lasted 3.2 years, but both groups were followed for over 10 years. Lifestyle intervention resulted in 58 % reduction in the incidence of T2D and the group difference remained significant over the whole follow-up period. Adherence to lifestyle changes was related to long-term success. The incidence of T2D was lowest in the group who had a high fiber but low-fat diet that was based on the frequent use of fruit, vegetables, local berries and whole grain products, e.g. from oats and rye, and low-fat/fat-free milk products. Intervention was effective independent of family history of diabetes or genetic risk score. However, no difference were found in major cardiovascular events between the intervention and control groups, but lifestyle intervention resulted in significant reduction in early diabetic retinopathy in a subgroup analysis of 214 study participants. Furthermore, lifestyle intervention had beneficial effects on low grade inflammation, blood pressure and serum triglycerides. Today, some 10 well-controlled trials have confirmed the benefits of lifestyle changes in the prevention of T2D in individuals at high risk for T2D, including the American DPP study published in 2002. To conclude: T2D is preventable by changing lifestyle with permanent weight loss, healthy dietary choices and increasing physical activity, and lifestyle changes have sustained beneficial effects for many years after the active intervention.

Current nutrition practices among cardiologists

P. ASSYAG – French Federation of Cardiology - FR

In France, cardiologists practice their profession in a hospital or practice to provide care and treat patients with cardiovascular disease, according to the latest recommendations of learned societies. As a result, cardiologists often find that they need to provide advice to promote a balanced diet. In this context, we at the French Federation of Cardiology have decided to conduct a survey into current nutrition practices among cardiologists, in partnership with APRIFEL. This survey involved 200 hospital and private practice cardiologists and may be summarised as follows: This is a low priority area for cardiologists. Indeed, in terms of prevention, cardiologists regularly support their patients with giving up smoking, suggest regular physical activity and, less frequently, a balanced diet (5 pieces of fruit and vegetables a day, oily fish, lean meats, etc.) with moderate consumption of salt and alcohol.

Nutrition remains a secondary topic with only 4.3 patients out of 10 on average who spontaneously ask for advice on diet in order to prevent cardiovascular diseases.

The second lesson from this survey is that cardiologists say they give nutritional advice on average to 6.5 out of 10 patients, a minority use educational materials and instead use laboratory brochures. Nearly 8 out of 10 cardiologists recommend a nutrition specialist to help their patients lose weight.

Thirdly, in addition to the lack of time mentioned by half of cardiologists, they suffer from a lack of training to improve their support for patients. Nearly 8 out of 10 cardiologists consider the topic difficult to explain to their patients. Cardiologists are aware of the complexity of this area and are open to the idea of better support; this would come from materials but also complementary training as expressed by nearly 8 out of 10 cardiologists.

Which actions for improvement are recommendable?

First and foremost, this area is part of the national health strategy put in place by the French Ministry of Health, which combines a balanced diet with regular physical activity.

Thus, the French Federation of Cardiology will continue to produce and disseminate educational materials on nutrition written by health professionals in this area of cardiovascular disease prevention.

Diet for the mind: what to eat to prevent Alzheimer's and cognitive decline?

T. NGANDU – National Institute for Health and Welfare (THL) - FI

With the aging of the population, number of persons living with dementia, Alzheimer's disease and cognitive impairment is expected to increase rapidly. Prevention plays a key role in reducing or curbing this epidemic worldwide. There is increasing evidence from epidemiological studies linking various modifiable risk factors throughout the life course with the development of dementia. Of particular interest are lifestyle factors like diet and physical exercise.

Several single nutrients and dietary patterns (eg. Mediterranean diet, MIND-diet) have been shown to be associated with risk of dementia and cognitive impairment. Randomised controlled trials (RCTs) targeting these factors are much needed to prove the associations, yet these studies pose methodological challenges. Given the multifactorial etiology of dementia and late-onset AD, multi-domain interventions targeting several risk factors and mechanisms simultaneously are most likely to be effective.

This presentation gives an overview of recent nutritional trials and multimodal interventions and discusses future directions in the field.

The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER) is a pioneering trial providing the first evidence from large RCT that a multi-domain lifestyle intervention may prevent cognitive impairment. The results of this study will be presented with particular focus on the nutritional component and participant compliance to the recommended dietary changes. New results concerning secondary outcomes and sub-group analyses will also be presented.

Building upon the experience from the FINGER and the LipiDiDiet trial, the MIND-AD project (Multimodal preventive trials for Alzheimer's Disease: towards multinational strategies) has been initiated. In this ongoing trial, a multidomain lifestyle intervention is tested along with a nutraceutical product for persons with prodromal AD.

FINGER represents a pragmatic model, which is now being tested in diverse populations and settings (Europe, USA, China, Singapore, Australia). To promote synergy across these trials and optimize efforts towards dementia prevention, we recently launched the World-Wide FINGERS Initiative. WW-FINGERS is an interdisciplinary network, to share experiences and data, and plan joint initiatives focusing on dementia prevention.

There is increasing evidence that it is possible to prevent or postpone late-life cognitive impairment and dementia with multi-domain lifestyle interventions. Tailored multimodal interventions combing non-pharmacological, nutritional and pharmacological approaches may be the most effective strategy to prevent cognitive impairment and dementia. WW-FINGERS will facilitate synergistic use of data from several countries, creating a unique opportunity for rapid implementation of knowledge and definition of effective and feasible prevention programs for diverse populations.

Recommendations for daily practice:

1. Healthy diet including plenty of fruits and vegetables, fish, unsaturated fats and whole grain products is beneficial also for the prevention of cognitive decline;
2. Dementia prevention is a lifelong journey, but it is possible to achieve benefits from lifestyle changes also in old age;
3. Targeting several risk factors at the same time, and tailoring interventions to take into account individual needs may be the optimal strategy;
4. What is good for the heart is also good for the brain.

S10 FOOD CONTAMINANTS: WHEN WE MIX SCIENCE AND POLITICS

Co-chairs: J. **RAMSAY** & J.M. **LECERF**

Organic vegetable products: from perceptions to scientific realities

M.J. AMIOT–CARLIN – INRA - FR

The organic sector is booming. This growth is affecting both supply and demand. It is reported that the consumption of organic products is closely associated with socio-economic, health and lifestyle indicators. Consumers have an increasingly negative perception of products derived from intensive production and industrialisation. The organic farming label offers consumers a guarantee of assurance that synthetic chemicals and GMOs have not been used in production. Organic products are thus preferred because of two salient features: the absence of crop protection products and the presence of substances with a positive influence on nutritional and sensory qualities. In general, organic and local are often undistinguishable for consumers, such that they would not buy organic products from remote sources.

What about the scientific reality? Organic regulations help produce products with specific qualities. On the health front, several articles, review and meta-analysis conclude that organic fruits, vegetables and cereals have fewer detectable pesticide residues than conventional products; no difference in mycotoxin concentrations has been reported between organic and conventional cereals. In terms of toxic metals, only cadmium concentrations have been found to be lower in organic cereals. Regarding nutritional quality, a recent meta-analysis showed that concentrations of various antioxidants are higher in organic plant products: this is true for polyphenols with +19 to +69% depending on the family (phenolic acids, flavanols, etc.), and for some carotenoids and vitamin C, but with smaller amplitudes, from +6 to +12%. For minerals, the differences are small; magnesium and zinc levels have been found to be slightly higher in organic vegetables. However, protein levels are lower in organic cereals (-15%). From a sensory point of view, most studies do not show significant differences between organic and conventional products. Some processing methods used in organic sectors such as the lesser degree of refining can have an impact on taste. Organic is considered a model food system in terms of sustainability. In fact, organic products have certain environmental benefits (reduced pollution and conservation of biodiversity) and social benefits (producer-consumer proximity via short supply chains). However, considering the accessibility for consumers, the prices of organic products are higher.

From a health point of view, rigorous studies comparing the effect of consumption of organic versus conventional products are non-existent. A French study in the Nutrinet-Santé cohort indicates that a higher consumption of organic foods, mainly vegetables, is associated with less metabolic syndrome risk, which is supposed to be due to less exposure to synthetic pesticides and/or endocrine disruptors. Studies are needed to validate this hypothesis.

As a recommendation, a diet with more organic or non-organic plant products provides protection against the risk of chronic disease incidence.

Endocrine disruptors: What are they and where do we go from here?

L. **MULTIGNER** – INSERM - FR

Chemical substances, both natural or man-made, having hormonal properties which may cause adverse health effects, were grouped under the generic term called Endocrine Disruptor. In the early 1990s, most attention was focused on substances having steroidal hormone properties and therefore on their undesirable effects (potential or confirmed) on reproductive system. Since then, new modes of action involving multiples biological signalling pathways, both endocrine or non-endocrine, have been identified. Considering that the various signalling pathways interact with one another, the potential undesirable effects might affect almost all systems and functions of an organism. Endocrine disruptors therefore cover a very wide field with imprecise borders and our understanding varies according to one's point of view. In addition, the science of Endocrine Disruption built around these substances currently deals between rigorous scientific approaches and over-simplistic interpretations. The result is an image that brings in mind Ansel Adams' words: "There is nothing worse than a sharp image of a fuzzy concept".

Environmental and health protection agencies have rightly seized upon substances that have potential health consequences. But to approach risk assessment and regulation, it is necessary to rely on an operational definition and not on a theoretical definition based on concepts, even if these concepts are widely accepted by the scientific community. The main challenge for an operational definition is that an endocrine disruptor should refers, as a starting point, to a mode of action and not to a health event. Faced with the many modes of action identified to date and to our lack of knowledge about their exact roles in the pathophysiological processes that may lead to an adverse health event, the operational definition of endocrine disruptors is far from obvious. In Europe, a definition has recently been proposed, encompassing several successive stages: i) that the substance has a hormonal mode of action, ii) that the exposure to this substance is associated with the occurrence of an undesirable health event, iii) that the adverse event may be explained by the hormonal mode of action mentioned. However, such a proposal based on the strict weight of evidence raises controversy. For a long time to come, it is to be feared that the issue of endocrine disruptors may still struggle between scientific evidence and misuse application of the precautionary principle by powerful interest groups.

Human health risk assessment on the consumption of F&V containing residual pesticides: a cancer risk/benefit perspective and non-cancer risk analysis

M. VALCKE – INSPQ - CA

Possible adverse health effects of pesticide residues in food are of concern for the population and public health authorities. Besides, abundant and varied consumption of fruit and vegetables (F&V) is a recognized preventive measure against some chronic health risks, including cardiovascular diseases and several types of cancer. Joint analysis of both issues is thus necessary for building sound public health policies. This study therefore aimed to evaluate the health risks and benefits associated with the chronic consumption of F&V in which residual pesticides can be measured, in the province of Quebec, Canada. Based on a representative sample of Quebecers (n = 4727, aged 1-79) enrolled in a Canadian nutrition survey, statistical distributions of their chronic dietary exposure to 169 different pesticide active ingredients (PAI) through the consumption of F&V was evaluated, including 135 for which non cancer toxicological reference values (TRV) were available in the literature. Among these, an oral cancer slope factor (SF) was also available for 28 PAI. Computing the ratio of the exposure estimates over each available TRV allowed generating ranges of PAI-specific non-cancer risk quotients (RQ) in toddlers (1-3 years), children (4-8 years), adults (19-50 years) as well as the entire population (1-79 years). Similarly, multiplying the entire population's mean chronic exposure value with the available SF allowed estimating the total cancer risk. The annual number of cancer cases estimated to be « prevented » was calculated for the province of Quebec based on the population's etiological fraction of the cancer risk that some F&V prevent its basal population risk, as well as the F&V consumption data. Non-cancer RQ > 1 were obtained at the 95th percentile of children's or toddler's exposure for 10 of the 135 PAIs, and considering the most severe pesticide-specific TRV. When the least severe TRV was considered, no RQ >1 were obtained. Total lifetime cancer risk attributable to the sum of the 28 carcinogenic pesticide exposures was estimated to be 3.3×10^{-4}, which corresponds to 39 new cancer cases annually in the Province of Quebec. For each estimated case of cancer triggered by PAI exposure through residues present in F&V, at least 88 cases were deemed « prevented » by the consumed F&V. Non-cancer risk were not clearly affected by socioeconomical status nor by the number of daily portions of F&V consumed. 21 PAI were identified as of priority toxicological interest, with emphasis being put on dithiocarbamates and imazalil, the major contributors to cancer and non-cancer risk. Chronic non-cancer health risks investigated are low and anti-cancer health benefits of F&V consumption by far outweigh the corresponding PAI-related risk. However, some risk estimates are not negligible and uncertainties remain.

Such work contributes to orientate public health policies as well as recommendations for practitioners. Thus:

1. Reducing PAI usage, with a particular focus on priority PAI mentioned above;

2. Recommending an abundant and varied F&V diet;

3. Stressing out the importance of water washing them, is desirable.

This work warrants further studies addressing its uncertainties.

Why should we believe the evaluations of official bodies?

J. RAMSAY – EFSA - IT

The EU's General Food Law entered into force in 2002 marking a step change in the way food is regulated in the EU. Coming soon after a series of food safety scandals at the turn of the century, the most prominent of which was the BSE crisis, it created a system in which responsibility for risk assessment (science) and for risk management (policy) are kept separate. This model has proved to be resilient and has provided a strong basis for science-based policymaking and internal market and international trade. It has also ensured that the EU's 500 million citizens enjoy some of the highest food safety standards in the world.

Yet, the system is not unshakeable. Food fraud incidents such as the horsemeat scandal and the contamination of eggs with fipronil generated widespread public concern and led to questions being asked about whether national and European agencies were doing all they could to safeguard consumers from harm. Food safety agencies also regularly come under fire for their assessments of products submitted by industry for approval, such as pesticides, GMOs and food additives. Assessments that are perceived to conclude in favour of business can lead to allegations that an agency is "too close" to industry or that its experts have conflicts of interest. The most high-profile example of this in recent years is the ongoing debate over the safety of the pesticide active substance glyphosate, a controversy that continues to mobilise campaigners and non-governmental organisations, generate headlines in mainstream media, and hold the attention of politicians at a national and European level.

At the heart of this debate is the issue of trust. What levers and drivers affect the extent to which a food safety agency is trusted by its stakeholders? What explains why some food safety issues break through into mainstream political and media discourse while the vast majority of work carried out by agencies goes unnoticed and unchallenged? Is it really the case that trust in the official bodies responsible for food safety is on the decline, as some stakeholders would have us believe?

This presentation will explore these questions from the perspective of the European Food Safety Authority (EFSA), using the glyphosate controversy as a case study and making reference to recent research that EFSA has carried out on reputation.The presentation will argue that, while measures to improve trust can be made, the criticism levelled at EFSA is often unfounded and serves as a proxy for a wider societal debate about agriculture practices or the role that multinational organisations have in the food supply chain. In essence, the foundations of the food safety system in the EU remain strong.

DAY 3

D3

S11 CHANGING CONSUMPTION DUE TO FOOD SYSTEM CHANGE: THE ROLE OF MARKETING, BEHAVIOURAL NUTRITION AND SOCIAL INEQUALITIES

Co-chairs: J. HALFORD & J. BREDA (co-organized by N8 Agrifood)

Food systems and food choices

C. REYNOLDS – Sheffield University - UK

The global food system has become increasingly complex with many factors influencing food choices - why, how and what food is purchased and how, what and when food is consumed. Using the UK diet from the 1950s to 2016 as an example, this talk will introduce various themes within the current food system, and discuss how the UK food system evolved to become this complex.

Themes highlighted will include changes to farming, manufacturing, and the transport of food; as well as the evolution of shopping and eating habits. These themes will then be linked to their effects on food choice and health outcomes. Likewise, the demographic and lifestyle transformation over the last 65 years will be discussed.

Specific attention will be given to the fragmented and contrasted dietary patterns of the most rich and poor income groups. With examples provided of dietary advice and interventions that can be offered to promote healthy sustainable eating by harnessing the current food system and food choice trends.

Recommendations for daily practice:

1. The food system is something we all interact with every day – there is potential to change many different aspects of individual's food environments, food habits, and food practices;
2. Dietary changes are not a new phenomenon. However, we can now amplify the positive trends to produce positive health outcomes (What are the positive deviants doing?);
3. Diets have become fragmented by income group and demographics. New tailored messaging strategies are required to speak to an individual's diet and habits;
4. Ways of cooking and time use are changing, we must understand what people are doing (and aspiring to do) in order to shift food choices and produce positive health outcomes.

Household food insecurity and promotion of healthy nutrition

A. LINOS – Athens Medical School - GR

Results of the program DIATROFI, a humanitarian aid program addressing the results of the Greek crisis, are going to be presented. The program addresses food insecurity and promotes healthy nutrition among school aged children and their families, residing on the most underprivileged areas in Greece.

From spring 2012 to June 2018, over 120,000 children have benefited with 14 million meals distributed during early mornings every school day.

Food insecurity and dietary habits based on 160,000 questionnaires filled by parents of the benefited children indicate that food insecurity measured with the Food Security Survey Module (USDA) questionnaire ranged between 54% and 66% in the beginning of each school year and between 48% and 59% in the end of each school year. On average, the share of students not consuming fruits or milk decreased by 20%, whole wheat bread by 15% and vegetables by 10%; moreover the portion of students with low adherence to Mediterranean diet fell by more than 10%.

In addition to the descriptive data, results of 2 randomized trials examining the methodological approach to improving dietary habits will be presented. A number of schools were randomized for two consecutive years. In the first school year (2013-2014) comparison between meal distribution and combination of meal distribution and healthy nutrition promotion activities were conducted. Results showed that students receiving in addition to the meal, the healthy nutrition activities had 1.6 times higher probability to improve weight status from overweight/obese to normal and 2.5 times to improve weight status from underweight to normal. The probability to increase the consumption of milk/yoghurt or fruits was 1.2 times higher in the group receiving the healthy nutrition activities. In the second school year (2014-2015) healthy nutrition promotion activities were compared to the combination of meal distribution and healthy nutrition promotion activities. Students receiving in addition to the healthy nutrition activities, the meal, exhibited significantly larger decrease of household food insecurity (by approximately 10%) and this decrease was more evident for food insecure families (16%), underweight (20%) and overweight/obese children (12%).

To this end, combination of food aid with healthy nutrition promotion activities in school, seems the most effective pathway towards reducing food insecurity and improving the health and the dietary habits of students.

With: Petralias A, Zota D, Dalma A, Georgakopoulos P, Pantazopoulou A, Kouvari M, Drymoni P, Kastorini CM, Haviaris AM, Veloudaki A

Unhealthy food marketing techniques and food consumption impact

E. BOYLAND – University of Liverpool - UK

This talk will provide a brief overview of the literature showing that food marketing has a detrimental effect on dietary health by influencing both determinants of eating behaviour (e.g. attitudes, preferences) and actual eating behaviour (consumption). The effects of both traditional broadcast media and newer digital marketing techniques will be considered, acknowledging that far more is known of children's exposure to broadcast advertising and the power of that advertising to influence behaviour (e.g. the impact of TV advertising exposure on the amount of food consumed has been repeatedly and robustly demonstrated). New digital methods of marketing delivery are challenging for public health researchers, both in terms of measuring exposure and in empirically demonstrating impact. However, emerging data on digital marketing and its effects will be presented, highlighting some of the novel opportunities afforded to marketers by digital techniques.

There have been calls across Europe for stricter regulation of food marketing, particularly to young people, and this session will evaluate the strength of the evidence to underpin policy action in this area. The evidence to support a causal relationship between marketing exposure and weight gain in youth will be discussed.

Recommendations for daily practice:

1. Limit children's screen time and therefore limit advertising exposure.
2. Encourage young people to be critical viewers of marketing, teach them to consider the motives of the advertisers.
3. Try to minimise the influence of "pester power" on family food purchases.

Healthy promotion through digital techniques

F. FOLKVORD – Radboud University - NL

Systematic reviews and experimental studies have repeatedly shown that food promotion for energy-dense foods stimulates unhealthy eating behavior among children. Moreover, most food promotion techniques target automatic process and focus on the rewarding aspects of palatable food products, inducing snack intake subconsciously. Due to the effectiveness of these food promotion activities children consume too much energy-dense foods and not enough healthy foods, like fruits and vegetables, according international dietary standards. Eating a diet rich in fruit and vegetables is essential for growth and development, protects against many illnesses including cardiovascular disease, stroke, and cancer, and increases mental well-being. Numerous studies have consistently shown that dietary intake patterns of children are poor and do not meet (inter) national dietary standards, especially among young children from low socio-economic status. In contrast to fruit and vegetables, energy-dense snacks have intrinsically rewarding properties that make them "wanted" and "liked", thereby inducing unhealthy eating behavior.

Considering the effectiveness and success of food promotion of unhealthy foods, it is highly promising to examine *whether, how,* and *when*, food promotion for healthier foods might increase the intake among children. Different empirical studies have been conducted that tested the effect of healthy food promotion, but an overarching theoretical model that explains and predicts these effects is missing and needed. This presentation describes recent studies that have tested the effect of healthy food promotion on children's eating behavior and aims to present an integration of empirical findings in a new theoretical framework, the *Healthy Food Promotion Model* that increases the understanding of the effects of healthy food promotion on eating behavior that might also be used for future research in this area.

Recommendations:

1. One important recommendation in daily practice is to make healthy foods more available for youth, in order to make it the easiest choice whenever they are craving for snacks or have a moment to eat. An important marketing strategy of energy-dense foods is high availability;
2. Second, making the energy-dense snack option more difficult increases also the possibility that children will choose for the healthier option;
3. Third, if children are not intrinsically motivated to consume healthy foods, it might be an effective strategy to make it more appealing and increase extrinsic motivation to consume the healthier food. After having tasted the food repeatedly for extrinsic reasons, they might start to like the foods, and eventually choose more often the foods because of intrinsic motivation;
4. Fourth, try to focus on automatic processes when aiming to improve children's eating behavior, and not so much on education and improving knowledge, because they have been shown to have limited effects on improving dietary intake.

S12 HELPING SCHOOL CHILDREN EAT HEALTHILY: GPS AS A VITAL FORCE FOR EDUCATION AND IMPACT ASSESSMENT

Co-chairs: W. KALAMARZ & M. CAROLI

EU school scheme: a European tool to encourage good eating habits in children

G. MEDICO – EC-DG AGRI - BE

The scheme, funded through the European Union's common agricultural policy (CAP) with EUR 250 million per year, supports the distribution of fruit and vegetables and milk and milk products to schools across the EU as part of a wider programme of education about European agriculture and the benefits of healthy eating.

Previously operating as separate schemes for milk and for fruit and vegetables, the new combined scheme entered into force on 1 August 2017, ahead of the 2017-2018 school year. The reform aimed at simplification and enhanced effectiveness.

All EU countries participate in either or both parts of the scheme. Information on the number of participating children and schools is not yet available but the trend seems in line with the previous separate schemes that had proved successful*.

The distribution of fruit, vegetables, milk and milk products started in autumn 2017, accompanied by educational activities aimed at reconnecting children with agriculture and promoting healthy eating habits and by information and communication activities for the public.

The national authorities in charge of health and nutrition endorsed the list of fruit, vegetables, milk and milk products that children receive under the school scheme. Fruit and vegetables are available in 26 countries, with a clear priority for fresh products. As regards milk and dairy products, available in all countries, the trend is of healthier choices. Priority is for plain milk; fewer countries provide dairy products with limited quantities of added sugar and/or flavouring.

Many countries give priority to local purchasing, short supply chains and organic.

Authorities and stakeholders from the agriculture, health and education sector are associated to the planning and/o implementation of the school scheme.

**Around 12 million children participated in the school fruit and vegetables scheme and 18 million in the school milk scheme (data from the 2016/2017 school year).*

School food provision & EU School Scheme experience in Italy

S. BERNI CANANI – CREA Research Centre for Food and Nutrition - IT

In Italy the childhood overweight and obesity prevalence has reached 21,3% and 9,3% respectively in 2016 with large differences between regions and higher prevalence in the south of Italy (data from the Ministry of Health nutritional surveillance system "Okkio alla Salute").

Children (8-9 years old) consume a too abundant mid-morning snack (53%), do not eat fruits and/or vegetables daily (20%) and have a daily consumption of sugary drinks or sodas (36%). These children have sedentary lifestyles and spend more than 2 hours a day playing with video games or watching TV (41%).

Moreover, the diffusion of social media is accompanied by a rampant disinformation, especially in the nutrition field. As reported by Eurobarometer (EBU Media intelligence Service «Trust in media 2017»), Italians refer to internet for health questions and trust in radio, tv, written press and internet. Unfortunately, it is not so easy to distinguish between scientific validated information and sensational fake news on the web.

The EU "School fruit and vegetables scheme" (SFVS), carried out in Italy since 2009, requires accompanying educational measures besides fruits and vegetables distribution for the mid-morning snack. The Italian Ministry of Agricultural, Food and Forestry Policies (coordinator of SFVS) assigns the measures to CREA, (Council for Agricultural Research an Economics), in particular to his Centre specialized in Food and Nutrition. The advantage of this approach is that the nutritional message dissemination can be scientifically accredited and univocal for the entire country.

Several actions were put in place, all of them with the aim of promoting fruit and vegetables consumption, involving students, families and teachers (e.g. teachers' training).

The results obtained in the first year with the teachers training show the efficacy of the method, especially in improving children frequency of consumption of fruit and vegetables.

In fact, school is considered a target place to promote health and, when meals are provided by school canteens, the moment of lunch is also the occasion in which students can enrich their knowledge and curiosity towards the food, tasting new dishes and new flavours.

The Ministry of Health, in collaboration with many stakeholders, has drafted the Guidelines for school meals in order to standardize the indications at the national level to encourage, from childhood, the adoption of healthy and correct eating habits. These guidelines contain information on the organization and management of the catering service: roles and responsibilities, nutritional and intercultural aspects, criteria for defining the tender documents.

The possibility of attend the school canteen helps ensure full enjoyment of the right to education, to health and to non-discrimination, but their presence is not guaranteed in all the schools, again with regional differences and low prevalence in the south of Italy.

The strength of the measures adopted in Italy are:

1. Teachers personal engagement;
2. Integration with school daily activities, but "fun and exciting";
3. Flexibility and adaptation to local context; particular attention in the involvement of the families;
4. Synergy with other Institutions (Ministry of Health and Ministry of Education).

The parents' representatives: The unavoidable actors

V. DURIN – COFACE - FR

The parent suggests, the child decides.
If you confine yourself to the child you won't be able to secure sustained improvement in their food choices because adults remain chiefly responsible for what's provided.How can you get parents behind the project to change the food provided to their children and support what's done in school?
Through the parent representative!

What is the parent representative and what is it for?
The parent representative is the link between what happens at school and the parent, but they also gauge areas for improvement and concerns. They seek to understand the school, support parents, inform and communicate. They can also collect feedback from parents and spearhead suggested changes to timetables but also the canteen provider; they gather queries for the headteacher, and support changes that may be worrying some people.

Parent representatives gather together in associations, with specific functions. The associations are partners of big institutional changes but always stand shoulder to shoulder with the child at the heart of the decision-making; nevertheless, they also defend the place of the parent, the primary educator. This is why they are a major player in any change within schools.

Recommendations on the ground:

1. Get in touch with the national or regional structure;
2. Contact the president of the school's association;
3. Organise interaction with the association in advance, an evening meeting to understand and answer questions from all parents;
4. Closing: Afterwards, organise a wrap-up meeting involving the children, allowing parents to be present and local elected officials to be invited;
5. Dissemination: Use "black notebooks" as a guide to share your findings and good food practices but also to communicate what happens in class, because children don't tell their parents much.

Joining up tools for optimal school food provision

S. STORCKSDIECK GENANNT BONSMANN – EC Joint Research Centre (JRC) - IT

Schools are a protected setting where children can learn and experience healthy dietary habits. It is positive to note that all countries in the EU have a more or less well developed school food policy in place – either established as mandatory standards or as voluntary guidance. Translating these policies into actual practice remains challenging at times, but a range of tools and measures are available that could be joined up for optimal school food provision and healthy eating habits of school children.

For example, the European Commission's Joint Research Centre (JRC) has developed technical guidance for the school setting on the public procurement of food for health. This guidance makes the case for health-minded food procurement that ensures school meals meet the nutrition standards defined in school food policies. Addressing the need for technical specifications that are clear and achieve the desired level of healthy school food provision, the report offers contract language phrasing built from real school food policy standards from across the EU. This information is complemented by hints on how to use procurement contract award criteria so that the most economically advantageous tender can be identified.

Furthermore, the JRC has produced a couple of toolkits that summarise the key components of successful interventions in schools to promote fruit, vegetable, and water intake. Typically such interventions combine multiple measures spanning the three areas of education, the environment, and the family, thus creating positive and engaging settings in which the healthy choice becomes the easy choice. For improving fruit & vegetable consumption, the analysis revealed that successful educational efforts covered aspects of classroom-based learning (e.g. dedicated lessons and homework, but also cross-curricular content), experiential learning (such as through school gardens and tasting sessions), games and competitions (incl. quizzes, song-writing competitions), and behaviour change approaches (role models, goal setting, individual feedback). As doctors are a trusted source of nutrition information, they can greatly support such educational efforts. Environmental components comprised increasing the availability of fruit & vegetables through various means, educating teachers and catering staff so as to be optimally supportive, and changes at the point of purchase or consumption (e.g. modifications to the display of foods to encourage positive behaviours). In this regard it is worth noting that Member States can enrol in the European Commission-funded school fruit, vegetable, and milk scheme. This scheme is designed to help promote the benefits of healthy eating to children and encourage them to increase their consumption of fruit, vegetables, and milk. Last, family involvement included organising parent evenings on healthy eating, encouraging food preparation together with children, and helping parents become good role models for regular fruit & vegetable consumption. Whatever the intervention eventually chosen, monitoring and evaluation are key to understanding which approaches work best in a given context; general practitioners are a vital force in assessing related health impacts.

Recommendations:

1. General Practitioners are a trusted source of information and should therefore be encouraged and enabled to deliver guidance on nutrition and health.
2. General Practitioners should be empowered and engaged in supporting education, monitoring, and evaluation as part of healthy diet and lifestyle interventions in schools and beyond.
3. Public procurement of food should consider health as a core aspect.
4. The JRC offers a range of useful tools and documents for promoting healthy eating in schools and invites anyone interested to consult the collection at https://ec.europa.eu/jrc/en/news/helping-eu-schools-become-springboard-healthy-diet-and-lifestyle-habits.

Round table

CONSIDERING THE ROLES OF KEY STAKEHOLDERS IN CHANGING F&V CONSUMPTION

Animated by: K. **LOCK** & P. **JAMES**

Panel:

- **A. Delahaye** – European Parliament – FR
- **M. Devaux** – OECD – FR
- **G. Golfidis** – EC – DG AGRI – BE
- **W. Kalamarz** – EC – DG SANTE – LU
- **D. Sauvaitre** – F&V Sector – FR
- **A. Stavdal** – WONCA Europe – NO

Introduction: Global benefits of F&V to health and sustainable development

K. LOCK – LSHTM - UK

This round table session will bring together experts from medical practice, economics, and food production with policy makers from the European Parliament, and European Commission (DG Sante, DG Agri) to discuss how to increase F&V consumption. It will consider how very different types of interventions - ranging from the work of doctors supporting individual patients to policies affecting the whole EU population- are all important parts of a whole system approach that is required to maximize the benefits of eating F&V for health, the environment, agriculture and the economy.

Questions for panelists

1. What is the evidence that fiscal policy levers increase consumption and production?
2. What can family and community doctors do to increase population consumption of F&V?
3. What are the challenges for current producers and all actors across the supply chain? What are the possible 'win-wins'?
4. How can the European Parliament become more effective in transforming the Commission's approach to the EU food chain in favour of fruit and vegetables? What has been achieved to harmonize different policies to better take into account the health benefits of F&V consumption?
5. Do European Commission investments maximize healthy diets while balancing the need to support profitable business? What is DG Sante doing to help counter the commercial influences on diet and promote F&V consumption?
6. What has been done in previous 5 years to increase F&V supply and ensure consumer prices are kept low? What are the challenges to European F&V policy in the next 5 years? How can current CAP policies be modified so that they favour F&V?

SPEAKERS

A

Marie-Josèphe **AMIOT-CARLIN**

Senior Scientist in Nutrition

INRA - France

Senior Scientist in Nutrition, National Research Institute on Agronomy (INRA), Division of Nutrition, Chemical Food Safety and Consumer Behaviour.

Research area and expertise: Sustainable food and nutrition, preventive nutrition and dietary recommendations, plant products, micronutrients and bioactive substances, metabolic syndrome. Her publications include more than 130 original articles, reviews and book chapters, 2 patents and around 90 lectures.

Expertise at ANSES on the revision of French nutritional guidelines and in FAO-CIHEAM group on the "Development of Voluntary Guidelines for the Sustainability of Mediterranean Diet.

Responsibility for contracts on sustainability and food security (MEDINA, RECONCIL, PREMEDIT, URBAL) and clinical studies (POLIVD3, VIDADO...) and participation to other projects on organic food consumption (BIONUTRINET, RMT TransfoBio).

Recent publications

BERTRAND C, LESTURGEON A, AMIOT MJ ET AL, "**Alimentation biologique: état des lieux et perspectives**" *Cahiers de nutrition et de diététique* - mars 2018

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AMIOT MJ, RIVA C, VINET A. (2016) "**Effects of dietary polyphenols on metabolic syndrome features in humans: a systematic review**", *Obesity Reviews* 17

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BARRÉ T, VIEUX F, PERIGNON M, CRAVEDI JP, AMIOT MJ, MICARD V, DARMON N (2016) "**Evidence from a whole diet modeling approach that meeting nutritional adequacy does not necessarily increase exposure to food contaminants**", *J Nutr* 146

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A

Patrick **ASSYAG**

Cardiologist

FFC representative - France

Cardiologist, former head of clinic and assistant of Strasbourg hospitals.

President of the Union of Cardiologists of Paris and Paris Region.

President of the Ile de France Cardiology Association dependent on the French Federation of Cardiology.

Vice-President of SNSMCV (Syndicat National Specialists in Cardiovascular Diseases).

Vice-President of the French Federation of Cardiology (FFC).

Member of the French Society of Cardiology.

Member of the European Society of Cardiology.

B

Sibilla **BERNI CANANI**

Biologist
CREA - Italy

Biologist. She joined CREA-Alimenti e Nutrizione (Council for Agricultural Research and Economics- Research Center for Food and Nutrition) in 2011.

She worked on the European Eatwell project from 2011 to 2013 (Interventions to Promote Healthy Eating Habits: Evaluation and Recommendations) interviewing the Italian stakeholders in specific focus groups and supporting the definition of the Italian guidelines.

Since 2011 she has been working at nutrition education initiatives in order to give scientific and useful information to different kind of public: children during scientific events (Festival della Salute di Viareggio 2011; Roma Fiction Festival, 2012; Bergamo Scienza, 2013; Festival della Scienza, Genova 2014); teachers (teachers training in the frame of the Additional Measures to the School Fruit Scheme) and families (awareness meetings on the importance of consuming fruits and vegetables in the frame of the Additional Measures to the School Fruit Scheme).

She is also involved in the elaboration of educational activities in order to promote healthy eating habits in particular in primary school children.

Recent publications

ROMANA ROCCALDO, LAURA CENSI, LAURA D'ADDEZIO, SIBILLA BERNI CANANI & LAURA GENNARO, **"A teachers' training program accompanying the "School Fruit Scheme" fruit distribution improves children's adherence to the Mediterranean diet: an Italian trial »**, *International Journal of Food Sciences and Nutrition*, DOI: 10.1080/09637486.2017.1303826

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SIBILLA BERNI CANANI, LAURA GENNARO, **« Efficacia delle politiche d'intervento per la promozione di una sana alimentazione e raccomandazioni per azioni future: evidenze del Progetto EATWELL"**, *Decimo Rapporto Osservasalute, Stato di salute e qualità dell'assistenza nelle regioni italiane*, 2013

B

Emma **BOYLAND**

Senior Lecturer in Appetite and Obesity - University of Liverpool - United kingdom

Dr Emma Boyland is a Senior Lecturer in Appetite and Obesity at the University of Liverpool. Her specific research expertise lies in quantifying the extent and nature of food advertising via television, new media and other sources (e.g. supermarket and point of sale promotions) and elucidating the impact of branding activity (e.g. use of promotional characters), and both situational factors (e.g. hunger state), and intrinsic factors (e.g. tendency to eat in the absence of hunger) on children's consumptive responses to food marketing.

She has published over 50 journal articles and 8 book chapters to date, as well as over 30 published conference abstracts.

She is a member of the Scientific and Technical Advisory Network for World Obesity, a member of the Childhood Obesity Task Force of the European Association for the Study of Obesity, a member of the board of the European Childhood Obesity Group and a former Trustee of the UK Association for the Study of Obesity.

Recent publications

TATLOW-GOLDEN, M., VERDOODT, V., OATES, J., JEWELL, J., BREDA, J., & BOYLAND, E. (2017), **"A safe glimpse within the "black box"? Ethical and legal principles when assessing digital marketing of food and drink to children"**, *WHO Public Health Panorama*, 3(4).

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B

João **BREDA**

Head of the NCDs office

WHO Europe - Russia

Head of the NCD office in Moscow, Russian Federation. This office leads WHO work on strengthening national capacity in all 53 countries in the WHO European Region to prevent and control NCDs, promote an intersectoral approach and develop policies to tackle NCDs.

During the previous 7 years before moving to Moscow João Breda has been the Programme Manager: Nutrition, Physical Activity and Obesity at WHO Regional Office for Europe based in Copenhagen, responsible for providing support to the 53 Member States of the WHO European Region on the implementation of the European Food and Nutrition Action Plan 2015-2020 & the Physical Activity Strategy for the WHO European Region 2016-2025, as well as evaluating their implementation process.

PhD in Nutritional Sciences from Porto University where he defended a thesis focused on alcohol and young people. He has done his Master Degree in Public Health by the Faculty of Medical Sciences of Lisbon University and an MBA from the European University in Barcelona.

In 2007, in collaboration with WHO, organized the first meeting of the WHO European Childhood Obesity Surveillance Initiative in Portugal. Nowadays, the Initiative is unique in the world and has expanded considerably.

He was the first coordinator and led for several years the National Platform against Obesity.

C

Margherita **CAROLI**

Paediatrician and nutritionist

ASL Brindisi - Italy

Margherita Caroli is a paediatrician and a nutritionist with a PhD in Paediatric Nutrition. She has been working at the Paediatric department in D Camberlingo Hospital since 1980 until 1998 when she was nominated Head of the Nutrition Unit at the Department of Prevention ASL Brindisi up to december 2016. Since then she is happily retired but keeps working in the field childhood nutrition.

She has been the scientific coordinator of several projects at national and European level in the field of health promotion, obesity prevention, and chronic diseases in children.

She is also frequently temporary advisor for WHO in the field of paediatric nutrition. She has been Board Member of the European Childhood Obesity Group, of the Italian Society of Obesity, of the EASO Task Force on Childhood Obesity, of the Italian Society of Paediatric Nutrition and President of the ECOG.

She is author of more than 150 papers in national and international scientific journals, 4 books on nutrition, and invited speaker at more than 200 congresses.

Recent publications

ARTUR MAZUR, MARGHERITA CAROLI, IGOR RADZIEWICZ-WINNICKI, PAULINA NOWICKA, DANIEL WEGHUBER, DAVID NEUBAUER, ET AL., **Reviewing and addressing the link between mass media and the increase in obesity among European children: The European Academy of Paediatrics (EAP) and The European Childhood Obesity Group (ECOG) consensus statement,** *Acta Pædiatrica,* 2017

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MARGHERITA CAROLI, ET AL. , **"Cip X Ciop Good Snacks At School: Low Cost Programme To Improve The Eating Habits Of Children Of Primary School",** *Acta Paediatrica,* 2015; 104: 10-11

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MARGHERITA CAROLI, ET AL., **"Innovative tools to improve children's eating habits. Nutritional educational farms vs gardening and taste shops",** *Appetite,* 2015; 89:328

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BORIS KAGANOV, MARGHERITA CAROLI, ARTUR MAZUR, ATUL SINGHAL AND ANDREA VANIA, **"Suboptimal Micronutrient Intake among Children in Europe",** *Nutrients,* 2015; 7:3524-3535
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C

Sebastien **CZERNICHOW**

Head of the Nutrition Department

Georges Pompidou European Hospital - France

Full professor of Nutrition, Paris Descartes University, Paris.

Head of the Nutrition Department, Georges Pompidou European hospital, Paris.

Post-doctoral fellow, Georges Institute, Sydney, Australia.

sPhD in epidemiology, Nancy 1 University, France.

Recent publications

THEREAUX J, LESUFFLEUR T, CZERNICHOW S, BASDEVANT A, MSIKA S, NOCCA D, MILLAT B, FAGOT-CAMPAGNA A., **"Association between bariatric surgery and rates of continuation, discontinuation, or initiation of antidiabetes treatment 6 years later.»**, *JAMA Surg,* 2018 Feb 14 [epub]

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FERAL-PIERSSENS AL, CARETTE C, RIVES-LANGE C, MATTA J, GOLDBERG M, JUVIN P, ZINS M, CZERNICHOW S., **"Obesity and emergency care in the French constances cohort"**, *PLoS One,* 2018 Mar 26;13(3):e0194831

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SLUIJS I, CZERNICHOW S , BEULENS JW, BOER JM, VAN DER SCHOUW YT, VERSCHUREN WM, ET AL., **"Intakes of potassium, magnesium, and calcium and risk of stroke"**, *Stroke,* 2014;45(4):1148-50

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HINNOUHO GM, S CZERNICHOW, DUGRAVOT A, NABI H, BRUNNER EJ, KIVIMAKI M, ET AL., **"Metabolically healthy obesity and the risk of cardiovascular disease and type 2 diabetes: the Whitehall II cohort study"**, *European heart journal,* 2014

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A YING, H ARIMA, S CZERNICHOW, M WOODWARD, R HUXLEY, F TURNBULL, V PERKOVIC BN., **"Effects of blood pressure lowering on cardiovascular risk according to baseline body-mass index: a meta-analysis of randomised trials"**, *The Lancet,* Epub 2014

D

Giovanni DE PERGOLA

Associate Professor

Bari University - Italy

Associate Professor in Internal Medicine, Department of Internal Medicine and Clinical Oncology, University of Bari Aldo Moro, Bari, Italy.

PhD in Endocrinology.

Specialised in Endocrinology and Metabolism Diseases.

President of the Apulian section of the Italian Society of Obesity (SIO).

Responsible of the Outpatient Clinic of Clinical Nutrition, Oncology, Policlinico di Bari, Bari, Italy

Recent publications

D'ALESSANDRO A, DE PERGOLA G, **"The Mediterranean diet: its definition and evaluation of a priori dietary indexes in primary cardiovascular prevention ",** *Int JFood Sci Nutr,* 2018

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IOVINO M, IACOVIELLO M, DE PERGOLA G, LICCHELLI B, IOVINO E, GUASTAMACCHIA E, GIAGULLI VA, TRIGGIANI V., **"Vasopressin in heart failure",** *Endocr Metab Immune Disord Drug Targets,* 2018

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IOVINO M, MESSANA T, DE PERGOLA G, IOVINO E, DI CUONZO F, GUASTAMACCHIA E, GIAGULLI VA, TRIGGIANI V., **« The role of neurohypophyseal hormones vasopressin and oxytocin in neuropsychiatric disorders",** *Endocr Metab Immune Disord Drug Targets,* 2018

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DE PERGOLA G, CORTESE F, TERMINE G, MELIOTA G, CARBONARA R, MASIELLO M, CORTESE AM, SILVESTRIS F, CACCAVO D, CICCONE MM., **"Uric acid, metabolic syndrome and atherosclerosis: the chicken or the egg, which comes first?",** *Endocr Metab Immune Disord Drug Targets,* 2018

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SILVESTRIS E, DE PERGOLA G, ROSANIA R, LOVERRO G., **"Obesity as disruptor of the female fertility",** *Reproductive Biology and Endocrinology,* 2018

D

Nathalie **DELZENNE**

Head of the Research Group in Metabolism and Nutrition

Louvain Drug Research Institute - Belgium

Nathalie Delzenne is Full Professor at the Université catholique de Louvain. She is a lecturer in Nutrition Biochemistry and Metabolism and is the leader of the Metabolism and Nutrition Research Group at the Louvain Drug Research Institute.

She has been involved in international scientific committee (Editor for the current Opinion in Clinical Nutrition and Metabolism, member of the Scientific Board of ESPEN, President of the Belgian Nutrition society, former member of the Board of directors of the International Scientific Association for Probiotics and Prebiotics, former member of the Board of the Nutrition society (UK)).

After obtaining a PhD in Pharmaceutical sciences in 1991, and a post-doctoral certificate in Nutrition (Lausanne, CH), she performed a post-doctoral research related to nutrients-gene interactions (Paris Inserm Unit 342).

Afterwards she returned to the Université Catholique de Louvain, where she started an academic career. She pioneered the discovery of nutrients (prebiotics) and the importance of their role in controlling malnutrition (obesity, cachexia, polyunsaturated fatty acid deficiencies ...) and similar metabolic disorders.

Recent publications

FRANCESCO SURIANO, AUDREY M. NEYRINCK, JORAN VERSPREET, MARTA OLIVARES, SOPHIE LECLERCQ, TOM VAN DE WIELE, CHRISTOPHE M. COURTIN, PATRICE D.CANI, LAURE B.BINDELS, NATHALIE M. DELZENNE, **"Particle size determines the anti-inflammatory effect of wheat bran in a model of fructose over-consumption: Implication of the gut microbiota",** *Journal of Functional Foods,* 2018; 41: 155-162

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BACHMANN R, LEONARD D, DELZENNE N, ET AL, **"Novel insight into the role of microbiota in colorectal surgerye",** *Gut ,* 2017; 66:738-749

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GAÉTAN KALALA, BIENVENU KAMBASHI, NADIA EVERAERT, YVES BECKERS, AURORE RICHEL, BARBARA PACHIKIAN, AUDREY M. NEYRINCK, NATHALIE M. DELZENNE & JÉRÔME BINDELLE, **"Characterization of fructans and dietary fibre profiles in raw and steamed vegetables",** *International Journal of Food Sciences and Nutrition,* 2017

D

Marion **DEVAUX**

Health Policy Analyst

OECD - France

Marion Devaux is a health policy analyst in the OECD Health Division. She holds a PhD in health economics from Paris-Dauphine University and a master degree in statistics from the French National School of Statistics and Information Analysis (ENSAI).

Marion has contributed to a range of OECD projects related to the Economics of Public Health, since 2008. In particular, she carried out extensive analyses of trends and social inequalities related to obesity and alcohol consumption. She led a study on the labour market impacts of obesity, smoking, alcohol use and their associated chronic diseases. Now she collaborates with national and international institutions on the development of a modeling platform for assessing policies aimed to tackle obesity, smoking, alcohol and their related chronic diseases.

Marion's work also focusses on health inequality. She is currently carrying out a study on inequities in health care services utilization and access to care.

D

Virginie **DURIN**

COFACE Representative
France

Engagement in family association:

- Familles de France national association actual vice president in charge of management of the staff and family life and education and past assistant treasurer
- Familles de France Paris Federation: actual president
- Familles de France Paris 5e: past president

Engagement in school association:

- APEL East Paris section(15 schools): actual president
- APEL Sainte Geneviève school: actual president
- PEEP Paris: actual President
- APEL Paris region: Person in charge of Information and councelling to families ICF
- APEL Notre Dame de Sion lycée: member of the board
- APEL Founder of a new school association

Board member:

- COFACE: Represents French Families
- STIF transport (Grand Paris)
- CNAF: Charter of secularism
- High Council to the Family: substitute
- UDAF de Paris

Education Background:

- Bachelor of science: biology Paris V
- 2 years law school FACO/ASSAS

D

Dominique **DURRER-SCHUTZ**

General Practitioner

EUROPREV Representative - Switzerland

Durrer-Schutz is a General Practitioner working in Nutrition, Obesity, Eating disorders & type 2 Diabetes.

She is an active member of several Swiss and European Associations, such as EUROPREV (European Association for Primary Care), European Network for General Practitioner (Swiss representative),WONCA (World Organisation of National College Academy and Academic Associations for General Physicians), as well as a member of the American Society for Diabetes.

Since 1999, she is President of EUROBESITAS (Swiss Branch) and a member of the Platform of Obesity experts for the Swiss Federal Office of Health since 2010. From 2011, she is also an active member of the Platform Nutrition, Physical activity and Health, European Commission, Brussels.

The last 15 years, she developed a number of programs on prevention and treatment of obesity and diabetes management for adults, teenagers and children. As practicing physician, she was also involved in research activities and published 15 peer review papers in the field of obesity and family practice.

Recent publications

HEBEBRAND J, HOLM J-C, WOODWARD E, BAKER J, L, BLAAK E, DURRER SCHUTZ D, FARPOUR-LAMBERT N, J, FRÜHBECK G, HALFORD J, G, C, LISSNER L, MICIC D, MULLEROVA D, ROMAN G, SCHINDLER K, TOPLAK H, VISSCHER T, L, S, YUMUK V, "**A proposal of the European Association for the study of obesity to improve the ICD-11 diagnostic criteria for obesity based on the three dimensions etiology, degree of adiposity and health risk**", *Obes Facts,* 2017;10:284-307

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MONNARD CR, FARES E-J, CALONNE J, MILES-CHAN JL, MONTANI J-P, DURRER D, SCHUTZ Y AND DULLOO AG, "**Issues in Continuous 24-h Core Body Temperature Monitoring in Humans Using an Ingestible Capsule Telemetric Senso**", *Front. Endocrinol,* 8:130, 2017
~~~~~

F

Frans **FOLKVORD**

Researcher and lecturer

Radboud University - The Netherlands

Dr. Frans Folkvord is currently a postdoctoral researcher and lecturer at the Behavioural Science Institute, Radboud University Nijmegen, and at the Department of Communication Science, Amsterdam University (both the Netherlands).

Furthermore, he is an assistant-professor at the Applied Social Science and Behavioral Economics Research group, University of Cataluña (Spain).

Dr. Folkvord has obtained a PhD in Social Science (cum laude) on children's reactivity to embedded food cues in advergames. He has published multiple articles in highly ranked journals, a book and a book chapter, in which he examined the effects of online food marketing on children's eating behavior.

Additionally, he is a co-author of a report for the European Commission about the impact of marketing through social media, online games and mobile applications on children's behaviour. Next, he has been a temporary advisor of the WHO, UNICEF, the Dutch Heart Foundation and the Dutch Nutrition Centre about the effects of food marketing on children's eating behavior.

Final, currently dr. Folkvord is conducting several studies to examine the effects of new forms of unhealthy food marketing and the effects of healthier food promotion on the actual intake of children.

Recent publications

LIVINGSTONE S., ÓLAFSSON K., HELSPER E. J., LUPIÁÑEZ-VILLANUEVA F., VELTRI G. A. & FOLKVORD F., **"Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation ",** *Journal of Communication,* 2017, 67(1), 82-105

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FOLKVORD F., LUPIÁÑEZ-VILLANUEVA F., CODAGNONE C., BOGLIACINO F., VELTRI G. & GASKELL G., **"Does a 'protective'message reduce the impact of an advergame promoting unhealthy foods to children? An experimental study in Spain and The Netherlands",** *Appetite,* 2017, 112, 117-123

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FOLKVORD F., ANASTASIADOU D. T., & ANSCHÜTZ D. , **« Memorizing fruit: The effect of a fruit memory-game on children's fruit intake",** *Preventive medicine reports,* 2017, 5, 106-111

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ALBLAS E. E., FOLKVORD F., ANSCHÜTZ D. J., KETELAAR P. E., GRANIC I., MENSINK F. & VAN'T RIET J. P, **"User statistics for an online health game targeted at children",** *Games for health journal,* 2017, 6(5), 319-325
~~~~~

F

Marie-Laure **FRELUT**

Paediatrician

ECOG - France

Dr ML Frelut is a pediatrician and nutrition and child obesity specialist who has been a Senior Consultant in Paris University Hospital until 2017.

She was a founding member and past president of the European Childhood Obesity Group (ECOG) and is Editor of the first free eBook on Child and Adolescent Obesity

She has worked as a national and international expert in the field of child and adolescent nutrition for the French government and national research agency (INSERM), with the AFERO (French association for the Research and Studies on Obesity) and WHO.

She currently is a member of the Nutrition Committee of the French Pediatric Society, of the European Committee for the teaching of obesity (SCOPE), of the European Association for the Study of Obesity (EASO) and of the AFERO.

She is Deputy Chair of the clinical committee of the World Federation of Obesity.

Recent publications

O'MALLEY G., RING-DIMITRIOU S., NOWICKA P., VANIA A., FRELUT M.L., FARPOUR-LAMBERT N., WEGHUBER D., THIVEL D. **"Physical activity and physical fitness in pediatric obesity: what are the first steps for clinicians? ", Expert conclusion from the 2016 ECOG workshop.** *Int J Exerc Sci,* 2017;10(4): 487-96.

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FRELUT ML, GIRARDET JP, BOCQUET A, BRIEND A, CHOURAQUI JP, DARMAUN D, DUPONT C, FEILLET F, HANKARD R, ROZÉ JC, SIMEONI U, **"Comittee on Nutrition of the French Society of Paediatrics. Impact of obesity on biomarkers of iron and vitamin D status in children and adolescents: The risk of misinterpretation".** *Arch Pediatr,* 2018 Jan;25(1):3-5.
~~~~~

G

Costa GOLFIDIS

Deputy Head of Unit
European Commission
DG Agriculture and Rural Development - Belgique

Unit B1: External communication and promotion policy

H

Jason HALFORD

Chair in Biological Psychology and Health Behaviour

Head of Department Psychological Sciences

Liverpool University - United Kingdom

Professor Jason Halford is Head of the Department of Psychological Sciences and Deputy Head of the Institute for Psychology Health and Society at the University of Liverpool, former, and Treasurer of the European Association of Obesity (EASO). He is a Chartered Health Psychologist.

In 1999 he co-founded the Human Ingestive Behaviour Laboratory at Liverpool, in 2004 he also cofounded the Liverpool Obesity Research Network (LORN) and recently helped set up the new Centre for Excellence in Sustainable Food Systems (CESFE).

Was is the co-ordinator of the 8 million Euro EU Framework Seven Satiety Innovation SATIN project to develop novel foods for appetite control and now the 9 million Euro H2020 SWEET project examine sugar replacement in weight management.

He is also a leading scientist on the WRAP trial investigating the role of commercial weight management providers in primary care and the lead investigator on the SWITCH trial to examine the impact of artificial sweeteners on appetite in the context of active weight management.

Professor Halford is theme lead for Improved Consumption and Health of the N8 Agri-food and a collaborator on iKnowFood examining reliance in the food system.

Recent publications

E.J. BOYLAND, S. NOLAN, B. KELLY, C. TUDUR-SMITH, A. JONES, J.C.G. HALFORD, E. ROBINSON, **"Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults."**, *The American Journal of Clinical Nutrition,* 2016, 103(2): 519-533

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E.J. BOYLAND, M. KAVANAGH-SAFRAN AND J.C.G. HALFORD, **" Exposure to 'healthy' fast food meal bundles in television advertisements promotes liking for fast food but not healthier choices in children "**, *British Journal of Nutrition,* 2015. 113(6): 1012-1018

~~~~~

V. FALLON, R. GROVES, J. CHRISTIAN, G. HALFORD, K.M. BENNETT, J.A. HARROLD, **« Postpartum anxiety and infant-feeding outcomes: a systematic review. "**, *Journal of Human Lactation,* 2016. 32(4): 740-758

J

Philip **JAMES**

Honorary Professor of Nutrition

LSHTM - United Kingdom

Philip James is a scientist and physician who Directed the Rowett Research Institute in Scotland. He is advisor to the WHO EURO and EMRO regional offices supporting global initiatives relating to food and health with particular emphasis on the pandemic of obesity and non – communicable diseases. He chaired the original WHO 997 Technical Consultation on diet and the prevention of malnutrition and chronic disease which established the current WHO goals for fibre and vegetable and fruit.

He launched the International Obesity Task Force which generated the evidence for WHO's establishing obesity as a major global public health problem. He established the World Obesity Federation and for Tony Blair the UK Food Standards Agency; he wrote the proposal for the development of the EU's DG SANCO, devised the global strategies for combatting bovine spongiform encephalopathy and the basis for the EU's Food Safety Authority. He Chaired the UN Millennium Commission on malnutrition and chronic disease and the use of a life-course approach to Nutrition.

Recent publications

W. PHILIP T. JAMES (2018) **"The Epidemiology of Obesity"**, *In Obesity: Chapter 1 in Pathogenesiss, Diagnosis and Treatment* - Eds Sbraccia P, Finer N. Springer Press. (in press)

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W. PHILIP T. JAMES (2018) **"From Childhood Malnutrition to Public Health Nutrition"**, *Annals of Nutrition and Metabolism*.72:202-9.

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W PHILIP T JAMES (2018) **"Obesity: A Global Public Health Challenge"**, *Clinical Chemistry,* Volume 64, No 1: 24-29.

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W PHILIP T JAMES (2017) **"A clinical nutritionist's experience and expectations"**, *European Journal of Clinical Nutrition,* 71: 915-918.

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W PHILIP T JAMES, KLIM MCPHERSON (2017), **"The costs of overweight"**, *The Lancet,* Volume 2,: 203-204.

~~~~~

W PHILIP T JAMES (2016), **"Taking action on sugar"**, *The Lancet Diabetes & Endocrinology,* Volume 4,: No 2: 92-94.
~~~~~

K

Wojciech **KAŁAMARZ**

Head of Unit
Health determinants and International Relations
EC - DG SANTE - Luxembourg

Wojciech Kałamarz graduated in International Relations, studied in London, Harvard and Stanford. He worked at the Polish Ministry of Foreign Affairs from 1989 until 2005.

He joined the European Commission in 2005 and he headed the units for quality control, finance and public procurement. Since January 2017, he has been the Head of Unit for Health Determinants and International Relations in DG SANTE. His area of responsibilities covers the promotion of health through measures addressing factors such as nutrition, physical activity and addictions (alcohol, drugs) as well as the coordination of the Commission/EU voice on global health, including co-operation with WHO, G7, G20, OECD, enlargement, neighbourhood, bilateral and regional partners.

He is serving as the chairperson of the EU High Level Group on Nutrition and Physical Activity, the EU Platform for Action on Diet, Physical Activity and Health, and EU Committee on National Alcohol Policy and Action.

Martine LAVILLE

Professor of Nutrition

Claude Bernard Lyon 1 University - France

Martine Laville is a MD, specialist in Endocrinology, Diabetes and Nutrition, Professor of Nutrition at Medical school in Lyon 1 University, PhD in Human Biology in 1987. Past activity as researcher at the INSERM in Lyon from 1992 to 1997.

Head of the Human Nutrition Research Centre of Rhône-Alpes since 1996 (CRNH). CRNH is a platform for clinical research in Nutrition used both by academic and industrials. She is currently the president of CENS (Center European for Nutrition and Health). CENS brings together all the forces in human nutrition research (ranging from molecular and cellular aspects to Economics and Social Sciences) from the Rhone Alpes region in connection with the European network of research center in nutrition. She is the leader of FORCE (French Obesity Centre of Excellence) a network between Lyon-Paris and Toulouse to developed trials for obesity treatment.

She has published more than 200 papers in paired reviewed journals. She is involved in European infrastructure projects ECRIN (WP Nutrition leader), RICHFIELD, SEMEIOTICONS. Professor Martine Laville has been President of the AFERO (French Society for Obesity Research) from 1995 to 2005 and is a member of several scientific societies both on obesity and diabetes. She was the chair for the European Congress of Obesity in may 2012 in Lyon. She is also the president of the National Council of University for Nutrition (CNU: 4404) and the president of the Medical Committee of her University Hospital.

Recent publications

ALLIROT X, SEYSSEL K, SAULAIS L, ROTH H, CHARRIÉ A, DRAI J, GOUDABLE J, BLOND E, DISSE E, LAVILLE M **"Effects of a breakfast spread out over time on the food intake at lunch and the hormonal responses in obese men."**, *Physiol Behav* - 2014 Mar 29;127:37-44.

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SEYSSEL K, ALLIGIER M, MEUGNIER E, CHANSEAUME E, LOIZON E, CANTO C, DISSE E, LAMBERT-PORCHERON S, BROZEK J, BLOND E, RIEUSSET J, MORIO B, LAVILLE M, VIDAL H. **"Regulation of Energy Metabolism and Mitochondrial Function in Skeletal Muscle during Lipid Overfeeding in Healthy Men."** *Men.J Clin Endocrinol Metab,* 2014 Jul;99(7):E1254-62.

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SEYSSEL K, MEUGNIER E, LÊ KA, DURAND C, DISSE E, BLOND E, PAYS L, NATAF S, BROZEK J, VIDAL H, TAPPY L, LAVILLE M **"Fructose overfeeding in first-degree relatives of type 2 diabetic patients impacts energy metabolism and mitochondrial functions in skeletal muscle."**, *Mol Nutr Food Res*, 2016 Jul 28.

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ICETA S, JULIEN B, SEYSSEL K, LAMBERT-PORCHERON S, SEGRESTIN B, BLOND E, CRISTINI P, LAVILLE M, DISSE E. **"Ghrelin concentration as an indicator of eating-disorder risk in obese women".** *Diabetes Metab,* 2018 Jan 27. pii: S1262-3636(18)30008-9.

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BÉTRY C, THOBOIS S, LAVILLE M, DISSE E, **«Deep brain stimulation as a therapeutic option for obesity: A critical review »** *TObes Res Clin Pract.* , 2018 Feb 20. pii: S1871-403X(18)30054-

L

Jean-Michel **LECERF**

Medical doctor
Endocrinologist and nutritionist
Pasteur Institut of Lille - France

Medical doctor since 1981.

Endocrinologist and nutritionist.

Associated professor at Institut Pasteur de Lille – Nutrition Department.

Clinician in the Internal Medicine Department in the University Hospital of Lille.

Member of many scientific societies (French Nutrition Society ...).

Expert for the French Nutrition Security Agency and for the recent revision of the fats and fatty acids recommended dietary allowances.

Author of 7 books, 750 scientific papers and 50 chapters of books on nutrition obesity.

Recent publications

SCHNEBELEN-BERTHIER C., ACAR N., POUILLART P., THABUIS C., RODRIGUEZ B., DEPEINT F., CLERC E., MATHIAUD A., BOURDILLON A., BAERT B., BRETILLON L., LECERF J.M., **" Incorporation of lutein and docosahexaenoic acid from dietary microalgae into the retina in quail ",** *Int J Food Sci Nutr,* 2015, 66, (2), 222-9

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FUMERON F., BARD J.M., VERGES B., PAILLARD F., LECERF J.M., **" Phytostérols : un point sur les recommandations de l'ANSES ",** *O.C.L,* 2015, 22(2), D205 (1-6)

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LANCKRIET S., BRISSIEUX E., BORYS J.M., JARUGA A., SCHNEBELEN-BERTHIER C., DEKNEUDT E., CALAIS A., RICHARD P., MAYER J., PENIN J., DJOUAK A., CHIEH A., NORMAND A., DUCLOS M., LECERF J.M., **« Assessment of the impact of a sports kit on physical activity in children 8 to 11 years of age ",** *J Phys Act Res ,* 2017, 2, 1, 50-60

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GUILLEMIN I., MARREL A., ARNOULD B., CAPURON L., DUPUY A., GINON A., LAYE S., URDAPILLETA I., ALLAER F.A., LECERF J.M., PRAST M., ROGEAUX M., **« How French subjects describe well-being from food and eating habits? A qualitative study on the development of the well-Being related to food Questionnaire (well-BFQ) ",** *Appetite,* 2016, 96, 333-46
~~~~~

L

Laurent LETRILLIART

Professor of General Practice

University of Lyon - France

Laurent Letrilliart is physician specialized in general practice and a professor at the University of Lyon.

He is a member of the Scientific Council of the French National College of Teachers in general practice (CNGE).

He is a member of the Wonca international classifications Committee (WICC).

He is a researcher in the HESPER (Health Services and Performance Research) laboratory.

His research work involves various thematic areas in the field of primary care, including overweight.

Recent publications

SUPPER I., BOURGUEIL Y., ECOCHARD R., LETRILLIART L. **" Impact of multimorbidity on healthcare professional task shifting potential in patients with type 2 diabetes in primary care: a French cross-sectional study. "**, *BMJ Open*, 2017; 7:e016545.

~~~~~

LETRILLIART L., OUSTRIC S., **" Frailty in general practice "**, *Frailty Aging,* 2016;5:183-5

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DARMON D., SAUVANT R., STACCINI P., LETRILLIART L., **" Which functionalities are available in the electronic health record systems used by French general practitioners? An assessment study of 15 systems. "**, *Int J Med Inform*, 2014; 83: 37-46.

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GONZALEZ C., RABILLOUD M., BONNETAIN N., BONNEFOY M., LETRILLIART L., **« Mini Nutritional Assessment : une étude de reproductibilité en institution pour personnes âgées»**. *Soins Gerontol,* 2012;97:17-20

~~~~~

COVI-CROCHET A., CITTEE J.C., LETRILLIART L., **«Fréquence, modalités et déterminants de l'éducation nutritionnelle des patients en médecine générale : l'étude Nutrimège. »**, *Rev Prat,* 2010; 60: S4-S8.

L

Thérèse **LIBERT**

Dietitian

EFAD Representative - France

Registered dietitian.

Medical University Degree in Sport Nutrition - Paris VI.

Degree in Stress Management in High Level Sport.

Since 1998 , Freelance dietitian in private practice and consulting: Clinic, Institution for mentally disabled adults, Ministry of youth and sport department (DRJSCS - IDF).

Vice-president of the French Association of Nutritionist Dietitians (AFDN).

Member of the European Federation of the Associations of Dietitians EFAD (executive Comity 2008-2016).

L

Athena **LINOS**

Professor & Chair

Athens University - Greece

Prof. Athena Linos studied Medicine at the University of Athens Medical School (MD degree) and Public Health at Harvard School of Public Health (MPH). She also holds a PhD and a Professorial degree from the University of Athens Medical School in the field of Epidemiology.

In 2014, she was elected Professor and Chair of Dept. of Hygiene, Epidemiology & Medical Statistics at Athens Medical School.

Prof Linos has participated in numerous national and European Committees and Councils regarding public health and occupational health and safety. She has also served as the Vice President of the Greek Regulatory Agency for Medicines and as President of the Committee for the Prices of Medicinal Products, Ministry of Economy, Competitiveness and Shipping. She has been appointed as Special Secretary on Educational Planning, Education of Greek students abroad, Intercultural Education and Decentralization, Ministry of Education and Religious Affairs, Culture and Sports (7/2011- 10/2013).

At European level, Prof. Linos was a member of the Expert Committee on the European Forum on Forward Looking Activities (EFLA) (DG Research and Innovation Policy) and also served as a member of the «Research, Innovation, and Science Policy Experts» (RISE) high level committee (DG Research and Innovation Policy). Moreover, she was on the School Fruit Scheme (DG Agriculture and Rural Development) of the European Commission and participated in the Jury Committee for the EU PRIZE for Women Innovators 2014.

Prof. Linos is the founder and President of the Prolepsis Institute of Preventive Medicine, Environmental and Occupational Health, which has recently developed targeted humanitarian action and public health interventions for over twenty years.

Recent publications

A. DALMA, P. KARNAKI, A. BAKA, V. RAFTOPOULOS, D. ZOTA, A. VELOUDAKI, A. GARRISON, P. MONTALBAN, Z. DHANANI & A. LINOS. **"Promotion of Immunizations for Health Professionals in Europe: A Qualitative Study in Seven European Member States. "**, Hospital Topics 2017.

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A. DALMA, D. ZOTA, M. KOUVARI, CM. KASTORINI, A. VELOUDAKI, P. ELLIS-MONTALBAN, A. PETRALIAS, A. LINOS. **"Daily distribution of free healthy school meals or food-voucher intervention? Perceptions and attitudes of parents and educators."**, *Appetite,* 2018; 627-635.
~~~~~

L

Karen **LOCK**

Professor of Public Health

LSHTM - United Kingdom

Professor Karen Lock has been working at the London School of Hygiene & Tropical Medicine (LSHTM) with collaborations worldwide developing methods to measure contextual environmental determinants of diet, alcohol, physical activity and cardiovascular disease in a range of urban and rural populations in countries at all stages of economic development. In the UK, this research is focusing on what factors might define 'healthy' neighbourhoods and how this can be operationalised through local government polices such as planning and licencing.

She is a member of the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH), an innovative programme to link agriculture and health research for international development. She has previously been involved in a number of food and agriculture policy processes. During 2007-9, she was an expert contributor to the European Commission DG Agri during development of new policy for school fruit and vegetable schemes as part of F&V sector reform (SFS). She was a member of the World Bank Global Design and Writing Team for the International Assessment of Agricultural Science and Technology for Development (IAASTD).

Her early research focused on estimating the global burden of disease due to low intake of fruit and vegetables, and she has also contributed to systematic reviews on the effectiveness of interventions and programmes promoting fruit and vegetable intake worldwide.

Recent publications

HAWKESWORTH S., SILVERWOOD R.J., ARMSTRONG B., PLIAKAS T., NANCHAHAL K., SARTINI C., AMUZU A., WANNAMETHEE G., ATKINS, J., RAMSAY S.E., CASAS J.P. MORRIS R.W., WHINCUP P.H., LOCK K., **«Investigating the importance of the local food environment for fruit and vegetable intake in older men and women in 20 UK towns: a cross-sectional analysis of two national cohorts using novel methods",** 2017, *Int J Behav Nutr Phys Act,* 2017, 14 (1). p. 128. ISSN 1479-5868

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MILLER V., YUSUF S., CHOW C.K., DEHGHAN M., CORSI D.J., LOCK K., ET AL, **" Availability, affordability, and consumption of fruits and vegetables in 18 countries across income levels: findings from the Prospective Urban Rural Epidemiology (PURE) study.",** *Lancet Glob Health*, 2016

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MORGAN E.H., VATUCAWAQA P., SNOWDON W., WORSLEY A., DANGOUR A.D., LOCK K., **« Factors influencing fruit and vegetable intake among urban Fijians: A qualitative study",** *Appetite,* 2016, 101. pp. 114-8. ISSN 0195-6663 DOI: https://doi.org/10.1016/j.appet.2016.03.003,

M

Luc MARLIER

Research scientist

CNRS - France

Luc Marlier is a research scientist at the National Center of Scientific Research (CNRS), Strasbourg, France.

He is member of the Laboratory ICube, co-director of the team Multimodal Imagery in Health, and manages a research group whose program focuses on the role of early olfactory and gustatory experiences on later food preferences and food choices. Current research studies focus on the following areas:

1) cognitive processing of olfactory and gustatory stimulations using fMRI techniques;

2) non conscious integration of very weak odours;

3) impact of ambient odours on food preferences and choices in normal and overweight adults;

4) impact of ambient odours on the well-being and health of premature newborns.

He is author or co-author of numerous peer-reviewed research papers and an internationally recognized speaker on the ontogeny of olfactory preferences and its implications for health and nutritional programming.

M

Ambroise **MARTIN**

Professor

Claude Bernard Lyon 1 University - France

Professor of Nutrition and Biochemistry, Lyon Medical School, Claude Bernard University from 1985 to 2013.

Head of the department from risk assessment for food safety and nutrition, French Food Safety Agency (Afssa) from 1999 to 2004.

Coordinator of the French Nutrient recommendations (ANC 2001).

Member of the expert Committee on Nutrition, Afssa then Anses (2005-2012)

Member of the NDA Panel of the European Food Safety Authority (EFSA) (2006-2012) and chair of the NDA Panel (2012-2015).

Chair (2006-2015) then member of the Efsa working group on dietary reference values (DRVs).

Member of the Efsa Working group on health Claims, since 2006.

Chair of the Group on Nutrition Policy of the French Food National Council since 2001.

Recent publications

MONERET-VAUTRIN D.A., PELTRE G., GAYRAUD J., MORISSET M., RENAUDIN J.M., MARTIN A., VOLATIER J.L., **«Prevalence of sensitisation to oilseed rape and maize pollens in France: a multi-center study carried out by the Allergo-Vigilance Network. ",** *European Annals of Allergy and Clinical Immunology,* 2012, 44.

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MARTIN A., **" Faut-il prendre plus de 110 mg de vitamine C ?",** *Phytothérapie*, 2014 12(2): 76–83 DOI 10.1007/s10298-014-0851-9.

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MARTIN A., POTIER DE COURCY G., **« Besoins nutritionnels et apports conseillés: Partie 1 - concepts, élaboration, utilisation.",** *EMC Encyclopédie médico-chirurgicale* , 2017, 10-308-A-10, 10 p.

~~~~~

MARTIN A., POTIER DE COURCY G., **« Besoins nutritionnels et apports conseillés: Partie 2 - Valeurs de référence pour l'énergie, les macronutriments et les micronutriments",** *EMC - Encyclopédie médico-chirurgicale,* 2017, 10-308-A-15, 24 p.
~~~~~

M

Fionnuala **MCAULIFFE**

Professor of obstetrics and gynaecology

University College Dublin - Ireland

Fionnuala McAuliffe is a Professor of Obstetrics and Gynaecology and a sub-specialist in maternal and fetal medicine at National Maternity Hospital Dublin. She is Head of Women's and Child's Health at University College Dublin and Director of UCD Perinatal Research Centre. Areas of interests include Maternal Medicine and Fetal Medicine, including nutrition in pregnancy. She is a lead clinician of the maternal medicine services at National Maternity Hospital which receives referrals nationally.

She has received significant grant funding both nationally and internationally, has more than 200 peer reviewed publications and is responsible for obtaining in Ireland over 10 million of external grant funding as PI/co-PI.

She is the principal Investigator on many antenatal intervention studies including the ROLO study (RCT of low glycaemic diet), PROPS (RCT of probiotics in obese and diabetic pregnancy) and PEARS (RCT of lifestyle package with smart phone app), the TEST study (RCT of aspirin) and a pilot to increase breastfeeding rates in Ireland, all aiming to improve maternal and fetal health.

She qualified in Medicine at University College Dublin and then undertook training in Ireland, London and Toronto. She is on Council at the Royal College of Obstetricians & Gynaecologists as international representative, has held many committee positions at the Royal College of Physicians of Ireland, is a reviewer for over 20 international scientific journals and has developed guidelines for pregnancy in Ireland, the UK and internationally.

Recent publications

HEERY E., WALL PG., KELLEHER CC. & MCAULIFFE F., "**Effects of dietary restraint and weight gain attitudes on gestational weight gain**", *Appetite,* 2016, 107, 501:510

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HORAN MK., MCGOWAN CA., GIBNEY ER., BYRNE J., DONNELLY JM. & MCAULIFFE F., "**Maternal nutrition and glycaemic index during pregnancy impacts on offspring adiposity at 6 months of age - Analysis from the ROLO Randomised Controlled Trial.**", *Nutrients,* 2016, 8(1), 7

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SCULLY H., ALBERDI G., SEGURADO R., MCNAMARA A., LINDSAY K., HORAN M., HENNESSY E., GIBNEY E. & MCAULIFFE F., "**Child care exposure influences childhood adiposity at 2 years: analysis from the ROLO study.**", *Childhood Obesity,* 2016, 13(2)

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ALBERDI G., MCNAMARA AE., LINDSAY KL., SCULLY HA., HORAN MH., GIBNEY ER., MCAULIFFE FM., "**The association between childcare and risk of childhood overweight and obesity in children aged 5 years and under: a systematic review**", *European Journal of Pediatrics,* 2016, 175 (10), 1277:1294
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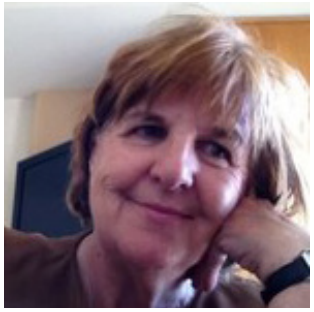
M

Mary **MCCARTHY**

General Practitioner

UEMO Representative - United Kingdom



General Practitioner in Shrewsbury, England.

General Practitioners Committee British Medical Association.

Head of BMA UEMO Delegation.

Board of Royal College of General Practitioners.

Vice-President UEMO.

Recent publications

MCCARTHY M., **" Too much scrutiny is bad for general practice "**, *BMJ*, 2016; 353 (https://doi.org/10.1136/bmj.i2151)

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MCCARTHY M., **" It's time for GP to be recognised as the specialists they are."**, *BMJ*, (http://blogs.bmj.com/Bmj/2017/10/09/mary-mccarthy-its-time-for-gps-to-be-recognised-as-the-specialists-they-are)
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M

Maria Giulia **MEDICO**

Policy officer School Scheme

EC-DG Agri - Belgium

European Commission.

Directorate General for Agriculture and Rural Development.

Policy officer in charge of the EU school fruit, vegetables and milk Scheme.

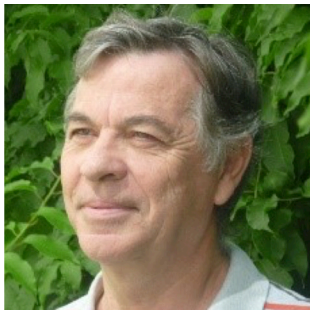
Formerly working on organic production, rural development.

M

Luc MULTIGNER

Research Director

INSERM - France



MD, PhD, HDR, Research Director at "National Institute of Health and Medical Research" (INSERM).

Head of the Team "Exposure Assessment and Epidemiological Research On Environment, Reproduction and Development" of the" Research Institute for Environmental and Occupational Health" (IRSET), Inserm U1085, Rennes, France. www.irset.org.

Member of the Working Group "Endocrine Disruptor" at the French Agency for Food, Environmental and Occupational Health & Safety (ANSES).

Recent publications

WAREMBOURG ET AL., "**Prenatal exposure to glycol ethers and sex steroid hormones at birth**", *Environ Int,* 113, 66-73, 2018

~~~~~

WAREMBOURG ET AL., "**Prenatal exposure to glycol ethers and cryptorchidism and hypospadias: a nested case-control study**", *Occup Environ Med.*, 59-65, 2018

~~~~~

BERANGER ET AL., "**Prenatal exposure to glycol ethers and neurocognitive abilities in 6-year-old children: the pelagie cohort study**", *Environ Health Perspect,* 125,684-90, 2017

~~~~~

HERVE ET AL., "**Prenatal exposure to chlordecone, gestational weight gain, and birth weight in a Guadeloupean birth cohort**", *Environ Res,* 151, 436-44, 2016

~~~~~

L. MULTIGNER, COSTET ET AL., "**Perinatal exposure to chlordecone and infant growth**", *Environ Res,* 142:123-34, 2015

N

Tiia NGANDU

Associate professor

National Institute for Health and Welfare - Finland

Tiia Ngandu is currently working at the Public Health Promotion Unit, National Institute for Health and Welfare, Helsinki, Finland as a research manager and leader of the Dementia Prevention group. She is also affiliated to the Alzheimer's Disease Research Center, Karolinska Institutet, Stockholm, Sweden. She has completed her medical studies in 2007 at the University of Kuopio, Finland, and her PhD in 2006 at the Karolinska Institutet, Sweden. She received the title of docent at the University of Helsinki in 2017.

Tiia Ngandu's major research interests are in the area of dementia epidemiology, particularly risk factors and prevention of Alzheimer's disease and cognitive impairment. She is involved in population-based studies investing modifiable dementia risk factors, and clinical trials to prevent dementia. She is the coordinator of the ongoing Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER). She is also involved in several European and global dementia prevention projects, including the recently launched World Wide Fingers network. She has authored approximately 50 original articles.

Recent publications

NGANDU T. ET AL., "**A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial.**". *Lancet,* 2015

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LEHTISALO J., NGANDU T. ET AL., "**Nutrient intake and dietary changes during a 2-year multi-domain lifestyle intervention among older adults: secondary analysis of the FINGER.**", *Br J Nutr.*, 2017

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SOLOMON A., TURUNEN H., NGANDU T. ET AL., "**Effect of the apolipoprotein ex genotype on cognitive change during a multidomain lifestyle intervention.**" *JAMA Neurol*, 2018

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MARENGONI A., NGANDU T. , "**The effect of a 2-year intervention consisting of diet, physical exercise, cognitive training, and monitoring of vascular risk on chronic morbidity - the FINGER randomised controlled trial.**", *J Am Med Dir Assoc.,* 2018;19:355-360

~~~~~

ROSENBERG A., NGANDU T. ET AL., "**Multidomain lifestyle intervention benefits a large elderly population at risk for cognitive decline and dementia regardless of baseline characteristics: the FINGER trial.**", *Alzheimers Dement,* 2018;14:263-270

N

Marc **NICOLINO**

Professor of Pediatrics

Femme-Mère-Enfant Hospital - France

Marc Nicolino is Professor of Pediatrics, Chief of the division of Pediatric Endocrinology and Metabolism, Femme-Mère-Enfant University Hospital, Lyon, France.

Dr Nicolino has earned a university degree, master degree, doctor of medecine, and PhD.

He has long clinical experience with endocrine diseases in children and adolescents. His main research interests include both atypical and type 1 diabetes, growth disorders, obesity and rare genetic dideases in Pediatric Endocinology.

Recent publications

ABDULKARIM B., NICOLINO M., IGOILLO-ESTEVE M., DAURES M., ROMERO S., PHILIPPI A., SENÉE V., LOPES M., CUNHA DA., HARDING HP., DERBOIS C., BENDELAC N., HATTERSLEY AT., EIZIRIK DL., RON D., CNOP M., JULIER C., "**A missense mutation in PPP1R15B causes a syndrome including diabetes, short stature, and microcephaly.**", *Diabetes,* 2015. (BA, MN, MC and CJ contributed equally to this article)

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DOS SANTOS RS., DAURES M., PHILIPPI A., ROMERO S., MARSELLI L., MARCHETTI P., SENÉE V., BACQ D., BESSE C., BAZ B., MARROQUÍ L., IVANOFF S., MASLIAH-PLANCHON J., NICOLINO M., SOULIER J., SOCIÉ G., EIZIRIK DL., GAUTIER JF., JULIER C., "**dUTPase (DUT) is mutated in a novel monogenic syndrome with diabetes and bone marrow failure.**", *Diabetes,* 2017

~~~~~

LENFANT C., BAZ P., DEGAVRE A., PHILIPPI A., SENÉE V., VANDIEDONCK C., DERBOIS C., NICOLINO M., ZALLOUA P., JULIER C., "**Juvenile-Onset Diabetes and Congenital Cataract: «Double-Gene» Mutations Mimicking a Syndromic Diabetes Presentation.**", *Genes,* 2017

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SOWERS CR., WANG R., BOURNE RA., MCGRATH BC., HU J., BEVILACQUA SC., PATON JC., PATON AW., COLLARDEAU-FRACHON S., NICOLINO M., CAVENER DR., "**The protein kinase PERK/EIF2AK3 regulates proinsulin processing not via protein synthesis but by controlling endoplasmic reticulum chaperones.**", *J Biol Chem,* 2018
~~~~~

N

Teresa **NORAT**

Principal Research Fellow

Imperial College London - United Kingdom

Dr. Teresa Norat is an epidemiologist working as Principal Research Fellow in the Department of Epidemiology and Biostatistics at Imperial College London since 2007.

She is coordinating the World Cancer Research Fund Continuous Update Project at Imperial College.

She worked from 1998 to 2006 in the Unit of Nutrition at the International Agency for Research on Cancer, Lyon where she collaborated in the large European Prospective Investigation into Nutrition and Cancer (EPIC).

Her research focuses on the role of nutrition, lifestyle, metabolic factors and genetic factors in the aetiology of chronic diseases, in particular cancer in EPIC.

Recent publications

AUNE D., GIOVANNUCCI E., BOFFETTA P., FADNES LT., KEUM N., NORAT T., GREENWOOD DC.,RIBOLI E, VATTEN LJ, TONSTAD S., **" Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality-a systematic review and dose-response meta-analysis of prospective studies.",** *Int J Epidemiol,* 2017;46(3):1029-1056. doi: 10.1093/ije/dyw319.

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NORAT T., SCOCCIANTI C., BOUTRON-RUAULT MC., ANDERSON A., BERRINO F., CECCHINI M., ESPINA C., KEY T., LEITZMANN M., POWERS H., WISEMAN M, ROMIEU I., **" European Code against Cancer 4th Edition: Diet and cancer.",** *Cancer Epidemiol*, 2015 Dec;39 Suppl 1: S56-66. doi: 10.1016 canep.2014.12.016

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NORAT T., AUNE D., CHAN D., ROMAGUERA D., **" Fruits and vegetables: updating the epidemiologic evidence for the WCRF/AICR lifestyle recommendations for cancer prevention.",** *Cancer Treat Res,* 2014;159:35-50. doi: 10.1007/978-3-642-38007-5_3.

O

Patrick **OUVRARD**

General Practitioner

UEMO Representative - France

General Practitioner, Family Doctor.
Vice President of UEMO.
Vice President of SFTG.
In charge of communication.
Head of the Department of medical anthropology.

R

James **RAMSAY**

Head of Engagement and Cooperation Unit

EFSA - United Kingdom

At EFSA since 2011, I'm currently responsible for engagement, cooperation and outreach activities with the Authority's key audiences, including EU institutions, civil society stakeholders and other food chain actors, the media, the general public, and European and international scientific networks.

Prior to EFSA, I worked as a communications consultant in London for public and voluntary sectors clients, including UK government departments and the European Commission, as well as for the financial services industry.

I have a Masters degree in international relations from Leicester University and Bacherlors degree in Hispanic Studies from Birmingham University.

R

Christian **REYNOLDS**

Knowledge Exchange Research Fellow

University of Sheffield - United Kingdom

Christian Reynolds is a Knowledge Exchange Research Fellow (N8 AgriFood project) at the Department of Geography, University of Sheffield, and an adjunct Research Fellow at the Barbara Hardy Institute for Sustainable Environments and Technologies, University of South Australia. Christian's research examines the economic and environmental impacts of food consumption; with focus upon sustainable, healthy and affordable diets; food waste; and the political power of food in international relations. Christian was formerly employed as a Public Health Research Fellow at the Rowett Institute of Nutrition and Health, University of Aberdeen, where he looked at healthy sustainable diets for high and low income groups using linear programming and agent based modelling.

From June 2017-2018 Christian Reynolds is on secondment to WRAP as Technical specialist in international food sustainability. In this role Christian will be working on integrating healthy sustainable eating and food waste reduction messages.

Recent publications

REYNOLDS, C.J., "**Energy embodied in household cookery: the missing part of a sustainable food system? Part 2: A life cycle assessment of roast beef and Yorkshire pudding**", *Energy Procedia,* Volume 123, September 2017, Pages 228-234.

~~~~~

REUTTER, B., LANT, P., REYNOLDS, C.J. & LANE, J., "**Food waste consequences: Environmentally extended input-output as a framework for analysis.**" *Journal of Cleaner Production,* 2016

~~~~~

REYNOLDS, C.J. MIROSA, M.; CLOTHIER, B.,"**New Zealand's Food Waste: Estimating the Tonnes, Value, Calories and Resources Wasted.**",
Agriculture, 2016, 6, 9.

~~~~~

REYNOLDS CJ., MACDIARMID JI., WHYBROW S., HORGAN G., KYLE J., "**Greenhouse gas emissions associated with sustainable diets in relation to climate change and health**",
Proc Nutr Soc
~~~~~

R

Elio RIBOLI

Professor of Cancer Epidemiology and Prevention

Imperial College London - United Kingdom

Professor Elio Riboli's career started at the Department of Epidemiology of the National Institute of Cancer, Milan (1978-1983).

In 1983 he was appointed Medical Officer in Epidemiology at the International Agency for Research on Cancer of the World Health Organisation-United Nations (IARC-WHO) based in Lyon, France.

While at IARC in the mid 1980's, he engaged a novel area of research focusing on the role of diet, nutrition and endogenous hormones in cancer aetiology. In 1988 this materialised into the initiation of the European Prospective Investigation into Cancer and Nutrition (EPIC), and its subsequent funding by the "Europe Against Cancer" programme of the European Commission. Professor Riboli has since been the European Coordinator and Principal Investigator of EPIC.

In 2006, he moved from IARC to Imperial College London where he was initially appointed Professor and Chair in Cancer Epidemiology and Prevention and one year later Head of the Division of Epidemiology, Public Health and Primary Care. He subsequently led the establishment of the Imperial College School of Public Health, of which he was Director from 2010 to 2017.

In 2018, Professor Riboli was appointed Professor of Public Health at the School of Medicine of Humanitas University in Milan, while retaining a joint Professorial appointment at Imperial College. His research is focused on nutritional, metabolic and behavioral risk factors for cancer and other chronic diseases.

Recent publications

AUNE D., KEUM N., GIOVANNUCCI E.... RIBOLI E., NORAT T., "**Whole grain consumption and risk of cardiovascular disease, cancer, and all cause and cause specific mortality: systematic review and dose-response meta-analysis of prospective studies**", *BMJ,* 2016 Jun 14;353:i2716

~~~~~

MULLER DC., MURPHY N., JOHANSSON M... RIBOLI E., BRENNAN P.,"**Modifiable causes of premature death in middle-age in Western Europe: results from the EPIC cohort study**", *BMC Med,* 2016 Jun 14;14:87

~~~~~

EZZATI M., RIBOLI E., "**Behavioral and dietary risk factors for noncommunicable diseases**", *N Engl J Med,* 2013, 369(10):954-64

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EZZATI M., RIBOLI E., "**Can noncommunicable diseases be prevented? Lessons from studies of populations and individuals**", *Science,* 2013, 337:1482-1487

~~~~~

PISCHON T., BOEING H., HOFFMANN K, ... RIBOLI E., "**General and abdominal adiposity and risk of death in Europe**", *N Engl J Med,* 2008, 359:2105-2120

R

Ana **RITO**

Director at CEIDSS and Researcher

INSA - Portugal

Ana Rito is the Director of the Research Centre CEIDSS (Centre for Studies and Research on Social Dynamics and Health) focusing public health nutrition studies. She graduated in Food and Nutrition Sciences (U.Porto-Portugal), obtained a Master Degree in Medical Sciences (U.Sheffield, UK) and her PhD in Public Health (ENSP, Brazil).

From 2008 she undertook 2 Post-Doc at the National Institute of Health Ricardo Jorge (INSA) - Portugal, one being on the EU project EConDA - Economics of Chronic Diseases" led by the UK Health Forum.

Former Vice President of Scientific Committee of the Platform Against Obesity (Ministry of Health) and the Head of the Bachelor Degree in Nutritional Sciences - University Atlântica, she is currently the Principal Investigator (PI) of Projects based on the development of creative answers to tackle childhood obesity at municipality-level.

At INSA (as a WHO Collaborating Center) Ana Rito has been, since 2007, the PI for Portugal, of the study «Childhood Obesity Surveillance Initiative - WHO / Europe " (COSI) and a member of its Advisory Board. She is also a member of European Networks has developed scientific/research collaboration with several international institutions in which, more recently the Copenhagen Business School, Denmark.

Recent publications

ABARCA-GÓMEZ L., ABDEEN Z.A., HAMID Z.A., ABU-RMEILEH ET AL. (NCD RISK FACTOR COLLABORATION) , **"Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: A pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. "**, *Lancet,* 2017; 390: 2627–4.

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L. LISSNER, TMA. WIJNHOVEN, K. MEHLING, A. SJÖBERG, M. KUNESOVA, A. YNGVE, A. PETRAUSKIENE, V. DULEVA, AI. RITO AND J. BREDA, **"Socioeconomic inequalities in childhood overweight: heterogeneity across five countries in the WHO European Childhood Obesity Surveillance Initiative (COSI–2008)"**, *International Journal of Obesity,* 2016; 1–7
~~~~~

S

Daniel **SAUVAITRE**

President

ANPP - France

Daniel Sauvaitre is an arborist and winemaker in Charente. He is President of the National Association of Apples Pear (ANPP) since its creation in 2008. He is General Secretary of Interfel and also Co-Chair of the Economic Commission of Interfel (Interprofession of Fresh Fruits and Vegetables) and member of the WAPA (World Apple and Pear Association).

Daniel Sauvaitre has been a director of the Interprofessional Technical Center for Fresh Fruits and Vegetables (Ctifl). He is also Regional Councilor of Aquitaine Limousin Poitou-Charentes.

S

Umberto **SIMEONI**

Professor of Paediatrics

University of Lausanne - Switzerland

Umberto Simeoni is Professor of Paediatrics at Faculté de Biologie et de Médecine, University of Lausanne and Director of the Division of Pediatrics and of the Developmental Origins of Health and Disease (DOHaD) Lab at CHUV University Hospital in Lausanne Switzerland.

After graduating, he worked in the position of Professor of Pediatrics and Director of Neonatal and Pediatric Intensive Care Units at Strasbourg University Hospital, up to 2001, then moved as Professor of Pediatrics and Director of the Department of Neonatology at Aix-Marseille University and AP-HM University Hospital in Marseille, France until 2014.

He authored and co-authored more than 200 referenced articles, several books on neonatology, and more than 300 invited lectures.

Umberto Simeoni is the Past-President of the European Association of Perinatal Medicine and President of the Société Francophone DOHaD.

Recent publications

VINCI G., BUFFAT C., SIMONCINI S., BOUBRED F., LIGI I., DUMONT F., LE BONNIEC B., FOURNIER T., VAIMAN D., DIGNAT-GEORGE F., SIMEONI U., **"Gestational age-related patterns of AMOT methylation are revealed in preterm infant endothelial progenitors."**, *PLoS One,* 2017 Oct 16;12(10):e0186321.

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YZYDORCZYK C., LI N., CHEHADE H., MOSIG D., BIDHO M., KESHAVJEE B., ARMENGAUD JB., NARDOU K., SIDDEEK B., BENAHMED M., VERGELY C., SIMEONI U., **"Transient postnatal overfeeding causes liver stress-induced premature senescence in adult mice."**, *Sci Rep,* 2017 Oct 10;7(1):12911.

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BOUBRED F., JAMIN A., BUFFAT C., DANIEL L., BOREL P., BOUDRY G., LE HUËRON-LURON I., SIMEONI U., **"Neonatal high protein intake enhances neonatal growth without significant adverse renal effects in spontaneous IUGR piglets."**, *Physiol Rep.,* 2017 May;5(10). pii: e13296.

S

Anna **STAVDAL**

President

WONCA Europe - Norway

Family doctor in the city of Oslo for 30 years, and associate professor at the University of Oslo.

Former president of the Norwegian College of General Practice, and the first president of the Nordic Federation of General Practice.

Vice President of WONCA Europe since 2010, and president since 2016.

Active in public debate on health politics and former weekly columnist in the biggest tabloid newspaper In Norway for 7 years.

WONCA Europe is the European department of World Organisation of Family Doctors - representing the academic voice of 120 000 family doctors in the region. Universal Health Coverage, with accessibility to a family doctor for every family is the main goal for the work of WONCA Europe.

Strengthening the link between family medicine and Public Health is mandatory to reach that goal.

S

Stefan STORCKSDIECK GENANNT BONSMANN

Scientific Project Officer

EC – DG JRC - Italy

Stefan Storcksdieck Genannt Bonsmann studied nutritional sciences and home economics in Giessen, Germany, followed by a PhD on iron bioavailability at ETH Zurich, Switzerland. From 2008 to 2013, he worked as a Project Manager on nutrition and health topics at the European Food Information Council (EUFIC) in Brussels, Belgium.

Since May 2013, Stefan has been working as a Scientific Project Officer at the Joint Research Centre (JRC) of the European Commission in Ispra, Italy, where his main focus as a member of the Nutrition and Health team is on school food standards, public procurement, nutrient profiles, and nutrition labelling.

Recent publications

STORCKSDIECK GENANNT BONSMANN S., CALDEIRA S., GAUCI C., GALLEJA A., FURTADO A., "**Public procurement as a policy tool to promote healthier food environments and choices.**", *WHO Public Health Panorama,* 2017;3(4):649-54

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CALDEIRA S., STORCKSDIECK GENANNT BONSMANN S., BAKOGIANNI I., GAUCI C., CALLEJA A., FURTADO A., "**Public procurement of food for health: technical report on the school setting.**", *European Commission,* 2017. ISBN: 978-99957-1-088-0. doi: 10.2760/269508

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MAK TN, STORCKSDIECK GENANNT BONSMANN S, CALDEIRA S, WOLLGAST J., "**How to promote fruit and vegetable consumption in schools: a toolkit.**", *EC,* 2016. EUR 27946. doi:10.2788/33817

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STORCKSDIECK GENANNT BONSMANN S., "**Comprehensive mapping of national school food policies across the European Union plus Norway and Switzerland.**", *Nutr Bull,* 2014;39(4):369-73.

S

Saverio **STRANGES**

Professor and Chair

Western University - Canada

Saverio Stranges is currently Professor and Chair of the Department of Epidemiology & Biostatistics within the Schulich School of Medicine & Dentistry, at Western University, in London, Ontario, Canada. He also holds a cross-appointment as Professor in the Department of Family Medicine.

From 2006 to 2015, he was a Senior Lecturer and then an Associate Clinical Professor (with tenure) of Cardiovascular Epidemiology in the Division of Health Sciences at the University of Warwick Medical School in the United Kingdom.

In Warwick, Dr. Stranges was also Director of the Academic Clinical Training in Public Health, as well as Honorary Consultant Physician at the University Hospitals of Coventry and Warwickshire NHS Trust, where he worked in the Lipid and Coronary Prevention outpatient clinics within the Warwickshire Institute for the Study of Diabetes, Endocrinology and Metabolism. Prior to his a ppointment at Western University in Canada, Dr. Stranges worked as Scientific Director of the Department of Population Health at the Luxembourg Institute of Health, in Luxembourg, where he still holds a formal role as Scientific Consultant.

Dr. Stranges is a medical doctor, public health specialist and chronic disease epidemiologist, with extensive experience in the field of epidemiology and public health research.

Throughout his career, Dr. Stranges has been involved in several international epidemiological projects, clinical trials, secondary data analyses and systematic review work, and has published extensively in the area of chronic disease epidemiology, with over 170 publications as scientific articles, reviews and book chapters.

Recent publications

RAYMAN MP., WINTHER KH., PASTOR-BARRIUSO R., COLD F., THVILUM M., STRANGES S., GUALLAR E., COLD S., **"Effect of long-term selenium supplementation on mortality: Results from a multiple-dose, randomised controlled trial."**, *Free Radic Biol Med.,* 2018;pii: S0891-5849(18)30070-4.

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SAMOUDA H., RUIZ-CASTELL M., KARIMI M., BOCQUET V., KUEMMERLE A., CHIOTI A., DADOUN F., STRANGES S.,**"Metabolically healthy and unhealthy weight status: health issues and related cost. Findings from the 2013-15 European Health Examination Survey in Luxembourg."**, *Diabetes & Metabolism,* 2017;pii: S1262-3636(17)30581-5.

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ALKERWI A., SAUVAGEOT N., BAHI IE., DELAGARDELLE C., BEISSEL J., NOPPE S., RODERICK PJ., MINDELL JS., STRANGES S., **"Prevalence and related risk factors of chronic kidney disease among adults in Luxembourg: evidence from the observation of cardiovascular risk factors (ORISCAV-LUX) study."**, *BMC Nephrol,* 2017;18:358.

S

R. James **STUBBS**

Professor

Leeds University - United Kingdom

Professor James Stubbs has over 25 years research experience in appetite science, nutrition, exercise and energy balance, necessarily incorporating body composition, human behaviour, physiology and psychology of food intake, diet composition, obesity.

He has extensive experience in research-intensive environments, conducting integrated human trials and interventions, concerned with diet composition, physical activity, energy balance, weight control and obesity. He specialises in bridging academic and industry interests, communicating at national and international conferences, in the media and in policy development within Europe and the United States. James has conducted over 70 studies, on human appetite, energy and nutrient balance and obesity (h-index 49) and has 10 years of industry experience and academic collaborations in developing applied solutions to weight control among in the general population, with a special interest in sustained weight loss, relapse prevention and weight maintenance strategies.

James's current research focuses on (i) how foods and whole diet approaches impact on appetite and energy balance (ii) psychobiological mechanisms of resistance to weight loss (iii) developing theoretically-informed, evidence based solutions for longer-term weight loss maintenance. These core themes are nested within an overarching philosophy of understanding psychobiological mechanisms that can inform interventions most likely to achieve impact on weight and health in the general population.

Recent publications

HOPKINS M., FINLAYSON G., DUARTE C., WHYBROW S., RITZ P., HORGAN GW., BLUNDELL JE AND STUBBS RJ., **"Modelling the associations between fat-free mass, resting metabolic rate and energy intake in the context of total energy balance."** *International Journal of Obesity and Related Metabolic Disorders,* 2015 doi:10.1038/ijo.2015.155.

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STUBBS J., MORRIS L., PALLISTER C., AVERY A., HORGAN G., LAVIN J., **"Weight outcomes audit in 1.3 million adults during their first 3 month's attendance in a commercial weight management programme.", *BMC Public Health,*** 2015, 15; 822 doi:10.1186/s12889-015-2225-0

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SAINSBURY K., EVANS EH., PEDERSEN S., MARQUES MM., TEIXEIRA PJ., LAHTEENMAKI L., STUBBS RJ, HEITMANN BL., SNIEHOTTA FF., **"Attribution of weight regain to emotional reasons amongst European adults with overweight and obesity who regained weight following a weight loss attempt."** *Eating and Weight Disorders, (In Press)*

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HOPKINS M., FINLAYSON G., DUARTE, GIBBONS C., JOHNSTONE AM., WHYBROW S., HORGAN GW., BLUNDELL JE., STUBBS RJ., **"Biological and psychological mediators of the relationships between fat mass, fat-free mass and energy intake."** *International Journal of Obesity and Related Metabolic Disorders, (ePub ahead of print),* doi:10.1038/s41366-018-0059-4

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STUBBS RJ., HOPKINS M., FINLAYSON GS., DUARTE C., GIBBONS C., BLUNDELL JE., **"Potential effects of fat mass and fat-free mass on energy intake in different states of energy balance."** *European Journal of Clinical Nutrition, (In press)*

Ann TANGHE

Psychologist

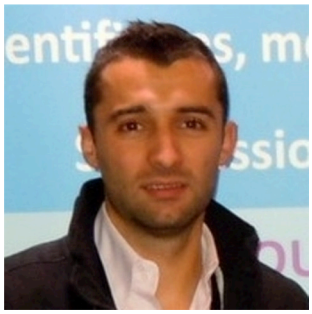
Zeepreventorium - Belgium

Since 1990 Ann Tanghe works at a residential paediatric care centre for chronically ill children "Zeepreventorium" at the Belgian Coast. In 1994 Ann Tanghe started a project for the inpatient treatment of severe obese children and youngsters. At that moment this project was unique in Europe and around the world.

For the moment Ann Tanghe is coordinator-psychologist of a continuous population of 120 severe obese youngsters between 5 and 18 years old. Since the start of the treatment there is an intense cooperation with Professor Caroline Braet from the University of Ghent to evaluate and improve the treatment program. This scientific work is being described in several publications of which Ann Tanghe is co-author.

T

David **THIVEL**



Associate Professor

Clermont Auvergne University - France

David Thivel completed his PhD in the Laboratory of Human Nutrition (INRA) and the Laboratory of Biology of APS Clermont-Ferrand (University Blaise Pascal), studying nutritional adaptations to physical exercise in the teenager thin and obese. He completed a first postdoctoral stay at Columbia University in New York City (USA) where he was able to deepen these energetic and metabolic explorations in response to weight loss induced by bariatric surgery. His second postdoctoral fellowship in Ottawa, Canada, allowed him to continue his work on nutritional responses to physical exercise and sedentary behaviors in children.

Today, David Thivel is Associate Professor at Clermont Auvergne University in Clermont-Ferrand (UFR STAPS) and focuses his research on the interests and impacts of physical activity and sedentary lifestyle on the metabolic profile and nutritional status of children and adolescents, particularly in the context of pediatric obesity.

Mr. Thivel is also Vice president of the European Organization for Pediatric Obesity (ECOG).

Recent publications

FEARNBACH S.N., SILVERT L., PEREIRA B., BOIRIE Y., DUCLOS M., KELLER K.L., THIVEL D., **" Reduced neural responses to food cues might contribute to the anorexigenic effect of acute exercise observed in obese but not lean adolescents. "**, *Nutrition Research,* 44: 76-84.

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MATHIEU M-E., LEBKOWSKI A., LAPLANTE E., DRAPEAU V., THIVEL D., **" Optimal Timing of Exercise for Influencing Energy Intake in Children during School Lunch. "**, *Appetite,* 120 (1): 416-422.

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SCWHARTZ C., KING NA., PEREIRA B., BLUNDELL JE., THIVEL D., **" A Systematic Review and Meta-Analysis of energy and macronutrient intake responses to physical activity interventions in children and adolescents with obesity. "**, *Pediatric Obesity,* 12(3):179-194.

U

Matti **UUSITUPA**

Professor of Nutrigenetics

University of Eastern Finland - Finland

Professor (Emeritus) of Nutrigenetics at the Public Health and Clinical Nutrition, University of Eastern Finland, 2010-2014.

Former appointments: Professor of Clinical Nutrition, University of Kuopio, Dean of the Faculty of Medicine, University of Kuopio, Chief Medical Director, Kuopio University Hospital, Rector of the University of Kuopio 2001-2009.

Main research focus includes prevention, biomarkers and genetics of Type 2 diabetes, and gene diet interactions regarding metabolic disorders in humans.

Over 600 original publications mainly from the field of nutrition, diabetes and cardiovascular diseases.

Recent publications

UUSITUPA M., "**Remission of type 2 diabetes: mission not impossible.**", *Lancet,* 2017

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DE MELLO VD ET AL. ,"**Indolepropionic acid and novel lipid metabolites are associated with a lower risk of type 2 diabetes in the Finnish Diabetes Prevention Study.**", *Sci Rep,* 2017

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UUSITUPA M., "**Lifestyle changes and cardiovascular risk reduction in diabetes.**", *Lancet Diabetes Endocrinol.,* 2016

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LIVINGSTONE KM., "**FTO genotype and weight loss: systematic review and meta-analysis of 9563 individual participant data from eight randomised controlled trials.**", *BMJ,* 2016

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LINDSTRÖM J., UUSITUPA M., TUOMILEHTO J, PELTONEN M., "**Following in the Footsteps of the North Karelia Project: Prevention of Type 2 Diabetes.**", *Global Heart,* 2016

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LINDSTRÖM J. ET AL., "**Improved lifestyle and decreased diabetes risk over 13 years: long-term follow-up of the randomised Finnish Diabetes Prevention Study (DPS).** ", *Diabetologia,* 2013
~~~~~

V

Mathieu **VALCKE**

Head toxicological and radiological risk assessment

INSPQ - Canada

Since 2004, Expert toxicologist and institutionnal researcher at Quebec's national institute of public health, where he's the head of the scientific team on toxicological and radiological health risk assessment.

He holds a PhD in toxicological risk and public health from the University of Montreal. He also holds a position as a clinical adjunct professor at the department of environmental and occupational health from the University of Montreal.

His research interests focus on improving the toxicologial health risk assessment methods by stochastic modelling approaches to chemical exposure and the use of human biomonitoring data on environmental contaminants.

Recent publications

VALCKE M., BOURGAULT MH., ROCHETTE L., NORMANDIN L., SAMUEL O., BELLEVILLE D., BLANCHET C., PHANEUF D., "**Human health risk assessment on the consumption of fruits and vegetables containing residual pesticides: A cancer and non-cancer risk/benefit perspective.**", *Environ Int,* 2017, 108:63-74. doi: 10.1016/j.envint.2017.07.023.

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BHAT VS., MEEK ME., VALCKE M., ENGLISH JC., BOOBIS AR., BROWN RJ., "**Evolution of Chemical-Specific Adjustment Factors (CSAF) based on Recent International Experience; Increasing Utility and Facilitating Regulatory Acceptance**", *Critical Reviews in Toxicology,* 2017, 47: 729-749. DOI: 10.1080/10408444.2017.1303818

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VALCKE M., LEVASSEUR ME., SOARES DA SILVA A., WESSELING C., "**Pesticide exposures and chronic kidney disease of unknown etiology: an epidemiologic review.**", *Environmental Health,* 2017, DOI: 10.1186/s12940-017-0254-0

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VALCKE M., HADDAD S., "**Assessing human variability in kinetics for exposures to multiple environmental chemicals: a PBPK-modeling case study with DBTEX**", *J Toxicol Environ Health A.,* 2015, 78:7, 409-431, DOI: 10.1080/15287394.2014.971477

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TOHON HG., FAYOMI B., VALCKE M., COPPIETERS Y., BOULAND C., "**BTEX air concentrations and self-reported common health problems in gasoline sellers from Cotonou, Benin**", *Int J Environ Health Res.,* 2014, DOI:10.1080/09603123.2014.915017

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VALCKE M., KRISHNAN K., "**Characterization of the Human Kinetic Adjustment Factor (HKAF) for the Health Risk Assessment of Environmental Contaminants.**", *J Appl Toxicol,* 2014, 34, 227-40. http://dx.doi.org/10.1002/jat2919

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BOURGAULT MH., GAGNÉ M., VALCKE M., "**Lung cancer and mesothelioma risk assessment for a population environmentally exposed to asbestos**", *J Int J Hyg Environ Health,* 2014, 217, 340-6. http://dx.doi.org/10.1016/j.ijheh.2013.07.008

V

Dave VAN KANN

Senior researcher and lecturer

Fontys University - The Netherlands

Dave Van Kann is appointed as senior researcher and lecturer at Fontys University of Applied Sciences in the Netherlands.

His research expertise is focused on creating supportive living environments for a healthy lifestyle, particularly in children.

He is involved in multiple research projects studying the effect of environmental influences on health behaviors by the use of objective measures, such as accelerometry and GPS, and supervises 3 PhD candidates on these topics.

He is project leader of two intervention studies targeting children's nutrition behavior and physical activity, in which translating empirical evidence into practice is a main goal.

Further, he is coordinator of a Master's degree program at Fontys University of Applied Sciences (Master Sports and Physical Education).

Recent publications

VAN KANN DHH., DE VRIES SI., SCHIPPERIJN J., DE VRIES NK., JANSEN MWJ., KREMERS SPJ., **"A multicomponent schoolyard intervention targeting children's recess physical activity and sedentary behavior: Effects after one year."**, *Journal of Physical Activity and Health,* 2017, 14, 866-875

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VAN KANN DHH., DE VRIES SI., SCHIPPERIJN J., DE VRIES NK., JANSEN MWJ., KREMERS SPJ., **"Schoolyard characteristics, physical activity and sedentary behavior: Combining GPS and accelerometry."**, *Journal of School Health,* 2016, 86(12), 913-921

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VAN KANN DHH., DE VRIES SI., SCHIPPERIJN J., DE VRIES NK., JANSEN MWJ., **"The effect of a multicomponent intervention on physical activity and sedentary behavior in primary school children: the Active Living study."**, *Preventive Medicine,* 2016, 89, 64-69

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VAN KANN DHH., JANSEN MWJ., DE VRIES SI., DE VRIES NK., KREMERS SPJ., **"Active Living: Development and quasi-experimental evaluation of a school-centered physical activity intervention for primary school children."**, *BMJ Public Health,* 2015, 13:1315

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GUBBELS JS., VAN KANN DHH., DE VRIES NK., THIJS CT., KREMERS SPJ., **"The next step in health behavior research: the need for ecological moderation analyses - an application to diet and physical activity at childcare."**, *International Journal of Behavioral Nutrition and Physical Activity,* 2016, 11:52

V

Andrea **VANIA**

Paediatrician

Sapienza University of Rome - Italy

Paediatrician since 1986 (graduated: 1982), Aggregate Professor, Dept. of Paediatrics, Faculty of Pharmacy and Medicine, "Sapienza" Rome University.

Author/co-author of >600 items (>200 of international relevance, ≈90 books' chapters/Congress Proceedings). Up-to-dated IF: ≈200. Responsible for the Centre for Paediatric Nutrition and Dietetics in the same Dept. Teacher in several Graduation and Post-Graduation Courses of "Sapienza" Rome University.

Organizer and teacher at the 7th-13th Upgrading Course in Paediatric Nutrition. President of ECOG (European Childhood Obesity Group), years 2010-2013, presently Past-President of ECOG and EAPE (European Association for Paediatric Education, also: Honorary Member), board member of SINUPE (Italian Society for Paediatric Nutrition), SIMA (Italian Society for Adolescent's Medicine), SIO-Lazio (Obesity Italian Society, Regional Branch of Latium); ordinary member of several National Scientific Societies (SIPPS – Italian Society of Preventive Paediatrics, SINU – Italian Society for Human Nutrition, ADI – Italian Association of Dietetics, SIO). Coordinator of the Transversal Group for Paediatric Age, in the Joint Committee for 2014 Italian RDA.

Until 2014 "expert" in the CME Programme of the Italian Health Ministry. Component since 2015 of the CNSA (National Committee for Food Safety) of the same Ministry.

Invited Opinion Leader in several Broadcasting Programmes of National TV/radio chains RAI. Responsible and/or expert of various websites interacting with the audience in topics related to Paediatric Nutrition (http://www.cibo360.it/; http://alimentazionebambini.e-coop.it/; http://www.ok-salute.it/).

Main interest areas: Paediatric Obesity, Nutrition, Psychology; Paediatrics in general; Human Nutrition; Teaching; Adolescentology; Paediatric Haematology, Gastroenterology, Infectious Diseases, Immunology.

Recent publications

BARBARO G., PIEDIMONTE A., PODAGROSI M. ET AL., **"Epicardial adipose tissue and signs of metabolic syndrome in children."**, *Eat Weight Disord,* 2016;21(2):269-76

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DELLA CORTE C., LICCARDO D., MOSCA A., VANIA A., NOBILI V., **"Non-alcoholic fatty liver disease."**, *Pediatr Child Health,* 2013;23(12):529-34

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DELLA CORTE C., MOSCA A., VANIA A., ET AL., **"Pediatric liver diseases: current challenges and future perspectives."**, *Expert Rev Gastroenterol Hepatol,* 2016;10(2):255-65

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NENNA R., MOSCA A., MENNINI M., ET AL., **"Coeliac Disease Screening Among a Large Cohort of Overweight/Obese Children."**, *JPGN,* 2015;60(3):405-7

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ZAMPETTI S., CAMPAGNA G., LUCANTONI F. ET AL., **"Wrist circumference is associated with increased systolic blood pressure in children with overweight/obesity."**, *Hypertens Res,* 2018;41:193-7

V

Monique VERSCHUREN

Head Department Life Course and Health

RIVM - The Netherlands

Monique Verschuren studied Human Nutrition at Wageningen University, the Netherlands, specializing in epidemiology. Throughout her career she has been involved in longitudinal population based cohort studies since 1987.

She is the principal investigator of the long-running Doetinchem Cohort Study and of the MORGEN-EPIC Study (part of the international European Prospective Investigation into nutrition and Cancer (EPIC)).

The main focus of her research is on development of lifestyle (including nutrition), metabolic risk factors and chronic diseases over the life course. More recently, her research expanded into the field of healthy ageing, looking at frailty and functioning in the elderly.

Monique is Chair of the section on 'Prevention, Epidemiology and Populations Science' of the European Association of Preventive Cardiology (EAPC). She contributed to the diet and lifestyle chapter of the 2012 and 2016 'European Guidelines on Cardiovascular Disease Prevention in Clinical Practice'.

She has co-authored over 275 international peer reviewed publications (h-index=55) and supervised 11 PhD students.

Recent publications

NOOYENS ACJ., VAN GELDER BM., BUENO-DE-MESQUITA HB., VAN BOXTEL MPJ., VERSCHUREN WMM., **"Fish consumption, intake of fats and cognitive decline at middle-age: the Doetinchem Cohort Study."**, *Eur J Nutr.*, 2017, May 9. doi: 10.1007/s00394-017-1453-8.

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PIEPOLI M., HOES A., AGEWALL S. ET AL., **"European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice "**, *European Heart Journal,* 2016;37:2315–2381

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OUDE GRIEP LM., VERSCHUREN WM., ET AL., **"Variety of fruit and vegetable consumption and 10-year incidence of coronary heart disease and stroke."**, *Publ Health Nutr,* 2012;15(12):2280-6

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OUDE GRIEP LM., VERSCHUREN WM., ET AL., **" Colors of fruit and vegetables and 10-year incidence of coronary heart disease."**, *Br J Nutr,* 2011;106:1562-9

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OUDE GRIEP LM, VERSCHUREN WM, ET AL., **"Colors of fruit and vegetables and 10-year incidence of stroke."**, *Stroke,* 2011;42:3190-5

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OUDE GRIEP LM, VERSCHUREN WM, ET AL., **"Raw and processed fruit and vegetable consumption and 10-year stroke incidence in a population-based cohort study in the Netherlands."**, *Eur J Clin Nutr,* 2011;65:791-9

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OUDE GRIEP LM., GELEIJNSE JM., KROMHOUT D., OCKÉ MC., VERSCHUREN WM., **"Raw and processed fruit and vegetable consumption and 10-year coronary heart disease incidence in a population-based cohort study in the Netherlands"**, *PLoS One,* 2010 Oct 25;5(10):e13609
~~~~~

W

Helen **WALLS**

Assistant Professor

LSHTM - United Kingdom

H. Walls research focus is on the structural drivers of public and global health – particularly relating to food systems and nutrition, and the role here of trade and agricultural policy. She currently leads a programme of work funded by the Drivers of Food Choice Competitive Grants Program (Bill and Melinda Gates Foundation; UK Department for International Development) examining the impact of Malawi's agricultural input subsidy programme on food choice and dietary diversity.

H. Walls has been at the London School of Hygiene and Tropical Medicine since 2012. Prior to this, she completed a PhD at Monash University, and whilst at the Australian National University was awarded an NHMRC Sidney Sax Public Health Fellowship. She has also worked in public health in New Zealand regionally and with the Ministry of Health, and with the World Health Organization (Geneva) on trade policy, diets and non-communicable disease.

H. Walls is an Associate Editor of the journal BMC Obesity. She is also an Honorary Senior Fellow at the University of Melbourne and a Research Associate at the University of the Witwatersrand.

Recent publications

WALLS HL., JOHNSTON D., MAZALALE J., CHIRWA E., **"Why we are still failing to measure the nutrition transition."**, *BMJ Global Health,* 2018

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BAKER P., HAWKES C., WINGROVE K., DEMAIO A., PARKHURST J., THOW AM., WALLS H., **"What drives political commitment for nutrition? A review and framework synthesis to inform the United Nations Decade of Action on Nutrition."**, *BMJ Global Health,* 2018

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WALLS H., LIVERANI M., CHHENG K., PARKHURST J., **"The many meanings of evidence: a comparative analysis of the forms and roles of evidence within three health policy processes in Cambodia."**, *Health Res Policy Syst.,* 2017

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WALLS HL., CORNELSEN L., LOCK K., SMITH RD., **"How much priority is given to nutrition and health in the EU Common Agricultural Policy?"**, *Food Policy,* 2016

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WALLS HL., SMITH RD., DRAHOS P., **"Improving regulatory capacity to manage risks associated with trade agreements."**, *Global Health,* 2015

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WALLS HL., SMITH R., **"Rethinking governance for trade and health."**, *BMJ,* 2015

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KANTER R., WALLS HL., TAK M., ROBERTS F., WAAGE J., **"A conceptual framework for understanding the impacts of agriculture and food system policies on nutrition and health."**, *Food Security,* 2015

W

Daniel **WEGHUBER**

Professor of Pediatrics

PMU - Austria

Daniel Weghuber, MD, is an alumni of Vienna Medical School. He is Professor of Pediatrics at Paracelsus Medical School (PMU) in Salzburg, Austria.

Clinically, he works as a consultant at the Department of Pediatrics, heading the Division of Pediatric Gastroenterology, Hepatology and Nutrition and the Obesity Research Unit at PMU, focusing on metabolic comorbidities including glucose and fat metabolism (in particular disturbed insulin sensitivity and secretion) and phenotypes of preclinical atherosclerosis.

Other areas of interest include orthopedic and psychological comorbidities, interdisciplinary diagnostics, mitochondrial genetics, lifestyle and pharmacological treatment as well interdisciplinary bariatric surgery of children and adolescents with obesity. In addition, is involved in severall training and educational activities of health care professionals on a national and international level in regard to obesity management.

He is currently elected President of the European Childhood Obesity Group (2017-2021).

Recent publications

A. MAZUR, M. CAROLI, I. RADZIEWICZ–WINNICKI, P. NOWICKA, D. WEGHUBER, D. NEUBAUER, Ł. DEMBINSKI, F. P CRAWLE, M. WHITE,A. HADJIPANAYIS, **"European Academy of Paediatrics (EAP) and the European Childhood Obesity Group (ECOG). Reviewing and addressing the link between mass media and the increase in obesity among European children: The European Academy of Paediatrics (EAP) and The European Childhood Obesity Group (ECOG) consensus statement."**, *Acta Paediatrica,* (2017);DOI:10.1111/APA.14136

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O'MALLEY G, RING-DIMITRIOU S, NOWICKA P, VANIA A, FRELUT ML, FARPOUR-LAMBERT N, WEGHUBER D., THIVEL D., **" Physical activity and physical fitness in pediatric obesity: What are the first steps for clinicians? Expert conclusion from the 2016 ECOG workshop. "**, *Int J Exerc Sci.,* 2017 Jul 1;10(4):487-496. eCollection 2017

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E. LUNDSTRÖM, R. STRAND, A. FORSLUND, P. BERGSTEN, D. WEGHUBER, H. AHLSTRÖM AND J. KULLBERG., **"Automated segmentation of human cervical-supraclavicular adipose tissue in magnetic resonance images."**, *Sci Rep,* 2017; 7(1):3064

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RING-DIMITRIOU S., FREUDENTHALER T., AISTLEITNER V., HORVATH G., STALLINGER J., DIMITIROU M., ARDELT-GATTINGER E. & WEGHUBER D., **"SALTO – study protocol and rationale of a community-oriented obesity prevention programme in the kindergarten. "**, *Obes Facts,* 2017;10:DOI: 10.1159/000481139.
~~~~~

W

Kremlin WICKRAMASINGHE

Technical Officer- NCD

WHO Europe - Russia

Kremlin is a technical officer on NCD Risk Factors. His work focuses on integrating responses to addressing NCD risk factors in the Region.

Before joining WHO, he was co-director of the WHO Collaborating Centre on Population Approaches to NCD Prevention at the University of Oxford, United Kingdom. He was also course director of the university's accredited short course on NCD prevention.

He co-edited the text book "An Introduction to Population-level Prevention of Non-Communicable Diseases" published by the Oxford University Press.

He has a special interest in multisectoral responses to health promotion, quantifying the outcome of health policies and implementation science. Kremlin graduated as a medical doctor from the University of Colombo.

He holds an MSc in Global Health Science and a PhD in Public Health from the University of Oxford.

POSTERS

POSTER	TITLE	FIRST AUTHOR (A-Z)
P1	A school-based, peer-led, social marketing intervention to engage spanish adolescents in a healthy lifestyle ("We Are Cool"-Som la Pera Study): a parallel-cluster randomized controlled study	**ACEVES-MARTINS Magaly**
P2	Adherence to a Mediterranean diet, body mass index and risk of type 2 diabetes mellitus: results from the UKBiobank	**ANDRE Perrine**
P3	Fruit and vegetable intake and its relationship to dietary antioxidant capacity and markers of oxidative stress. A gender-related study	**BACCHETTI Tiziana**
P4	Access to healthy food in a university restaurant of a Brazilian public university	**BARBOSA Roseane Moreira Sampaio**
P5	Fruits and vegetables at home (FLAM): a randomized controlled trial of the impact of fruits and vegetables vouchers in children from low-income families in an urban district of France.	**BUSCAIL Camille**
P6	Dietary intakes and risk of periodontitis: the Nutrinet-Santé e-cohort study	**CARRA Maria Clotilde**
P7	Does diet quality explain socioeconomic differences in metabolic syndrome in French West Indies?	**COLOMBET Zoé**
P8	Socioeconomic disparities in diet quality in the French West Indies	**COLOMBET Zoé**
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A school-based, peer-led, social marketing intervention to engage Spanish adolescents in a healthy lifestyle («We Are Cool»-Som la Pera study): a parallel-cluster randomized controlled study

P 1

ACEVES-MARTINS Magaly[1]
LLAURADÓ Elisabet[1]
TARRO Lucia[1,2]
MORIÑA David[3]
PAPELL-GARCIA Ignasi[2]
PRADES-TENA Jordi[4]
KETTNER-HOEBERG Helle[4]
PUIGGRÒS Francesc[2]
AROLA Lluís[2,5]
DAVIES Amy[6]
GIRALT Montse[1,7]
SOLÀ Rosa[1,2,8]

[1] Universitat Rovira i Virgili, Facultat de Medicina i Ciències de la Salut, Functional Nutrition, Oxidation, and Cardiovascular Diseases Group (NFOC-Salut), Health Education and Promotion, C/ Sant Llorenç, 21, Reus (43201), Spain

[2] Eurecat, Centre Tecnològic de Catalunya, Unitat de Nutrició i Salut, Av. Universitat 1, Reus (43204), Spain

[3] Unit of Infections and Cancer - Information and Interventions (UNIC-I&I), Catalan Institute of Oncology (ICO)-IDIBELL, L'Hospitalet de Llobregat, Barcelona, Spain

[4] Universitat Rovira I Virgili, Departament d'Estudis de Comunicació, Tarragona, Spain

[5] Universitat Rovira i Virgili, Departament de Bioquímica i Biotecnologia, Nutrigenomics Research Group, C/ Marcel·lí Domingo, 1, Tarragona (43007), Spain

[6] National Children's Bureau, Health & Social Care, London, United Kingdom

[7] Universitat Rovira i Virgili, Facultat de Medicina i Ciències de la Salut, Unit of Pharmacology, C/ Sant Llorenç, 21, Reus (43204), Spain

[8] Hospital Universitari Sant Joan de Reus, Reus, Spain

Corresponding author:
LLAURADÓ Elisabet
Facultat de Medicina i Ciències de la Salut
NFOC group Eurecat-Reus
Centre Tecnològic de Catalunya
C/ Sant Llorenç 21
43201-Reus, Spain
elisabet.llaurado@urv.cat

Background: Encouraging adolescents to adopt healthy lifestyles can be challenging.

Objective: The aim of the «Som la Pera» study was to engage adolescents by applying new strategies to increase both their fruit and vegetable consumption and their physical activity (PA) while reducing their sedentary behavior.

Methods: In disadvantaged neighborhoods of Reus (Spain), two high schools were randomly assigned to the intervention (IG) (n=170 13- 16-year-olds) and two were assigned to the control group (CG) (n=223 13- 16-year-olds). The intervention, lasted 12 months spanning 2 academic years (2013-2015), and used social marketing (SM) to improve healthy choices. The peer-led strategy involved 5 adolescents who designed and implemented 10 activities as challenges for their 165 school-aged peers. The CG received no intervention. To assess self-reported lifestyles in both groups, the Health Behavior in School-Aged Children Survey was used at baseline (T0) and at the end of study (T1). Generalized linear models were used to analyze differences from the baseline to the end of the study of the intervention and control groups.

Results: The number of adolescents consuming ≥1 fruit/day significantly increased in the IG from T0 to T1 (28.6% to 51.2%; p<0.01), whereas a non-significant drop occurred in the CG (33.7 to 27.4%; p=0.14), resulting in a significant difference between both groups at the end of the study (p<0.01). Similarly, the number of adolescents engaged in ≥6 hours/week of PA significantly increased in the IG from T0 to T1 (29% to 50%; p<0.01) whereas a non-significant increase occurred in the CG (21.2 to 23.7%; p=0.51), resulting in a significant difference between both groups at the end of the study (p<0.01). Only in males, those consuming ≥1 vegetable/day significantly increased in the IG from T0 to T1 (12.8% to 40.7%; p<0.01) whereas a non-significant drop occurred in the CG (16% to 15.1%; p=1.00), resulting in a significant difference between both groups at the end-of-study (p<0.01). In addition, the number of males reporting ≤2 hours/day of sedentary activity increased significantly in the IG (11.7% to 39.5%; p<0.01) and in the CG (5.7% to 17.9%; p<0.01), with a significantly difference in favor of IG at the end of the study (p=0.01).

Conclusions: A school-based, peer-led, SM intervention developed by adolescents attending high schools in low-income neighborhoods effectively improved fruit consumption and PA in adolescent students of both genders. Increased in vegetable consumption and decreased sedentary behavior were only observed in males.

Adherence to a mediterranean diet, body mass index and risk of type 2 diabetes mellitus: results from the UKBiobank

P 2

ANDRE Perrine[1]
PROTOR Gordon[2]
RODRIGUEZ-ARTALEJO Fernando[3,4]
LOPEZ-GARCIA Esther[3,4]
GOMEZ-CABRERO David2
NEYRAUD Eric[5]
BROS Pauline[5]
GARCIA-ESQUINAS Esther[3]
MORZEL Martine[5]
FEART Catherine[1]

[1] Univ. Bordeaux, Inserm, Bordeaux Population Health Research Center, UMR 1219, F-33000 Bordeaux, France

[2] Mucosal & Salivary Biology Division, Floor 17 Tower Wing, King's College London, London SE1 9RT, UK

[3] CIBERESP and Department of Preventive Medicine and Public Health, School of Medicine, Universidad Autónoma de Madrid/ Idipaz, Arzobispo Morcillo, 4, 28029 Madrid, Spain

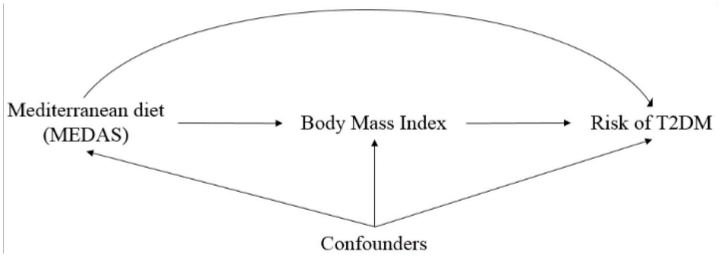
[4] IMDEA-Food Institute. CEI UAM+ CSIC, Madrid. Spain

[5] Centre des Sciences du Goût et de l'Alimentation, AgroSup Dijon, CNRS, INRA, Université de Bourgogne Franche-Comté, F-21000 Dijon, France

Corresponding author:
ANDRE Perrine
INSERM U1219
Bordeaux Population Health Research Center Bordeaux University, ISPED
146 rue Léo-Saignat, CS 61292
33076 Bordeaux Cedex, France
perrine.andre@u-bordeaux.fr

Context: The incidence of type 2 Diabetes Mellitus (T2DM) has significantly increased worldwide, as has the T2DM-related morbidity and mortality. Regarding T2DM prevention, accumulating evidence suggests an association between a greater adherence to a Mediterranean-type diet and a lower risk of T2DM. To deeper investigate underlying mechanisms, we focused on the potentially mediating effect of the body mass index (BMI) on this relationship.

Methods: UKBiobank participants with T2DM clinical data and who answered at least one dietary survey were included. Diabetic status was self-reported and participants with prevalent, gestational, or uncertain diagnosis were excluded. The MEDAS score was used to assess the baseline adherence to a Mediterranean-type diet, based on 11 food groups (olive oil, vegetables, fruits, red meat, butter or cream, sweet beverages, wine, legumes, fish, pastries and nuts) and an additional question about the preferred meat (white or red). A causal mediation analysis based on a Cox proportional hazards model was performed to assess the relationships between MEDAS score and the risk of T2DM.



Results: From the initial cohort of 6,362 participants, 113 individuals developed incident diabetes during a mean follow-up time of 4.6 years. At baseline, the mean MEDAS score was 4.6, range from 0 to 11. Regarding the total effect, the incidence of T2DM was reduced by 12% in individuals with higher MEDAS score. However, there was no significant direct effect of the MEDAS score on the risk of T2DM after adjustment for potential confounders, including BMI, (HR 0.91 95%CI [0.82 – 1.02]). Mediation analyses suggested that BMI explained around 3% of the relationship between MEDAS score and risk of diabetes (HR 0.97; 95%CI [0.96 – 0.97]).

Conclusion: The well-known beneficial effects of a higher adherence to a Mediterranean-type diet on the risk of T2DM may be partly mediated by level of BMI among the UKBiobank participants.

Fruit and vegetable intake and its relationhip to dietary antioxidant capacity and markers of oxidative stress. A gender-related study

P 3

Tiziana BACCHETTI
Imma TURCO
Camilla MORRESI
Gianna FERRETTI

Centro di Ricerca e Servizio di Educazione Sanitaria e Promozione della Salute (C.I.E.S.S.), Università Politecnica delle Marche, Ancona, Italy

Corresponding author:
FERRETTI Gianna
Centro di Ricerca e Servizio di Educazione Sanitaria e Promozione della Salute (C.I.E.S.S.)
Faculty of Medicine, Via Tronto
Università Politecnica delle Marche Ancona, Italy
g.ferretti@univpm.it

Objectives: We investigated gender differences in dietary intake of fruit and vegetable (F&V) and relationship with plasma levels of carotenoids and total antioxidant capacity (pTAC). Moreover, we studied the gender differences in the relationship between F&V intake and plasma levels of lipid hydroperoxides and oxidized low-density lipoprotein (ox-LDL).

Methodology: No smokers and normopese subjects (35 men and 48 women, mean age was 40± 10 years) were included in the study. Dietary habits, intake of carotenoids and total antioxidant capacity (dTAC) were evaluated on the basis of a 15-day food frequency questionnaire. Alcohol intake was not significantly different in males and females. Plasma levels of ß-carotene, lutein and pTAC were studied. Moreover levels of plasma lipid hydroperoxides and ox-LDL were evaluated using ferrous oxidation-xylenol orange 2 (FOX2) assay and a monoclonal antibody-based ELISA procedure,respectively. Gender-related differences were studied using a multivariate statistical analysis.

Results: Dietary habits were gender-related with a higher intake of ß-carotene ($p<0.002$) in women with respect to men. Mean values of ß-carotene were higher in women compared with men. Mean values of ox-LDL and hydroperoxides were higher in men than in women ($p<0.02$ and $p<0.05$ respectively). Significant negative correlations were established between the individual values of ox-LDL vs levels of lutein, vs ß-carotene and vs pTAC values in both group of subjects. Male or female subjects belonging to tertile with highest daily F&V intake or highest daily d-TAC showed lowest levels of plasma ox-LDL.

Conclusions: We confirm that a high F&V consumption exerts a positive effect on antioxidant defenses and decreases oxidative damage of plasma lipoproteins. The protective effect realizes at a higher extent in women with respect to men. Dietary recommendation towards higher consumption of F&V antioxidants should be highlighted in prevention of diseases in which gender-related differences in oxidative stress play a role.

Access to healthy food in a university restaurant of a Brazilian public university

P 4

BARBOSA Roseane Moreira Sampaio[1]
HENRIQUES Patrícia[2]
FERREIRA Daniele Mendonça[3]
SOARES Daniele da Silva Bastos[4]
DIAS Patrícia Camacho[5]
CHARTIER Jérôme Franck[6]

[1-6] Faculdade de Nutrição – Universidade Federal Fluminense - Niterói, Rio de Janeiro, Brasil.

The University´s Restaurants (UR) integrate the policy of student assistance to public universities that aim to provide adequate and healthy food at affordable prices to students.

Objective: The goal of this study was to characterize the UR of a Brazilian public university according to the dimensions of access to healthy food.

Methods: Data collection was performed with the application of a questionnaire and direct observation to identify the dimensions of healthy food access (availability, accommodation and accessibility). The availability was verified by the frequency of the monthly supply of fruit and vegetables (healthy food) and ultra-processed foods (unhealthy food) according to the food guide for the Brazilian population.

The accommodation was verified by the description of the days of operation and local structure (drinker or free water, tables and chairs for the meal). The accessibility was determined by the students moving from the academic units to the UR. The university has a central UR and four canteens serving all students.

Results: Regarding the availability of healthy foods, it was found that the UR menus (n=20) offered daily fruits and vegetables (100%) however it was observed the presence of ultra-processed foods (100%), of which the processed juices were offered every day. The UR provides two meals a day (lunch and dinner) from Monday to Friday and has a location with appropriate furniture and free water supply. The students' moving to the UR, and their respective canteens is done by a free university shuttle.

Conclusion: It is concluded that the UR represents an opportunity for adequate and healthy food for the student community, although it still needs to improve the quality of the food offered. For this, it is fundamental the students' awareness and the greater commitment of the managers in the promotion of healthy food environments.

Corresponding author:
CHARTIER Jérôme Franck
Address: Rua Conselheiro Lafaiete 38 Copacabana CEP 2208
020 Rio de Janeiro – RJ – Brazil
jefracha@gmail.com

Fruit and vegetables at home (FLAM): a randomized controlled trial of the impact of fruit and vegetables vouchers in children from low-income families in an urban district of France

P 5

BUSCAIL Camille[1]
BRAUER Paula[1]
MARGAT Aurore[3]
PETIT Stéphanie[1]
GENDREAU Judith[1,2]
DAVAL Paul[4]
LOMBRAIL Pierre[2,3]
HERCBERG Serge[1,2]
LATINO-MARTEL Paule[1]
MAURICE Aurélie[3]
JULIA Chantal[1,2]

[1] Equipe de Recherche en Epidémiologie Nutritionnelle (EREN), Université Paris 13, INSERM U1153, Inra U1125, Cnam, Centre de Recherche en Epidémiologie et Biostatistiques (CRESS) Sorbonne Paris Cité- 74 rue Marcel Cachin - 93017 Bobigny cedex, France

[2] Département de Santé Publique, Hôpital Avicenne (APHP) – 125 rue de Stalingrad F-93000 Bobigny, France

[3] Laboratoire Educations et Pratiques en Santé (LEPS) EA3412, Université Paris 13, Sorbonne Paris Cité, Campus Condorcet, 74 rue Marcel Cachin F-93017 Bobigny cedex, France

[4] Maison de la Santé de Saint-Denis, 6 rue des Boucheries, F-93200 Saint-Denis, France

Corresponding author:
Camille Buscail
EREN, Université Paris 13
Bâtiment SMBH
74 rue Marcel Cachin F
93017 Bobigny cedex, France
Phone number: +33148388977
c.buscail@eren.smbh.univ-paris13.fr

Background: Fruit and Vegetable (F&V) consumption is considered a marker of social inequalities in health since it is considerably decreased in disadvantaged populations. The main objective of this trial was to evaluate the impact of vouchers for F&V purchase on the consumption of F&V among children living in disadvantaged families in a French urban district.

Methods: The FLAM study was a controlled randomized intervention trial, performed in Saint-Denis (North suburbs of Paris). The study group (intervention or control) was randomly attributed to parent-child pairs at inclusion. The intervention group received vouchers exchangeable for F&V over a 1 year period. Nutritional education through workshops was available for both groups. F&V consumption was assessed through face-to-face food frequency questionnaires. Participants who reported eating less than 3.5 F&V per day were considered low F&V consumers.

Results: A total of 92 parent-child pairs were included, in which 45 were allocated to the intervention group and 47 to the control group. Amongst them, 64 completed the final follow-up questionnaire (30% lost to follow-up). After one year, the proportion of low F&V consumers in children was significantly lower in the intervention group (29.4%) compared to the control group (66.7%, p = 0.005). Overall, 82% of the vouchers were used by the families, and 64% families participated in at least one workshop over the study period.

Conclusions: This study found a decreased proportion of small consumers in children after 1 year of distribution of F&V vouchers compared to the control group. F&V vouchers could be an effective lever to increase F&V consumption among children from disadvantaged households.

Dietary intakes and risk of periodontitis: the Nutrinet-Santé e-cohort study

P 6

CARRA Maria Clotilde[1]
DETZEN Laurent[1]
HAMDI Zeineb[1]
FESSI Sabrine[1]
HERCBERG Serge[2]
JULIA Chantal[2]
BOUCHARD Philippe[1]
ANDREEVA Valentina[2]

[1] Department of Periodontology, Service of Odontology, Rothschild Hospital, AP-HP, Paris 7- Denis Diderot University, U.F.R. of Odontology, Paris, France

[2] Equipe de Recherche en Epidémiologie Nutritionnelle (EREN), Centre de Recherche en Epidémiologie et Statistiques, Université Paris 13/ INSERM U1153/INRA U1125/CNAM

Corresponding author:
Valentina Andreeva
Equipe de Recherche en Epidémiologie Nutritionnelle (EREN)
Centre de Recherche en Epidémiologie et Statistiques
Université Paris 13/INSERM U1153/ INRA U1125/CNAM
COMUE Sorbonne Paris Cité F
93017 Bobigny, France
v.andreeva@eren.smbh.univ-paris13.fr

Background and Aims: Periodontitis is a common inflammatory disease of the tooth supportive tissues due to a microbial dysbiosis in the oral cavity. Recent evidence suggested that nutritional habits might influence the development and severity of periodontitis. The present study aims to evaluate the association between dietary intakes and risk of periodontitis in a French adult population.

Methods: The study included 35,390 subjects from the Nutrinet-Santé e-cohort study, who completed a questionnaire pertaining oral health between 2011 and 2012. The risk of periodontitis was assessed by calculating the Periodontal Screening Score (PESS) on 4 selected questions, with a score ≥5 indicating a high risk of having severe periodontitis. Dietary data were obtained from at least three self-administered 24h records via the internet. Association between PESS and diet was evaluated by univariate and multivariate analyses (ANCOVA tests).

Results: The study population had a mean age of 49.04±13.94 years and was composed mainly by women (75.8%). Overall, 7263 (20.5%) presented with a high risk of severe periodontitis. After adjustment for potential confounders (e.g., age, gender, BMI, socioeconomic status), high-risk PESS had significantly lower consumption of milk and dairy products (2.49 versus 2.57 portions/ day; p=0.007), and a lower intake of water (1.24 versus 1.31 L/day; p<0.0001) compared to low-risk PESS. Conversely, they had higher intakes of proteins (17.5%versus 16.9% of total energy intake; p=0.005), and alcohol (10.38 versus 7.42 mg/day; p<0.0001). The consumption of fruit and vegetables was similar between the two groups after adjustment for possible confounders (6.17 vs. 5.59 portions per day; p=0.520). Concerning the micronutrients, high-risk PESS individuals had a significantly lower intake of calcium (934.6 versus 957.9 mg/ day; p=0.019).

Conclusion: The present findings support an association between dietary habits and risk of periodontitis particularly related to calcium intakes.

Does diet quality explain socio-economic differences in metabolic syndrome in French West Indies?

P 7

COLOMBET Zoé[1]
PÉRIGNON Marlène[1]
SALANAVE Benoît[2]
LANDAIS Edwige[3]
MARTIN-PRÉVEL Yves[3]
AMIOT-CARLIN Marie-Josèphe[1]
MÉJEAN Caroline[1]

[1] MOISA, Univ Montpellier, CIRAD, CIHEAM-IAMM, INRA, Montpellier SupAgro, Montpellier, France

[2] Nutritional Surveillance and Epidemiology Team (ESEN), French Public Health Agency, Paris-13 University, Centre de recherche en épidémiologie et statistiques, COMUE Sorbonne Paris Cité, Bobigny, France

Introduction and objective: Obesity and chronic diseases represent a major health burden in the Caribbean, particularly since a large part of the population is disadvantaged. However, socioeconomic inequalities in chronic diseases are poorly explored in the Caribbean and the contribution of diet to explain these inequalities has not been studied yet. We therefore investigated the association between socioeconomic position and the prevalence of the metabolic syndrome (MetS) and the mediating effect of diet quality.

Methods: This cross-sectional analysis included 1144 Guadeloupean and Martinican adults from the Kannari study. Dietary intakes were estimated from 24h dietary records and the diet quality was assessed using the Diet Quality Index-International (DQI-I). MetS was defined according to the 2009 harmonized definition, from biological data.

Associations between socioeconomic indicators (education, employment status, social assistance benefits, single-parent household, presence of child in the household) and prevalence of MetS, and the mediating effect of diet quality were assessed using multivariate logistic regression models, adjusted for area of residence (Guadeloupe or Martinique), age, sex and body mass index.

Results: Among Guadeloupean and Martinican adults, MetS prevalence was 25%. Low and middle educated subjects (ORlow vs. high=1.9; 95%CI=[1.0-3.6] and ORmiddle vs. high=2.7; 95%CI=[1.4-5.1]) and recipients of social assistance benefits (OR=2.2; CI95%=[1.1-4.2]) were more likely to be at risk of MetS compared with individuals with high education level and non-recipients. DQI-I explained 11% of the overall educational variation in MetS and only 1.3% of the overall variation due to social assistance benefits.

Conclusions: Diet quality contributes little to explain the socioeconomic inequalities in MetS in these Caribbean populations. Mediating effect of other lifestyle factors such as smoking status and physical activity are needed to be investigated to better understand mechanisms of socioeconomic inequalities in MetS and therefore to guide future public health measures.

[3] UMR204-Nutripass, French National Research Institute for Sustainable Development (IRD), Université de Montpellier, Montpellier, France

Corresponding author:
COLOMBET Zoé
INRA, UMR 1110 MOISA
2 place Pierre Viala
F-34000 Montpellier, France
zoe.colombet@inra.fr

Socioeconomic disparities in diet quality in the French West Indies

P 8

COLOMBET Zoé[1]
PÉRIGNON Marlène[1]
SALANAVE Benoît[2]
LANDAIS Edwige[3]
MARTIN-PRÉVEL Yves[3]
AMIOT-CARLIN Marie-Josèphe[1]
DARMON Nicole[1]
MÉJEAN Caroline[1]

[1] MOISA, Univ Montpellier, CIRAD, CIHEAM-IAMM, INRA, Montpellier SupAgro, Montpellier, France

[2] Nutritional Surveillance and Epidemiology Team (ESEN), French Public Health Agency, Paris-13 University, Centre de recherche en épidémiologie et statistiques, COMUE Sorbonne Paris Cité, Bobigny, France.

[3] UMR204-Nutripass, French National Research Institute for Sustainable Development (IRD), Université de Montpellier, Montpellier, France

Corresponding author:
COLOMBET Zoé
INRA, UMR 1110 MOISA
2 place Pierre Viala
F-34000 Montpellier, France
zoe.colombet@inra.fr

Introduction and objective: In the Caribbean context, high prevalence of obesity and chronic diseases coexist with high rate of poverty. Socioeconomic disparities in diet may be involved in social health inequalities. We therefore investigated the association between socioeconomic indicators and diet quality.

Methods: Dietary intakes were estimated from 24h dietary records in 1144 adults from the Kannari study, a cross-sectional survey based on a multistage stratified random sample of the Guadeloupean and Martican populations. Diet quality was assessed using the mPNNS-GS [range -1 to 13.5 points], measuring adherence to French recommendations, and Diet Quality Index-International (DQI-I) [range 0 to 100 points], assessing several aspects of diet quality (variety, adequacy, moderation, overall balance). Associations between diet quality scores and socioeconomic indicators (education, employment status, social assistance benefits, single-parent household, presence of child in the household) were assessed using multivariate linear regression models, adjusted for area of residence (Martinique or Guadeloupe), age, sex and marital status.

Results: The mean mPNNS-GS was 7.5 points (range 4-10.5 points) and the mean DQI-I was 60.8 points (range 39-82 points). Compared with high educated subjects, no significant difference was found for mPNNS-GS in low educated individuals while middle educated participants had lower mPNNS-GS (7.3 (SEM:0.2) vs. 7.7 points (SEM:0.05); p=0.1). No association was found between DQI-I and education, however unemployed or never employed subjects had lower DQI-I compared with employed participants (60.6 (SEM:0.7) vs. 62.5 points (SEM:0.4); p=0.02). No association between employment status and mPNNS-GS was found.

Conclusion: Few socioeconomic differences in diet quality were found in the sample. However, our sample included low rates of disadvantaged participants and therefore new studies focusing on these subjects are necessary. Identifying sub-populations most at risk of having an unhealthy diet remains a main challenge in the Caribbean context, in order to help targeting nutrition and public health actions.

Mediterranean diet in complementary feeding: a new approach to teaching children to eat fruit and vegetables

P 9

DE FRANCHIS Raffaella[1]
ALBANO Fabio[1]
ANTIGNANI Angelo[4]
BOZZA Luigi[1]
CANALE Pasquale[1]
CHIACCHIO Maria[1]
CORTESE Paolo[1]
D'AVINO Antonio[1]
DE GIOVANNI Maria[1]
DELLO IACOVO Mirella[1]
D'ONOFRIO Antonietta[1]
FEDERICO Aniello[1]
GASPARINI Nicoletta[1]
IACCARINO Felicia[1]
ROMANO Giuseppe[1]
SPADARO Raffaella[1]
TEDESCO Mariangela[1]
TOSCANO Porfirio[1]
VITIELLO Giuseppe[1]
AURICCHIO Salvatore[2]
BRUZZESE Dario[3]

[1] Italian Federation of Maedical Paediatrics (FIMP), Naples, Italy
[2] European Laboratory Food Induced Disease (ELFID) and 3 Dipartimento di Sanità Pubblica, University of Naples "Federico II", Italy
[4] Dipartimento di Medicina Clinica e Chirurgia, University of Naples "Federico II", Italy

Corresponding author:
DE FRANCHIS Raffaella
Corso A. Lucci 121
80142 Naples, Italy
info@fimpnapoli.it

Objectives: The primary endpoint was the percentage of children with an optimal adherence to the Mediterranean Diet (MD) (kidmed score >=8). The secondary endpoint was the longitudinal evaluation of the BMI. A further objective was to verify how many changes in familial eating habits may come from an early education of the infant towards a Mediterranean eating style.

Methodology: A randomized controlled trial was carried out by 18 general paediatricians affiliated to the Italian Federation of Maedical Paediatrics (FIMP) of Naples. Infants were weaned between 4 and 6 months of age, according to current guidelines. The weaning scheme was characterized either by industrial foods (controls) or by natural foods (cases). Randomization was done at children level using a block randomization schema: An adequate amount of fresh green vegetables and seasonal fruit was early offered to the case group. Mothers received a questionnaire before the weaning and at 36 months of age of the child to monitor variations in family eating habits. The manual "MD in the first year of life" was freely given to all cases' mothers. Data about MD adherence were collected by using questionnaires both for adult and for children (kidmed score).

Results: 325 children (163 cases and 162 controls) have been enrolled. The two groups are homogeneous with respect to baseline characteristics, as shown in Figure 1. Preliminary results show a statistically significant association between mothers´ degree and their adherence to the MD (Figure 2). No correlation was observed between mothers adherence to MD and birth weight of children (Figure 3). Of note, only 40% of mothers at T0 consumed at least three fruits per day. At 12 months of age, the kidmed score of the case group showed that 73,4% had a value between 8 and 12 (good adherence); 2,7% between 1 and 3 (bad adherence); 23.9% between 4 and 7 (Figure 4).

Conclusion: MD at weaning is useful to have healthy habits at 12 months of age. We will analyze the usefulness of an early introduction of natural foods, in order to verify long term eating habits and health outcome.

	Cases (200)	Controls (203)
Age at enrollment(days)	145 +/-17	143 +/-20
Gender (female)	108 (54)	103 (50.7)
Birth weight (kg)	3.16 +/- 0.48	3.18 +/- 0.44
Weight at enrollment (kg)	7.61 +/- 4.99	7.17 +/- 0.96
Brothers/ sisters in the house (yes)	101 (50.5)	112 (55.2)
Breastmilk	62 (31.2)	50 (24.6)
Formula	109 (54.8)	116 (57.1)
Mixed	28 (14.1)	37 (18.2)
Mother's educational level		
Elementary/Middle school	52 (26.1)	71 (35)
High school	87 (43.7)	84 (41.4)
University	60 (30.2)	48 (23.6)
Mothers adherence to MD (%)	63 +/- 13	61 +/- 15

Fig 1

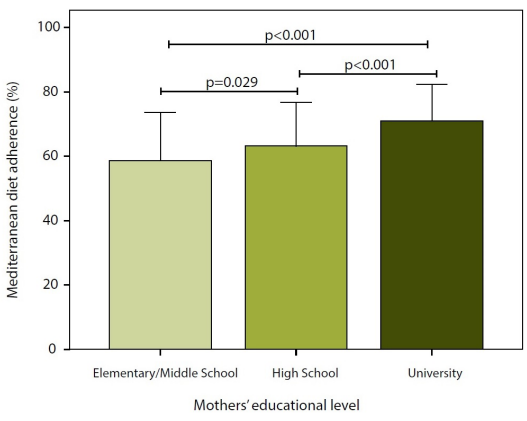


Fig 2

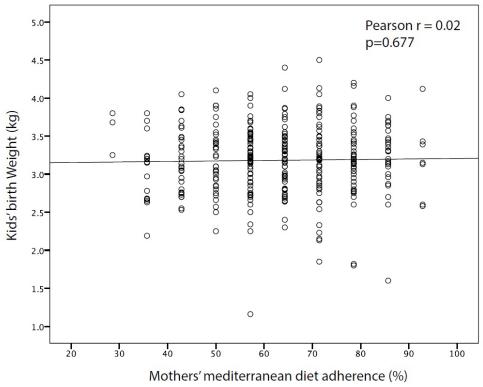


Fig 3

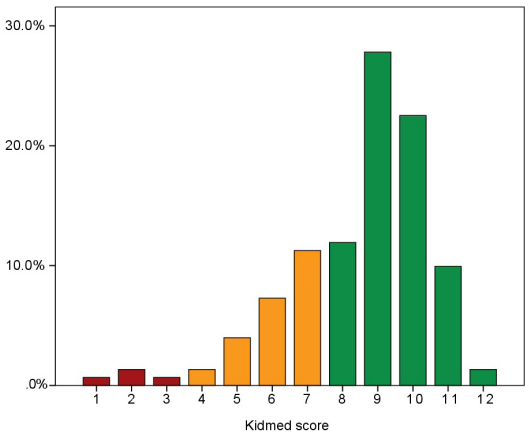


Fig 4

Cisplatin chemotherapy induces culinary and dietary habits changes in bronchial cancer patients

P 10

DRARENI Kenza [1,2]
BENSAFI Moustafa [2]
GIBOREAU Agnes [1]
LAVILLE Martine [3]
SOUQUET Pierre Jean [3]
NAZARE Julie Anne [4]
DOUGKAS Anestis [1]

[1] Research Center of the Institut Paul Bocuse, Ecully, France
[2] CNRS, UMR5292, INSERM U1028, Lyon Neuroscience Research Center, University Lyon, F-69000, France
[3] CH Lyon Sud, Hospices Civils de Lyon, 69310 Pierre Bénite, France
[4] Centre de Recherche en Nutrition Humaine Rhone-Alpes and CENS, University of Lyon 1, CH Lyon Sud, Hospices Civils de Lyon, 69310 Pierre Bénite, France

Corresponding author:
DRARENI Kenza
Research Center of the Institut Paul Bocuse
1 Cheòin de Calabert
69130, Ecully, France
kenza.drareni@institutpaulbocuse.com

Background and objective: Malnutrition is a common side effect of cancer and has a multifactorial etiology, including metabolic changes induced by the pathology and food behavior modifications through chemotherapy treatment. Previous studies showed modifications in patients' food preferences during chemotherapy (Coa, 2015; Guerdoux-Ninot, 2016). Thus, the aim of this study was to explore food behavior modifications during cancer treatment, based on self-reports of lung cancer patients.

Methods: In this randomized case-control study, fourty four bronchial cancer patients receiving cisplatin and 44 age and gender matched healthy participants (controls) completed a food behavior questionnaire related to culinary habits, eating habits, and food preferences. Patients and controls completed the questionnaire before the beginning of the chemotherapy treatment (T0), and 6 weeks later, corresponding to the completion of 2 cycles of chemotherapy (T1).

Results: Approximately 32% of patients reported modifications in their eating habits after 2 cycles of chemotherapy; 39% removed food and/or beverage from their usual diet and 27% declared the intake of dietary supplements. However, no such changes were observed in the control group. When asked about their food preferences at (T0), only 27% of patients mention at least one fruit or vegetable whereas 54,5% of controls did. This percentage increased for patients at (T1).

Conclusion: These findings show that cancer treatments affect eating and drinking behavior in a substantial subset of patients. Patients tend to modify their dietary habits by adding or removing food and beverage. This could be considered as an opportunity to use positively in order to introduce healthy food recommendations and improve patients' nutritional status and quality of life through the continuum of cancer care.

Relationship between occupational sitting and BMI among workers of a higher education institution

P 11

FIALHO Sónia[1]
MARTINS Anabela Correia[2]
ALMEIDA João[3]

[1] IPC, ESTeSC - Coimbra Health School, Dietetics and Nutrition Dept. Portugal
[2] IPC, ESTeSC - Coimbra Health School, Physiotherapy Dept. Portugal
[3] IPC, ESTeSC - Coimbra Health School, Environmental Health Dept. Portugal

Corresponding author:
FIALHO Sónia
IPC, ESTeSC
Coimbra Health School,
Dietetics and Nutrition Dept.
Portugal
sonia.fialho@estescoimbra.pt

Background: Compared to our ancestors, there is an increase in time in environments that not only limit physical activity, but also require prolonged sitting times at work, at home, in our cars, and in the communities in which we live. The adoption of a sedentary lifestyle has taken on an increasingly real world dimension, posing a serious problem in terms of public health, especially in North America and Europe

Sedentary behaviour was associated with an increased risk of developing chronic diseases such as overweight/obesity, type II diabetes, cardiovascular diseases, and these diseases are the main cause of mortality and morbidity in Portugal.

Objective: This study aims to evaluate the relationship between occupational sitting and body mass índex (BMI) in teaching and non-teaching workers.

Methods: The questionnaires - Occupational Sitting and Physical Activity Questionnaire (OSPAQ) and the International Physical Activity Questionnaire – Short version (IPAQ – S) were applied. Data on age, gender and body mass index were collected from a sample of 59 adult men and women between December 2017 and January 2018, work full time. The anthropometric evaluation was effected with a stadiometer and bioimpedance equipment. The statistical treatment, the authors analyzed the information with SPSS Statistics.

Results: In the present study, 39 of the individuals were females and 19 males, aged 31-62 years. Was reported that 54.3% of the workers had a BMI ≥ 25 kg/m^2 and on-teachers are more sedentary in their occupational activity. Spearman's correlation revealed that there was no association between sitting time and anthropometric parameters (p> 0.05).

Conclusions: With this study it was verified that more than half of the workers was overweight/obese and there are individuals with sedentary behavior at work. There was no association between sedentary work and BMI; however measures must be taken to create conditions for a healthy working environment.

Satiety quotients but not appetite feelings are reduced after intensive exercise in healthy adults

P 12

FILLON Alicia[1,2]
METZ Lore[1]
GENIN Pauline[1]
MIGUET Maud[1]
KHAMMASSI Marwa[1]
PEREIRA Bruno[3]
DUCLOS Martine[4,5,6,7]
BOIRIE Yves[4,6,7,8]
BLUNDELL John[9]
TREMBLAY Angelo[10]
DRAPEAU Vicky[10]
FINLAYSON Graham[9]
MATHIEU Marie-Eve[11]
THIVEL David[1,7,9]

Background: Appetite sensations are an accurate method of measuring subjective states of motivation to eat before and in response to meals (Flint et al., 2000). Measured before and after a meal, appetite feelings can also provide information about the satiating capacity of food, which can be expressed as Satiety Quotient (SQ). Yet exercise has been found to affect subsequent ad libitum energy intake, it remains to our knowledge unknown whether exercise can also affect the individuals' satiating capacity. The aim of the current study was to compare the effect of iso-caloric low and high intensity exercises on the Satiety quotients in response to a fixed meal in healthy adults.

Methods: Nineteen (21.5 (0.5) years, 10 males) healthy adults were included. Anthropometric measurements, body composition (BIA), aerobic capacity (VO2 max) and dietary profile (TFEQ) were assessed. They randomly completed 3 experimental sessions: i) Control (CON); ii) High Intensity exercise (HIE-75% VO2max-30min); iii) low intensity exercise (LIE–50%VO2max-45min). Appetite feelings were assessed using Visual Analogue Scales at regular intervals and Satiety quotients calculated in response to a fixed lunch meal 30 minutes after rest (CON) or the two cycling exercises (HIE and LIE).

Results: Fasting and pre-meal Hunger, Fullness, Prospective Food Consumption and Desire to Eat (DTE) were not significantly different between conditions neither were their post-meal Areas Under the Curve (60 minutes). SQ for Satiety and DTE were not different between conditions while SQ for hunger was significantly higher on CON (12.8±5.0) than HIE (10.4±4.5) and LIE (10.1±5.9) ($p<0.05$) and SQ for DTE was significantly higher on CON (13.2±9.7) than HIE (4.5±6.4) ($p<0.05$).

Conclusion: These preliminary findings suggest that the satiating capacity of food might be affected by intensive exercise in healthy adults. Further analyses are needed to assess whether this might be accompanied by subsequent nutritional compensations.

[1] Clermont Auvergne University, EA 3533, Laboratory of the Metabolic Adaptations to Exercise under Physiological and Pathological Conditions (AME2P), Clermont-Ferrand, France

[2] UGECAM Nutrition Obesity Ambulatory Hospital, Clermont-Ferrand, France

[3] Clermont-Ferrand University hospital, Biostatistics unit (DRCI), Clermont-Ferrand, France

[4] CRNH-Auvergne, Clermont-Ferrand, France

[5] Department of Sport Medicine and Functional Explorations, Clermont-Ferrand University Hospital, G. Montpied Hospital, Clermont-Ferrand, France

[6] INRA, UMR 1019, Clermont-Ferrand, France

[7] University Clermont 1, UFR Medicine, Clermont-Ferrand, France

[8] Department of Human Nutrition, Clermont-Ferrand University Hospital, G. Montpied Hospital, Clermont-Ferrand, France

[9] Appetite Control and Energy Balance Research Group, University of Leeds, Leeds, UK

[10] University of Laval, Quebec City, Québec, Canada

[11] Université de Montréal, Montréal, Québec, Canada

Corresponding author:
Fillon Alicia
AME2P 24 Avenue des Landais
63170 Aubière
fillonalicia@gmail.com

"Mon Alimentation Sur-Mesure", a tailored nutrition counselling web application based on mathematical diet optimization

P 13

Introduction: By definition, messages in tailored approaches are built to reach a specific person, based on its specific characteristics and needs. Tailored dietary behavior change interventions have a small but significant effect on dietary behavior change. The majority of these interventions target a few food groups or nutrients, without evaluating the overall diet. Diet optimization is a powerful mathematical method to translate nutrient recommendations into individual-specific food choices. This method is increasingly used in nutrition research, in the fields of public health and diet sustainability.

Objectif: The aim of this work was to combine tailored approaches and diet optimization in a web application of tailored nutrition counselling.

GAZAN Rozenn[1]
VIEUX Florent[1]
DARMON Nicole[2]
MAILLOT Matthieu[1]

[1] MS-Nutrition, Marseille, France

[2] MOISA, INRA, CIHEAM-IAMM, CIRAD, Montpellier SupAgro, Univ Montpellier, Montpellier, France

Corresponding author:
GAZAN Rozenn
MS-Nutrition
Faculté de médecine de la Timone
27, boulevard Jean Moulin
13005 Marseille
rozenn.gazan@ms-nutrition.com

Method and results: The web application, called « Mon Alimentation Sur Mesure », was developed based on techniques of behaviors changes, such as: self-monitoring, self-regulatory, tailored feedback and engaging communication techniques. In a first feature, based on user's data collected online (including answers to a food frequency questionnaire), the user can obtain a picture of the nutritional quality of their diet, their diet cost and their own level of physical activity. In a second feature, « Mon Alimentation Sur Mesure » suggests to the user a list of tailored dietary advices to have a healthier diet (i.e., a nutritionally adequate diet), adapted to their specific needs and food preferences. With the application, the user is actor in their own dietary changes: he specifies their food preferences and; chooses dietary suggestions that he considers achievable.

Conclusion: This prototype could be a future online health promotion tool which could help individuals to improve their diet or serve as a decision-support tool for health professionals. The evaluation of the tool (e.g. whether the use of the tool results in changes of dietary habits) is warranted before use on health promotion.

Effect of the "5 portions of vegetables, fruit or juice" campaign on nutritional awareness of mothers of 3-10 year olds with regard to vegetables, fruit and juice consumption

P 14

GUTKOWSKA Krystyna[1]
GROELE Barbara[2]
GŁĐBSKA Dominika[1]

[1] Warsaw School of Life Sciences, Poland

[2] Polish Association of Juice Producers, Warsaw, Poland

Corresponding author:
GUTKOWSKA Krystyna
Warsaw University of Life Sciences
Nowoursynowska 159c / 320
776 Warsaw
krystyna_gutkowska@sggw.pl

Objectives: The consumption of fruit and vegetables in Poland is lower than recommended. In order to increase consumption, various educational activities and social campaigns have been organized. The aim of this paper is to present the results of the «5 portions of vegetables, fruit or juice» program launched by the Polish Association of Juice Producers (KUPS) in 2008.

Methodology: Periodical studies commissioned by KUPS during the campaign – measurement of the «5 portions of vegetables, fruit or juice» campaign objectives achievement with use of computer-assisted telephone interviews in December 2008 by IQS Research and in September 2014 by GFK Polonia and DriveR.

Results: The analysis revealed that:

1) knowledge of the project and its aim among 25-45 year old mothers of 3-10 year old children has improved - from 45% (2008) to 76% (2014);

2) awareness of experts' recommendations to consume five portions of fruit and vegetables per day increased from 49 % (2008) to 74 % (2014);

3) interest in promoting the '5-a-day' idea, nutritional value of fruit, vegetables and juices and the definition of a portion among online portals, newspapers, schools, public administration increased noticeably;

4) awareness among 300 surveyed mothers increased - 31% of mothers stated that fruit and vegetables should be consumed 5 times a day (a significant increase from 21% in the first year of the study), while almost 40% of mothers consume at least 5 portions of fruit and/or vegetables daily themselves, significantly more than at the beginning of the program (26%).

Conclusion: The «5 portions of vegetables, fruit or juice» promotion and information campaign was successful in raising both awareness of the recommended portions of vegetables and fruit and actual adherence to these recommendations. However, a discrepancy continues to exist between what consumers know about dietary recommendations on the one hand and their eating habits on the other.

Families' thoughts about vegetables and fruit

P 15

HELGEGREN Hannah[1]
LARSSON Christel[1]

[1] Department of Food and Nutrition, and Sport Science. University of Gothenburg, Sweden

Corresponding author:
Hannah Helgegren
Department of Food and Nutrition and Sport Science
PO Box 300
SE404 30 Göteborg
Hannah.Helgegren@gu.se

The aim was to investigate 11-12 year old children's and their parents' experiences and thoughts about vegetables and fruit (V&F).

Method: During the summer of 2018, semi structured individual interviews were conducted with 11 children (5 girls and 6 boys), attending 5th grade in 6 different schools in a large Swedish city. One of each child's parents (10 mothers and 1 father) was also interviewed. The interviews, lasting 35-70 minutes, were conducted by a paediatric dietician at a place where the family felt comfortable. They were recorded and later transcribed verbatim.

Results: Both children and parents named health and especially the content of vitamins and minerals as a major reason to eat V&F. Words such as "tasty" and "sweet" were more often used to describe fruit, whereas the general word "healthy" was used when speaking of vegetables. All children could give detailed description on their preferred V&F serving style. Varieties of V&F that children or parents had never tried and didn't want to try were described as probably having an unpleasant texture or that they would taste bitter e.g. butternut squash, aubergine, water chestnut or gooseberries. None but one of the parents knew the recommendation for V&F and their guesses ranged from 250 -1000 g (see table 1). When asked to translate what they thought the recommendations were in actual servings two parents used the phrase "5 a day".

Conclusion: There was a consensus that V&F is healthy and important for growth, whereas the properties of V&F connected to preventing cardiovascular disease, cancer etc. was very seldom mentioned. When communicating recommendations concerning V&F more emphasis should perhaps be on making the recommendation understandable, less abstract and more "ready to be applied in everyday meals".

Table 1. Parents answered questions about what they believed the Swedish recommendation of V&F intake is for adults and children above the age of 10 years (in fact 500 g), how happy they are with their family's current intake of V&F and how many days per week some kind of vegetable is being served at a meal at home.

Family	Estimated recommendation of V&F, grams per day	How satisfied parent is with own family's fruit consumption *	How satisfied parent is with own family's vegetable consumption*	How many days per week vegetables are served at a meal at home
1	x	8,5	6	7
2	500	6	8	7
3	350	4 -10	4 -10	7
4	x	8	10	7
5	275	3	10	5-6
6	350	7	7	4-7
7	x	8	8	7
8	x	7	7	5
9	1000	10	10	7
10	400	10	10	7
11	250	8	8	7

*On a scale of 1-10 where 1 is not satisfied at all and 10 is most satisfied x Parents choosing not to guess the recommendation

Assessing the frequency of fruit and vegetables on school menus in Rio de Janeiro - Brazil

P 16

HENRIQUES Patrícia
SOARES Daniele da Silva Bastos
DIAS Patrícia Camacho
FERREIRA Daniele Mendonça
BARBOSA Roseane Moreira Sampaio

Faculdade de Nutrição – Universidade Federal Fluminense - Niterói, Rio de Janeiro, Brasil.

Corresponding author:
HENRIQUES Patricia
Tavares de Macedo, street, 89/1402 - Icaraí - Niterói
Rio de Janeiro, Brasil
patihenriques@gmail.com

Background: The daily supply of fruits, vegetables and leafy vegetables (F&V) school food constitutes a health promotion strategy since the regular consumption of these foods is related to the low risk of obesity, hypertension, and dyslipidemia in children and adolescents. In this context, the National School Feeding Program (PNAE) plays an essential role in the building of healthy habits of children, through the provision of meals that cover their nutritional needs and food and nutritional education actions.

Objective: To analyze the quality of the menus of school feeding in the state of Rio de Janeiro, regarding the supply of (F&V).

Methods: A cross-sectional and descriptive study was carried out for two months, based on the school menus available at electronic sites of the city halls of the 92 municipalities of the state of Rio de Janeiro. The menus were analyzed regarding the monthly frequency of F&V and classified by the percentage of F&V occurrence considering the following cut-off points: "optimal" ≥ 90%; "good" between 75 to 89%; "regular" between 50 and 74%; "poor" from 25 to 49% and "very bad" <25%. Results: Only 23 available menus were identified during the survey period of which only seven presented a "good" or "optimal" classification for fruit. Regarding vegetables, half of the menus presented a "good" or "optimal" classification. As for the frequency of leafy vegetables, all presented a classification between "regular", "bad" and "very bad".

Conclusions: The low supply of fruit and vegetables in school meals does not comply with the recommendations of a healthy diet under the PNAE. Consequently, there is a need to reformulate the menus, which will be very important for the promotion of healthy food, and as a strategic tool for actions of food and nutritional education with schoolchildren.

Longitudinal associations of physical activity and screen time with food fussiness in Finnish children – the PANIC Study

P 17

JALKANEN Henna[1]
SCHWAB Ursula[2,3]
VENÄLÄINEN Taisa[1,2]
KIISKINEN Sanna[1]
VÄISTÖ Juuso[1]
LAKKA Timo[1,4,5]
LINDI Virpi[6]
ELORANTA Aino-Maija[1,2]

[1] Institute of Biomedicine, School of Medicine, University of Eastern Finland, Kuopio, Finland
[2] Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio, Finland
[3] Department of Medicine, Endocrinology and Clinical Nutrition, Kuopio University Hospital, Kuopio, Finland
[4] Kuopio Research Institute of Exercise Medicine, Kuopio, Finland

Objectives: Fussy eating is associated with poor diet quality, such as low willingness to taste and consume vegetables and fruit, and a low intake of several nutrients, such as vitamin C, vitamin E, and fiber. However, the determinants and factors which may affect food fussiness are less known. We therefore investigated the cross-sectional and longitudinal associations of physical activity and screen time with food fussiness.

Methodology: The participants were a population sample of 204 girls and 215 boys aged 6–8 years at baseline. We assessed food fussiness using the Children's Eating Behaviour Questionnaire (CEBQ) and physical activity and screen time using questionnaires at baseline and after 2-year follow-up. Data were analysed using linear regression models, baseline analyses adjusted for age and gender and longitudinal analyses adjusted for age at baseline, gender, and the explanatory and outcome variables at baseline. We further adjusted the data separately for lean body mass and fat mass measured by dual-energy x-ray absorptiometry (DXA).

Results: Physical activity was inversely associated with food fussiness (ß=-0.229, p<0.001) and screen time was directly associated with food fussiness (ß=0.128, p=0.010) at baseline. Change in physical activity was inversely associated with change in food fussiness (ß=-0.142, p=0.007) and change in screen time was directly associated with change in food fussiness (ß=0.134, p=0.014). Further adjustments for lean body mass and fat mass had no effect on these associations.

Conclusions: Higher physical activity and shorter screen time were associated with lower food fussiness. Our findings suggest that increasing physical activity and decreasing screen time decrease fussy eating in children.

[5] Department of Clinical Physiology and Nuclear Medicine, Kuopio University Hospital, Kuopio, Finland

[6] University of Eastern Finland Library, Kuopio, Finland

Corresponding author:
JALKANEN Henna
Institute of Biomedicine
University of Eastern Finland
Yliopistonranta 1
70210 Kuopio, Finland
henna.jalkanen@uef.fi

The changing role of convenience stores in South Korea

P 18

KIM So-young[1]
CHOI Jiyu[2]

[1] Department of Food Science and Nutrition, Soonchunhyang University, 22 Soonchunhyang-ro, Asan, 31538 South Korea

[2] Department of Culinary Arts, Woosong University, 171 Dongdae-jeon-ro, Daejeon, 34606 South Korea

Corresponding author:
KIM So-young
Department of Food Science and Nutrition
Soonchunhyang University 22 Soonchunhyang-ro
Asan 31538 South Koren
sonyah@sch.ac.kr

Objectives: This study aimed to develop policy recommendations for creating a healthy food environment involving convenience stores which have been recently promoted as an extension of food retailing and indeed of the foodservice market in South Korea.

Methodology: This study was based on case studies evaluating the nutritional quality of lunch box products sold by the Korean big 3 convenience store brands (CU, GS25, and 7-Eleven) as meal replacements. Samples of all lunch box products sold during October 2016 in Asan city, South Korea were collected for nutritional quality evaluation. A total of 36 different kinds of lunch box products were collected, and among these, 27 products that followed the traditional Korean meal structure (CU: 8, GS25: 10, 7-Eleven: 9) were included in the final analysis.

Results: The food items in the "Meats/Fish/Eggs/Legume" food group was 2.4 times the recommended intake of around 60g , while that in the "Vegetables" food group was even less than one serving size of 70g. The most frequent cooking method both for the animal-and plant-based food groups was stir-frying. The average calories fell short of the reference value for men but exceeded it for women. The percentage energy contribution from fats exceeded the reference range (15%-30%). The average amounts of protein, saturated fat, cholesterol and sodium were higher than recommended.

Conclusions: Overall, the nutritional quality of lunch box products sold by the Korean big 3 convenience store brands was evaluated to be inadequate as meal replacements. This study calls attention to the necessity and importance of establishing healthy food standards for meal replacements in convenience stores, given the ever-growing reliance on these establishments as a go-to spot for a convenient meal. The results may also provide useful insights for developing countries in Asia, which are being targeted as an emerging market for convenience stores.

Evaluating the nutritional quality of ready meals in South Korea: can they be healthy alternatives?

P 19

KIM So-young[1]
SUYOUN Kim[2]

1 Department of Food Science and Nutrition, Soonchunhyang University, 22 Soonchunhyang-ro, Asan, 31538 South Korea
2 Department of Food and Nutrition, Seoul National University, Seoul 08826, South Korea

Corresponding author:
KIM So-young
Department of Food Science and Nutrition
Soonchunhyang University 22 Soonchunhyang-ro
Asan 31538 South Korea
sonyah@sch.ac.kr

Objectives: The current study analysed and compared the nutritional quality of private brand (PB) and national brand (NB) ready meal (RM) products in South Korea.

Methodology: Data on RM products were collected via the food information database (EatSight) of Daesang Information Technology between February and May of 2017. For PB, data on all RM products by Peacock, a PB by the chain store (Emart) with the largest market share in South Korea, were extracted to compare the nutritional qualities with NB products. A total of 91 PB and 415 NB products were selected and categorized into four main categories of "soup/stew", "refrigerated noodles", "frozen rice/noodles", and "dumplings". Basic and nutritional information was extracted for each product, and analyses were performed to compare difference between PB and NB products.

Results: The study results showed that PB products accounted for the highest percentage of refrigerated products while NB products occupied the highest percentage of frozen products, and that their main products showed evident nutritional problems. Soup/stew PB products were shown to be significantly higher in nutrients that should be limited in consumption such as calories, fats, sodium, saturated fats, and trans-fats than NB products. Likewise, in the case of frozen rice/noodles, NB products were significantly higher in sodium and saturated fats than PB products. In particular, sodium contents were high and even close to the daily recommended intake as in the case of refrigerated noodles. When the Korean guidance for traffic light labelling was applied, a mere 0.2% and 5.9% of the total RM products showed all four and three green lights, respectively. Meanwhile, RM products with no green light took up 42.3%, while one green light accounted for 33.2%.

Conclusions: Though it is difficult to draw a definitive conclusion on the comparative nutritional qualities of PB and NB RM products due to the lack of consistency in the results, this study suggests that there is room to improve the nutritional quality of RM products in general.

Food habits of the teens when free of charge school meals are provided – baseline study for EU school fruit, vegetables and milk scheme in Finland

P 20

KUUSIPALO Heli[1]
TAPANAINEN Heli[1]
RAULIO Susanna[1]
VIRTANEN Suvi M.[1,2]

[1] National Institute for Health and Welfare (THL); 2University of Tampere and Tampere University Hospital

Corresponding author:
KUUSIPALO Heli
National Institute for Health and Welfare (THL), P.O. Box 30
00270 Helsinki Finland
heli.kuusipalo@thl.fi

Objectives: All school children under the compulsory education are served a warm lunch free of charge every school day in Finland. The recommended ("Eating and learning together – recommendations for school meals" by National Nutrition Council in Finland, 2017) model of school meal includes main course, fresh vegetables/fruits, bread, bread spread and milk/sour milk and should provide 1/3 of daily energy needs. In this study we investigated how the almost 3000 pupils aged 12 to 14 years (6th and 8th graders) chose fruits, vegetables and milk to their school meal.

Methodology: The data of this study are derived from questionnaires filled in by 1078 participants in 6th and 1808 participants in 8th grades in 20 municipalities across Finland. The back ground data included sex, length, weight, parents' education and smoking, and amount of pocket money. There were questions on health behavior (physical activity, sleep) and food habits.

Results: In the 6th grade 87% of pupils participated to school meal every day but in the 8th grade only 68% participated. Of the girls 7% and of the boys 12% in the 6th grade and of the 8th graders 4% and 8%, respectively, chose all the components of the meal every day. Milk is commonly used at meals in Finland but only 38% of the girls in 6th and 51% of boys in 6th and 26% of girls in 8th and 45% of boys in the 8th grade selected milk to their school meal. Most commonly used milk was skimmed milk. Vegetables were chosen to school meal by half of the 6th graders and only by about 1/3 of the 8th graders. The 6th graders eat together with their teachers and as teachers are an example, the meal is more according to the recommendations. The 8th graders tend to follow more the example of their school-mates, thus the sometimes "choosy" opinion leaders. Some 65% of the pupils reported that they had eaten the breakfast at home every school day.

Conclusion: Despite the detailed nutrition recommendations, very few pupils chose the recommended varied and healthy school meal. Although, over 50% of the pupils were reporting that their diet is healthy.

Screening of multiple bacterial strains from dairy products and human feces iden tifies Lb102, Bf141 and P35 as probiotic strains that improve intestinal health and host metabolism in a mouse model of obesity

P 21

LE BARZ Mélanie[1,2,3*]
DANIEL Noémie[1,2*]
VARIN Thibault[2]
NAIMI Sabrine[1,2,4]
DEMERS-MATHIEU Véronique[2,4,5]
PILON Geneviève[1,2]
AUDY Julie[6]
LAURIN Émilie[7]
ROY Denis[2]
URDACI Maria C.[3]
ST-GELAIS Daniel[2,4,5]
FLISS Ismail[2,4]
MARETTE André[1,2]

[1.] Department of Medecine, CRIUCPQ, Laval University, Quebec, Canada
[2.] Institute of Nutrition and Functional Foods (INAF), Quebec, Canada
[3.] University of Bordeaux, Laboratory of microbiology, Gradignan, France
[4.] Dairy Science and Technology Centre (STELA), Quebec, Canada
[5.] Ste-Hyacinthe Research Development Centre, Agriculture and Agri-Food Canada
[6.] Agropur Cooperative, St-Hubert, Canada
[7.] Ultima Foods, Granby, Canada
[*] These authors contributed equally to this work.

Corresponding author:
MARETTE André
Pavillon Marguerite d'Youville
local Y4340 - 2725 chemin de Ste-Foy
Québec, Canada
andre.marette@criucpq.ulaval.ca

The gastro-intestinal tract and the gut microbiota represent the interface between diet and host organism. Given the growing evidence that gut dysfunction plays a critical role in the development of metabolic diseases, the identification of new probiotic bacteria has attracted more attention. In fact, using probiotics to improve gastro-intestinal health may help prevent obesity-linked metabolic syndrome and inflammation.

Objective: To determine, in vivo, the potential anti-obesity effects of bacterial strains isolated from dairy products and human feces.

Methods: Bacterial strains were selected in vitro for their ability to modulate inflammation and then tested in a mouse model of diet-induced obesity. C57BL/6 mice were divided into 8 groups: 2 control groups (chow and high-fat high-sucrose diet(HFHS)) gavaged with skim milk (vehicle) and 6 treated groups fed under HFHS diet and gavaged with one of the 6 strains: P35 (Propionibacterium), Lb38, Lb79, Lb102 (*Lactobacillus*), Bf26, Bf141(*Bifidobacterium*)) at 109cfu/day during 8 weeks.

Results: While three strains showed only modest (Lb38, Bf26) or no (L79) effects, P35, Lb102 and Bf141 significantly reduced HFHS-induced obesity, visceral fat accumulation and associated inflammation, concomitant with improved glucose tolerance and insulin sensitivity. Further analysis revealed beneficial but strain-specific effects of P35, Lb102 and Bf141 on intestinal barrier homeostasis, without reversing HFHS diet-induced gut microbiota dysbiosis.

Conclusion: Using a combination of *in vitro* and *in vivo* screenings, we have thus identified three new potential probiotics that prevent diet-induced metabolic disturbances. Since parallel experiments demonstrated that Lb102 and Bf141 are compatible with their integration into fermented dairy products, our data are paving the way towards the development of novel probiotic yogurt and cheese that may help to prevent body weight gain and related metabolic disorders.

Where are we having lunch? Eating-out location choices during the workday

P 22

MASSEY Camille[1,2]
SAULAIS Laure[1,3]

[1] Institut Paul Bocuse Centre for Food and Hospitality Research
[2] Laboratory "Systemic Health Care", EA4129, University Lyon 1 UCBL
[3] INRA GAEL, Grenoble (associate researcher)

Corresponding author:
MASSEY Camille
Institut Paul Bocuse Centre for Food and Hospitality Research
Château du Vivier, BP 25
69131 ECULLY Cedex, France
camille.massey@institutpaulbocuse.com

Background: Increased selection and consumption of fruits and vegetables are associated with better access and availability (Appleton et al. 2016; Hakim & Meissen, 2013). Therefore, the eating-out location is decisive in the type of food consumers are likely to choose. This is especially true for the working population, whose choices of location may be constrained by workplace organization. Workplaces are considered a promising place to promote healthy eating (Wanjek, 2005), mainly because of the recurrence of eating occasions. However, while research suggests that workers rarely attend the same location throughout the workweek (Mathé & Francou, 2014; Poulain, 2002), it is unclear what drives location selection.

Objectives: The first objective is to describe the perceived eating-out environment and habits of French workers. The second objective is to study the relationship between work constraints and selection location for lunch during the workday.

Methodology: 1,000 French wage-earning workers recruited from an online survey panel answered an ad-hoc questionnaire regarding the food environment around their workplace, their actual location selection, their workplace organization, and their job characteristics.

Results: The majority of respondents perceive that many location options are available to them for buying lunch, regardless of SES, sex or region. Over 50% attended several lunch locations in the two-week period before they took the survey. Preliminary analysis of workplace constraints indicates that perceived control over schedule, proximity, and rapidity in service are all associated with location choice.

Conclusion: Workplace organization drives employees' lunchtime strategies, and thus their food choices. A better understanding of the determinants of place selection under constraints can contribute to the promotion of healthier diets through increased access to fruits and vegetables.

Higher energy intake following a 10-month multidisciplinary weight loss program is influenced by the level of initial dietary restriction in adolescents with obesity

P 23

MIGUET Maud[1]
MASURIER Julie[2]
CHAPUT Jean Philippe[3,4]
PEREIRA Bruno[5]
LAMBERT Céline[5]
DÂMASO Ana Raimunda[6]
COURTEIX Daniel[1,7]
DUCLO Martine[7,8,9,10]
BOIRIE Yves[7,9,10,11]
THIVEL David[1,7]

[1] Clermont Auvergne University, EA 3533, Laboratory of the Metabolic Adaptations to Exercise under Physiological and Pathological Conditions (AME2P), Clermont-Ferrand, France

[2] UGECAM Nutrition Obesity Ambulatory Hospital, Clermont-Ferrand, France

[3] Healthy Active Living and Obesity Research Group, Children's Hospital of Eastern Ontario Research Institute, Ottawa, Ontario, Canada

[4] Department of Pediatrics, Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada

[5] Clermont-Ferrand University hospital, Biostatistics unit (DRCI), Clermont-Ferrand, France

[6] Post Graduate Program of Nutrition. Paulista Medicine School, Universidade Federal de São Paulo (UNIFESP), Rua Botucatu, 862–Vila Clementino, São Paulo, SP 04020-050, Brazil

[7] CRNH-Auvergne, Clermont-Ferrand, France

[8] Department of Sport Medicine and Functional Explorations, Clermont-Ferrand University Hospital, G. Montpied Hospital, Clermont-Ferrand, France

[9] INRA, UMR 1019, Clermont-Ferrand, France

[10] University Clermont 1, UFR Medicine, Clermont-Ferrand, France

[11] Department of Human Nutrition, Clermont-Ferrand University Hospital, G. Montpied Hospital, Clermont-Ferrand, France

Corresponding author:
MIGUET Maud
AME2P 24 Avenue des Landais
63170 Aubière
maud.miguet@gmail.com

Background: Multidisciplinary interventions have shown some merits in weight reduction strategies in youth; however, their impact on subsequent daily energy intake remains largely unknown. The aim of the present study was to evaluate the nutritional responses to a 10-month multidisciplinary intervention among adolescents with obesity, in relation to their eating behavior characteristics at baseline.

Methods: Thirty-five adolescents (mean age: 13.4 (±1.2) years) with obesity took part in a 10-month residential multidisciplinary weight loss program. Anthropometric measurements, body composition (DXA), 24-hour ad libitum energy intake (weighted test meals), eating behaviors profile (DEBQ) and appetite sensations (Visual Analogue Scales) were assessed on three occasions: During the first week of their arrival in the institution (T0), after 5 months (T1), and at the end of the 10-month program (T2). Repeated measures ANOVA were performed to evaluate the evolution between T0, T1 and T2. Unpaired t-tests were used to compare baseline parameters (e.g., weight, body composition) and their variation at the end of the 10-month intervention between restrained and unrestrained eaters, emotional and non-emotional eaters, and external and non-external eaters. Linear regressions were used to examine the association between baseline eating behavior scores and weight and body composition variations.

Results: The adolescents lost 10.7 (±7) kg of body weight (12.0 ± 7% of their initial weight) at T2 compared to T0. Weight loss was accompanied by a modification in eating behaviors profile, with a significant decrease in emotional (-8.3%, $p<0.05$) and external (-14.8%, $p<0.001$) eating scores. 24-hour ad libitum energy intake increased significantly at T2, compared to T0 (+246 kcal, $p<0.001$). The observed subsequent increased 24-hour ad libitum energy intake at T2 compared to T0 was significantly higher in restrained (+492 kcal) compared to unrestrained (+115 kcal) eaters ($p<0.05$). Dietary restraint score at baseline was inversely correlated with the percentage of weight loss ($r = -0.44$, $p<0.01$). Cognitively restrained eaters lost 8% of their initial weight at T2 compared to T0, whereas non-restrained eaters lost 13% of their initial weight ($p=0.07$).

Conclusion: A 10-month multidisciplinary weight loss intervention induced an increase in 24-hour ad libitum energy intake compared to baseline, especially in cognitively restrained eaters. Moreover, cognitively restrained eaters at baseline tended to lose less body weight compared to unrestrained ones at T2 compared with T0. These findings suggest that baseline dietary restraint may be a useful eating behavior characteristic to consider as a screening tool for identifying adverse responders to weight loss interventions in youth.

Consumption of dairy products, macro- and micro-nutrients and clinical characteristics of French elderly people enrolled in the Three-City-Bordeaux cohort

P 24

PELLAY Hermine[1]
HELMER Catherine[1]
BOYER Constance[2]
MARMONIER Corinne[2]
SAMIERI Cécilia[1]
FEART Catherine[1]

[1] Univ. Bordeaux, Inserm, Bordeaux Population Health Research Center, UMR 1219, F-33000 Bordeaux, France
[2] CNIEL, Technical and Scientific Department, Health and Nutrition Research Unit , F-75009 Paris, France

Corresponding author:
Hermine PELLAY
INSERM U1219, BPH - Team LEHA
146 rue Léo Saignat
33076 BORDEAUX Cedex
hermine.pellay@u-bordeaux.fr

Background: Most food groups characterized by healthy eating habits, such as the Mediterranean diet, are now well known. Although recommendations place a premium on dairy products (DP) in the diet of elderly, differences remain in the calculation of dietary scores of healthy diets.

Objective: The objective of this study was to identify DP consumers and to describe their macro- and micro-nutrients intake, socio-demographic and clinical characteristics.

Methods: The study sample was constituted of Bordeaux participants enrolled in the 3-City cohort, aged 65y and older at baseline, who answered dietary surveys, including a food frequency questionnaire and a 24h dietary recall. Regular consumers (RC) were identified as those consuming DP at least once a day and were compared to non-regular consumers (NC). Clinical characteristics were measured (hypertension, BMI, hypercholesterolemia, diabetes, global cognitive performances) or self-reported (smoking, angina, cardiac rhythm disorders, cardiac failure, arteritis, myocardial infarction, osteoporosis, dyspnea, asthma, depressive symptomatology and Parkinson disease).

Results: The study sample was constituted of 1596 participants, aged 74.2y on average, 62% were women. Among them, 94% were considered as RC. Compared with NC, RC presented similar age on average and the same educational level, but were more often married. Regarding macro- and micro-nutrients intake, RC reported significant higher consumption of calcium (877mg vs 691mg), and phosphorus (1119mg vs 1013mg) than NC. Regarding clinical characteristics, RC suffered significantly less often from cardiac failure (6% vs 11%) and dyspnea (13% vs 20%) than NC. There was no significant difference on other co-morbidities.

Conclusion: This cross-sectional study pointed out that a regular consumption of DP was a significant provider of calcium and phosphorus and was associated with a lower prevalence of some adverse clinical events among the elderly, suggesting that DP could be considered as a relevant food group. A study by profile will clarify the share of DP's benefits in overall diet.

Vegetable and fruit delivered to beneficiaries in Alimento para Todos (Mexican Food bank)

P 25

PEREZ-LIZAUR Ana Bertha[1]
JIMENEZ Mariana[2]

[1] Universidad Iberoamerica
[2] Alimento para Todos

Corresponding author:
PEREZ-LIZAUR Ana Bertha
Prolong Reforma 880 CDMX
01219 Mexico
anabertha.perez@ibero.mx

Alimento para Todos (APT) is a Mexican Food Bank in Mexico City. APT attends about 34 990 beneficiaries per week: the beneficiaries are selected between people in food insecurity and with a very low income (food poverty). Each week the population in family groups pick up 80 to 100% of vegetable and fruit daily recommendations and 50% of energy daily recommendations for the beneficiaries.

Objective: analyse the difference of total delivery between 2 different periods of the year (May vs December).

Methodology: The institution records in an electronic system (APTSis) the deliveries to families, the data were obtained from the system and analysed the months of May and December 2017 to compare the quantities of vegetable and fruit delivered and the amount of vitamins A and C provided in this food groups.

Results: In May 2017, the amount of vegetable delivered daily per person was 190g and of fruit 280g; in December 2017, the daily amount was 120g and 210g respectively of vegetable and fruit; in May the most important food were tomato red and green, papaya, eggplant, mango, prunes, grapes, pineapple; in December the food were oranges, mandarina, tejocote, and mostly the same vegetables. Both vitamins A and C covered the nutritional recommendations in both period of time: Vitamin C 182.5mg vs 165.72; Vitamin A 765µg vs 802µg.

Conclusion: APT mission to deliver enough vegetable and fruit is covered for the population and allows a better diet to population, with a very low recuperation fee (5% of the market price).

Visual approach for estimating the compliance of plate model in school meals – baseline study for EU school fruit, vegetables and milk scheme in Finland

P 26

RAULIO Susanna[1]
TAPANAINEN Heli[1]
KUUSIPALO Heli[1]
VIRTANEN Suvi M[1], [2]

[1] National Institute for Health and Welfare (THL)
[2] University of Tampere and Tampere University Hospital

Corresponding author:
RAULIO Susanna
National Institute for Health and Welfare (THL), P.O. Box 30
00270 Helsinki Finland
susanna.raulio@thl.fi

Objectives: All Finnish school children under the compulsory education are offered a lunch free of charge at the school canteen every school day. The plate model of school meal includes the main course, fresh vegetables, bread, bread spread and milk/sour milk according to the school meal nutrition recommendations. In this study, we investigated whether the pupils aged 12 to 14 years (sixth and eighth graders) chose fresh vegetables and milk to their school meal. The baseline for milk and vegetable consumption was measured and the follow up study to assess the impact of school scheme will be conducted after five years.

Methodology: The data of this study - photographs of school meals in comprehensive schools - are derived as a part of the field study conducted at five schools across Finland, for 593 adolescents. Photographs were analyzed according to the criteria of the National Nutrition Recommendations and the Food Portion Picture booklet. Meal was considered being in accordance with the nutrition recommendations when it contained the main course, fresh vegetables, rye bread, margarine and milk or sour milk and when the portion size was following that of described in the recommendations.

Results: Portions that were in perfect accordance with the nutrition recommendation were rare: only 2.5% of the portions of sixth graders and 5% of the portions of eighth graders. Fresh vegetables were included only in 40% of the portions of sixth graders and in 50% of the portions of eighth graders. Only 30% of sixth graders and 40% of eighth graders chose milk to their school meal. The main course, in the other hand, was chosen by almost all of those who attended school lunch.

Conclusion: In EU school scheme the consumption of milk and fresh vegetables are promoted since these foods are important contributors to the healthy meal. Despite the detailed National Nutrition Recommendations the sixth and eighth graders in the studied schools did not follow the recommendations accurately. More intense nutrition promoting in schools is needed to encourage pupils to consume fresh vegetables and milk regularly.

Fatty acid composition of visceral adipose tissue in colorectal cancer and obesity: influence of dietary habits

P 27

SCAZZOCCHIO Beatrice
VARI' Rosaria
DEL CORNO' Manuela
CONTI Lucia
D'ARCHIVIO Massimo
SILENZI Annalisa
GESSANI Sandra
MASELLA Roberta

Center for Gender-Specific Medicine, Istituto Superiore di Sanità, Viale Regina Elena, 299, 00161 Rome, Italy

Corresponding author:
SCAZZOCCHIO Beatrice
Center for Gender-Specific Medicine
Istituto Superiore di Sanità
Viale Regina Elena, 299
00161 Rome, Italy
beatrice.scazzocchio@iss.it

Objectives: Colorectal cancer (CRC) is one of the major causes of cancer-related mortality in both men and women worldwide. Obesity and lifestyles, specifically dietary habits and physical activity, are primary determinants of cancer risk. Fatty acid (FA) profile of white adipose tissue (AT) depends on both dietary intake and innate metabolic differences. Modified FA profiles have been found associated with an inflamed microenvironment in visceral AT in obese subjects and patients affected by CRC. This study aimed to determine the influence of the diet on FA profile of visceral AT and to compare FA composition of lean healthy subjects (Nw) with those of obese (Ob) individuals and normal weight (NwCRC) and obese (ObCRC) CRC patients.

Methodology: AT biopsies were collected from 71 lean and obese subjects aged 25-70 years, undergoing abdominal surgery or laparoscopy for benign or CRC conditions (histologically proved primary colon adenocarcinoma, stage Duke's A,B/stage I-II) and were analyzed for fatty acid composition by gas-liquid chromatography. Matched validated food frequency questionnaires were filled in during individual interviews, and analyzed by Winfood software. Estimated desaturase activities were calculated as precursor to product FA ratios in AT.

Results: Data showed inadequate dietary habits in Ob and CRC subjects. NwCRC subjects showed an increased intake of saturated-FA (SFA) (p=0,0151), specifically palmitic (p=0,0042) and stearic acid (p=0,0091), and a parallel reduction of monounsaturated-FA (MUFA) consumption (p=0,002), in particular oleic acid, with respect to Nw. Estimated AT SCD-1 activity, a key enzyme converting saturated-FA to monounsaturated-FA, was increased in all the groups in comparison with Nw (p=0.029).

Conclusions: Unhealthy eating habits, characterizing obese and CRC subjects, may influence the FA composition of visceral AT contributing to the alteration of tissue functions. The quality of the diet, other than the quantity of energy consumed, might have a main role in the inflammatory microenvironment found in CRC visceral AT.

Eating habits in early pregnancy: a study with pregnant women from "Healthy Bellies Program"

P 28

SILVA Ana[1,2]
PEREIRA Beatriz[1,2]
SOUZA Sérgio[2,3]
PEIXOTO Inês[1,2]
ROSÁRIO Rafaela[2,4]

[1] School of Education, University of Minho, Portugal
[2] Research Centre in Child Studies, Portugal
[3] Federal University of Marahão, Brazil
[4] School of Nursing, University of Minho, Portugal

Background: The importance of healthy lifestyles during pregnancy is currently an indisputable fact in improving the health of both the pregnant and the newborn. For a healthy pregnancy, it is recommended that the pregnant woman adopt several essential health care, including balanced nutrition, physical activity, abstention from smoking, alcohol and drugs, and appropriate obstetric surveillance.

Objective: The objective of this study is to describe eating habits in early pregnancy, namely caloric intake and intake of vegetables and fruit.

Methods: This study is part of a larger, quasi-experimental, called «Healthy Bellies». A descriptive analysis of 313 pregnant women, apparently healthy, with ages between 18 and 44 years (mean = 31.37, SD = 4.13) was performed. Food intake data were obtained through the food frequency questionnaire.

Results: The mean (SD) of ingested calories was 1331.22 (549.29) Kcal. The total consumption of vegetables was 485.15 (337.21) g / day and fruit consumption was 386.36 (274.23) g / day. The highest energy consumption, as well as fruit and vegetable intake, was associated with participants with higher literacy, higher socioeconomic status and higher total physical activity level.

Conclusion: The health profile in early pregnancy contributes to the design of effective interventions.

Corresponding author:
SILVA, Ana
Largo do Paço 4704
553 Braga - Portugal
anasilva0883@gmail.com

Consumption of vegetables and fruits, as well as their juices, nectars and drinks by Polish schoolchildren

P 29

STOS Katarzyna
JAROSZ Miroslaw
OLTARZEWSKI Maciej
GLOWALA Aneta
ZIOLKOWSKA Izabela

Institute of Food and Nutrition, Warsaw, Poland

Corresponding author:
STOS Katarzyna
Institute of Food and Nutrition,
61/63 Powsinska St.
02-903 Warsaw, Poland
kstos@izz.waw.pl

Objectives: Vegetables and fruits are important elements of children's menu. These groups of products are included in the Polish food pyramid as the base of the daily diet. WHO recommends the intake of a minimum of 400g of fruit and vegetables per day (excluding potatoes and other starchy tubers) for the prevention of chronic diseases such as heart disease, cancer, diabetes and obesity as well as prevention of several micronutrient deficiencies. The aim of the study was to assess the children's diets with special regard to consumption of fruit, vegetable and their products.

Methodology: The study was carried out between 2006 and 2011 among 981 girls and boys aged 9-13 years from North and South-East Poland, with the use of one-day dietary recall method. The consumption of vegetables, fruits, juices, nectars and fruit drinks was calculated.

Results: The mean consumption of vegetables was 155 grams per day in children. The consumption of fruits was smaller (128 grams per day). The group of girls were characterized by a higher consumption of vegetables and fruits than the group of boys, in particular of fruits (137 grams per day in girls and 119 grams per day in boys). The total mean consumption of juices among children was 102 milliliters per day and the mean consumption of nectars and fruit drinks was 60 milliliters per day.

Conclusion: The results from the study show that daily consumption of vegetables and fruits among Polish schoolchildren was below the WHO recommendations. The mean consumption of above products (283 g per day) covered nearly 71% of minimum recommended amount. It is necessary to promote the consumption of vegetables and fruits, especially among children, in order to achieve the recommended levels.

National nutrition education projects in Finnish schools – from curriculum and recommendations to children's participation and health promoting food choices

P 30

TALVIA Sanna[1]
JALKANEN Henna[1]
TILLES-TIRKKONEN Tanja[1]
KÄHKÖNEN Kaisa[1]
KARHUNEN Leila[1]

[1] Team of food and nutrition education research, Institute of Public Health and Clinical Nutrition, University of Eastern Finland

Corresponding author:
TALVIA Sanna
P.O. Box 1627
FI-70211 Kuopio, Finland
sanna.talvia@uef.fi

In recent years two national food educational activities have been launched in Finland: Maistuva koulu (in English: Tasty School) project and Ruokatutka (in English: Food Radar) campaign. Both are founded on the National core curriculum and National Nutritional Council's recommendations for dining in schools and early childhood education. The Finnish school dining system, established in 1948, provides many possibilities to integrate food and nutrition education to the school day.

Maistuva koulu project (2018-2020) is a national R&D project, financed by the Ministry of Social Affairs and Health. The project aims to establish a permanent culture of conscious food education in the Finnish primary schools. A model for planning, implementation and evaluation of food education at schools is developed. The model utilizes school dining as well as activities in and out of classroom as a platform for education. The co-operation of different stakeholders is especially emphasized. The project also establishes a national network of mentors for food education. The model is developed in pilot schools during the school year 2018-2019 and feasibility and effects of the model will be tested in research schools during the school year 2019-2020.

Ruokatutka campaign (2018-) is part of the School fruit, vegetable and milk scheme of the European Union, funded by the European Union's common agricultural policy. The program aims to educate pupils about the benefits of healthy eating and to help them reconnect to agriculture. The campaign includes different internet-based materials, e.g. games, activities, Youtube-videos and tests. First materials, including a nutrition knowledge oriented game, were launched in August 2018. In the videos a young girl called Dabi explores food related topics with food professionals and celebrities. First tests included a test for milk product consumption and a test for fruit and vegetable consumption. The campaign inspires children and young people to ask food-related questions, to research topics together and to get creative. In that way they will grow up to citizens with a curious attitude to food and eating, with respect to food and food producers and with capability of constructive thinking in food matters.

Co-operators in the Maistuva koulu project: Ruukku – Centre for Food Culture and University of Eastern Finland

Co-operators in the Ruokatutka Campaign: Communication agency CoComms Oy Ltd, University of Eastern Finland, Ruukku – Centre for Food Culture, Ammattikeittiöosaajat Amko Ry (Professional kitchen experts' association)

Knowledge and nutritional behaviours of Polish parents related to fruit and vegetable consumption.

P 31

TARASZEWSKA Anna[1]
WOLNICKA Katarzyna[1]
JACZEWSKA-SCHUETZ Joanna[1]
JAROSZ Mirosław[1]
NIEWIAROWSKA Monika[2]

[1] Institute of Food and Nutrition, Poland
[2] National Support Centre for Agriculture, Poland

Corresponding author:
TARASZEWSKA Anna
Institute of Food and Nutrition
61/63 Powsinska Str.
Warsaw, Poland
ataraszewska@izz.waw.pl

Objectives: Parents create child's environment from an early age and influence on behaviors, habits and attitudes. Therefore eating habits of parents play an important role in shaping the preferences of food intake, including fruit and vegetable (F&V), by children.

Methodology: Data was obtained from 1165 parents on the basis of anonymous questionnaire in May/June 2015. The study was the part of evaluation of School Fruit and Vegetable Scheme conducted in Poland in 2012-2016. Parents were asked i.a. about their knowledge and nutritional behaviours related to F&V consumption.

Results: Almost all parents (99,2%) claimed that daily consumption of F&V by children is important but only 20,6% of them knew that children should eat at least 5 portions F&V a day. The main source of nutritional knowledge of parents were media: TV, radio – 65,4%, internet – 68,1%. Professionals or school were source of information for 35,2% and 20,4% of parents respectively. Almost 80% of parents offered access to various kind of fruits and 68% offered access to various kind of vegetable to children at home. Ready to eat F&V between meals were given children by 52,5% and only 21% of parents respectively. Merely 30% of parents gave fruit and 11% - vegetable to their children to school every day/ most days. In parents' opinion barriers in F&V consumption were high price (F: 9,5%, V: 4,6%), problems with storage (F: 6,8%, V: 5,3%), long time of preparing to eat (F: 1,2%, V: 4,3%) or taste (F: 5,6%, V: 8,8%).

Conclusions: Parents' knowledge related to the F&V consumption by children is incomplete and there is still need to popularize information through reliable sources. It is also necessary to promote strongly vegetable consumption and searching and promoting practical ideas which will help parents to increase vegetable consumption in their children.

Impact of a youth-led social marketing intervention run by adolescents to encourage healthy lifestyles among younger school peers (EYTO-Kids project): a parallel-cluster randomized controlled pilot study

P 32

TARRO Lucia[1,2]
LLAURADÓ Elisabet[1]
ACEVES-MARTINS Magaly[1]
MORIÑA David[3]
PAPELL-GARCIA Ignasi[2]
AROLA Lluís[2,4]
GIRALT Montse[1,5]
SOLÀ Rosa[1,2,6]

[1.] Universitat Rovira i Virgili, Facultat de Medicina i Ciències de la Salut, Functional Nutrition, Oxidation, and Cardiovascular Diseases Group (NFOC-Salut), Health Education and Promotion, C/ Sant Llorenç, 21, Reus (43201), Spain

[2.] Eurecat, Centre Tecnològic de Catalunya, Unitat de Nutrició i Salut, Avinguda Universitat 1. Reus (43204), Spain

Background: Encouraging healthy lifestyles in children is a challenge.

Objective: This project aimed to improve lifestyles of younger peers by engaging adolescent creators (ACs) to design and implement peer-led and social marketing (SM) health promoting activities.

Methods: A 10-month parallel-cluster randomized controlled school-based pilot study was performed in disadvantaged neighborhoods in Reus (Spain) spanning two academic years (2015-2016/ 2016-2017). Eight primary schools (n=375 children) and 4 high schools (n=94 ACs) were randomly placed in the intervention group (IG), and 8 primary schools (n=327 children) and 3 high schools

(n=98 adolescents) served as the control group (CG). In the intervention group, 94 ACs (12-14y) designed and implemented 4-SM activities for their younger peers (9-11y). The CG received no intervention. Primary (physical activity and fruit consumption) and secondary outcomes (screen time, consumption of vegetables, sugary drinks and fast-food) were assessed with validated questionnaires at baseline (T0) and at the end-of-the-study period (T1). Generalized linear models were used to analyze differences from the baseline to the end of the study of the IG and CG.

Results: At T1, in the principal outcomes, there were no significant changes in fruit consumption and physical activity within and between the intervention and control groups.

However, in the secondary outcomes, the number of children consuming sweets weekly decreased in the IG from T0 to T1 (20.4% to 12.9%; p=0.006), whereas no change happened in the CG (10.2% to 10.3%; p=0.782), resulting in a significant difference between both groups at the end of the study (p=0.004).

The number of girls consuming fast food decreased non-significantly in the IG (20.7% to 18.5%; p=0.701) and a non-significant increase occurred in the CG (9.5% to 13.2%; p=0.356), being a significant difference between groups in favor of IG (p=0.015) and following the same tendency in the sugary drinks IG (38% to 33.8%; p=0.327) and CG (28.6% to 38.0%; p=0.053) being a significant difference between groups in favor of IG (p=0.044). The number of boys who reported screen time ↖2h/weekday non-significant increase in the IG from T0 to T1 (68.4% to 71.6%; p=0.585) and non-significant decrease in the CG (87.3% to 82.3%; p=0.265), being a significant difference between groups in favor of IG (p=0.003).

Conclusion: The EYTO-Kids intervention, using 4-SM and peer-led activities, was not effective in improving the primary outcomes but was effective in reducing consumption of sugary drinks, fast-food and sweets among girls and reducing screen time in boys, compared to the CG.

[3.] Unit of Infections and Cancer - Information and Interventions (UNIC-I&I), Catalan Institute of Oncology (ICO)-IDIBELL, L'Hospitalet de Llobregat, Barcelona, Spain

[4.] Universitat Rovira i Virgili, Departament de Bioquímica i Biotecnologia, Nutrigenomics Research Group, C/ Marcel·lí Domingo, 1, Tarragona (43007), Spain

[5.] Universitat Rovira i Virgili, Facultat de Medicina i Ciències de la Salut, Unit of Pharmacology, C/ Sant Llorenç, 21, Reus (43204), Spain

[6.] Hospital Universitari Sant Joan de Reus, Reus, Spain

Corresponding author:
TARRO Lucia
Facultat de Medicina i Ciències de la Salut
NFOC group, Eurecat-Reus
Centre Tecnològic de Catalunya
C/ Sant Llorenç 21
43201-Reus, Spain
lucia.tarro@urv.cat

Impact of community gardens in promoting sustainable lifestyles in urban settings: design and protocol of the JArDinS study

P 33

THARREY Marion[1]
PERIGNON Marlène[1]
MEJEAN Caroline[1]
DARMON Nicole[1]

[1] MOISA, INRA, CIHEAM-IAMM, CIRAD, Montpellier SupAgro, Univ Montpellier, Montpellier, France

Corresponding author:
THARREY Marion
INRA, UMR 1110 MOISA
Campus Inra-SupAgro de la Gaillarde,
2 place Pierre Viala - Bât. 26
34060 Montpellier Cedex 2, France
marion.tharrey@supagro.fr

Background/Objective: Despite the growing body of evidence on the health benefits associated with community gardening, qualitative and cross-sectional designs still dominate the scientific literature and longitudinal studies based on quantitative data are needed. Here we describe the protocol of the JArDinS study, a quasi-experimental research focusing on community gardens as a way to induce more sustainable lifestyles.

Methods/Design: This study will be based on a natural experiment (access to a community garden). Gardeners (n=80) who recently had access to a community garden will be recruited in Montpellier, France. Volunteers living in the same neighborhoods but with no access to a community garden will be recruited in a control group (n=80). Participant will be issued with three tools: a Food Supply Dairy to collect data on household's food supply patterns over 1-month, a triaxial accelerometer (Actigraph) to measure physical activity and an online questionnaire. The sustainability of lifestyles will be examined by considering conjointly the three dimensions of sustainability:

1) Social/health – measured by nutritional quality of food supply, physical activity, mental well-being and social connection.

2) Environment – measured by environmental impact of household's food supply and related food trips, concern for food waste and connection with nature.

2) Economy - measured by household food expenditure and the share of each food group and subgroup.

Results: Change of outcomes after 1 year will be compared between the natural experiment and control group, to evaluate the effect of access to a community garden on the sustainability of lifestyles.

Conclusion: This study will provide valuable information about the role of community gardens in urban strategies to favor sustainable lifestyle, based on a robust quasi-experimental design allowing causality evaluation.

Connected cooking devices to influence nutritional homeostasis: a feasibility randomized controlled trial at home

P 34

VAILLANT Marie-France[1,2]
TERRISSE Hugo[3]
ARTEMOVA Svetlana[3]
ROLLAND Carole[3]
JOYEUX-FAURE Marie[2,4,5]
BOREL Jean-Christophe[2,4,5]
OBERLI Marion[6]
DANCER Paul[6]
SICARD Mariette[6]
CASAS-AGUSTENCH Patricia[7,]
ANDRES-LACUEVA Cristina[7]
LLOYD Amanda J.[8]
DRAPER John[8]
PISON Christophe[1,2]
MOINARD Christophe[1]

[1]Laboratory of Fundamental and Applied Bioenergetics, INSERM 1055, Université Grenoble Alpes, France

[2] CHU Grenoble Alpes, France

[3] TIMC-IMAG, UMR CNRS5525, France, Université Grenoble Alpes, France

[4] INSERM 1042, Grenoble, France, Université Grenoble Alpes, France

[5] IC@dom, Meylan, France

[6] Groupe SEB, Ecully, France

[7] Biomarkers and Nutrimetabolomic Laboratory, Department of Nutrition, Food Sciences and Gastronomy, XaRTA, INSA, Faculty of Pharmacy and Food Sciences, University of Barcelona, CIBERFES ISCSIII, B arcelona, Spain

[8] Metabolomics Centre, IBERS, Aberystwyth University, United Kingdom

Corresponding author:
Marie-France VAILLANT
LBFA – U1055
Université Grenoble Alpes – CS40700
38058 Grenoble cedex 9
mfvaillant@chu-grenoble.fr

Rationale: Unhealthy lifestyles are major contributing factors to chronic conditions that impose a huge financial burden on EU healthcare systems. Cook2Health pilot study (C2H) aims to assess the feasibility of using connected cooking devices to improve dietary habits and health-status.

Methods: Monocentric randomized controlled trial (ClinicalTrials.gov NCT03171571): healthy volunteers, representative of the French population, were randomly allocated (1:1) to connected cooking devices with a recipes application: Intervention Group (IG) or Control Group (CG) using Zelen design. Feasibility/acceptability, assessed by completeness of collected data, was the primary outcome. Secondary outcomes included changes over a 1-year period between groups in Alternative Healthy Eating Index-2010 (AHEI-2010) score, anthropometric measurements, body composition, blood pressure, quality of life SF36, actimetry, blood and urine nutritional biomarkers and microbiota.

Results: 20 subjects (16 women), non-smokers, main person who prepares meals at home, with a mean age of 39.3(SD ±3.2) years and a Body Mass Index of 27.3(±1.3)kg/m2 were randomized in IG (n=11) or CG (n=9). Completeness of assessment at Month 0, 6 and 12 (home and hospital visits) was deemed successful.

At 1-year follow-up: there was no significant different between IG vs CG for AHEI-2010 (gain of a quintile), weight change mean(SD) 2.1 kg (±6.5 kg) vs -0.4 kg (±3.6 kg), waist circumference change: -5.9 cm (±7.7) vs 0.2 (±4.0), % fat mass -1.8(±6.7) vs -1.4 (±5.9), systolic blood pressure 123.0 (±15.0) vs 111.9 (±.6) and diastolic blood pressure 74.3 (±11.6) vs 71.7 (±6.1).

However, median sleep duration increased in IG +0.9h/d[0.3-1.2] vs -0.0[-0.4-0.3] for CG (P=0.04). Microbiota analysis showed promising differences with an increase in Firmicutes (P = 0.02) for IG.

Conclusions: Our preliminary results demonstrated the feasibility and acceptability of a home comprehensive multiscale assessment to measure the impact of connected cooking devices on dietary habits and health-status. This will be validated with 160 subjects in the on-going randomized multicenter controlled trial (NCT03169088).

MaestraNatura: an innovative nutrition education method for children

P 35

VARI' Rosaria[1]
SCAZZOCCHIO Beatrice[1]
SILENZI Annalisa[1]
DEL PAPA Sara[2]
D'AMORE Antonio[1]
GIOVANNINI Claudio[1]
GIMIGLIANO Annamaria[2]
MASELLA Roberta[1]

[1] Center for Gender-Specific Medicine, Istituto Superiore di Sanità, Viale Regina Elena, 299, 00161 Rome, Italy
[2] AMG Edutainment s.r.l., Rome, Italy

Corresponding author:
VARI' Rosaria
Center for Gender-Specific Medicine
Istituto Superiore di Sanità
Viale Regina Elena, 299
00161 Rome, Italy
rosaria.vari@iss.it

Objectives: The prevalence of paediatric overweight/obesity is a well-recognized public health problem worldwide. Educational programs have been carried out in the last few years in Italy. However, evidence for their real effectiveness in enabling children to transfer the theoretical knowledge in the daily life is quite equivocal. MaestraNatura (MN) is an innovative educational program tested from 2012 to 2017 in six Italian regions involving 103 schools, 900 teachers, about 20,000 students (6-13 y) and their parents.

This study was aimed at assessing the effectiveness of MN nutrition education program in filling the gaps in children's knowledge on nutritional issues, also highlighting possible gender differences in dietary habits and basic knowledge on nutritional issues.

Methodology: The didactical contents were distributed by a web platform to 1000 students of primary school (V class) and secondary-first level school (second class). Dietary habits and knowledge about the origin and function of different food were assessed by ad-hoc questionnaires. At the beginning and at the end of the scholastic year, the students were required to organize a weekly meal planner that were scored by nutritionists. This allowed us to assess possible improvements in their performances.

Results: Data collected from the questionnaires evidenced gender differences in behaviours/eating habits. In addition, females had better basic nutrition knowledge than males (T0 $F_{1,532} = 9.20$ $p = 0.0025$); interestingly, this difference disappeared at the end of the didactic path (T1 $F_{1,471} = 2.96$ $p = 0,0861$). Moreover, significant differences between the beginning (T0) and the end (T1) of the scholastic year ($F_{1,498} = 23,95$ $p=0,0000$) were found in terms of student knowledge.

Conclusions: The MN educational program has shown its effectiveness in transferring information contained in the food pyramid to the real context of a daily menu. This activity favoured a greater awareness on the importance of having appropriate dietary habits.

Milk polar lipids reduce cardiometabolic risk factors in post-menopausal women: a randomized double-blind controlled trial

P 36

VORS Cécile[1,2]
JOUMARD-CUBIZOLLES Laurie[3]
LECOMTE Manon[1]
COMBE Emmanuel[1]
OUCHCHANE Lemlih[4,5]
DRAI Jocelyne[1,2,6,7]
RAYNAL Ketsia[8]
JOFFRE Florent[9]
LE BARZ Mélanie[1]
GABORIT Patrice[8]
GESAN-GUIZIOU Geneviève[10]
COTTE Eddy[6]
LAVILLE Martine[1,2,6]
BERNALIER-DONADILLE Annick[11]
LAMBERT-PORCHERON Stéphanie[2,6]
MALPUECH-BRUGERE Corinne[3]
MICHALSKI Marie-Caroline[1,2]

Background: Disturbances of fasting and postprandial lipid profiles are major cardiovascular (CV) risk factors. Nutrition plays a key role in their modulation, notably in postmenopausal women at CV risk. Interest has grown on the potential benefits of milk polar lipids (MPL). However, effects of MPL supplementation in humans have been inconsistent, often due to trials being performed in healthy subjects by increasing lipid intake. We hypothesized that isolipidic enrichment of the diet with MPL via a realistic dairy product could improve lipid markers of CV risk.

Methods: We notably targeted a 5g/day dose using an originally designed butterserum microfiltration process (Gassi et al., Int. Dairy J. 2016). We performed a double-blind randomized controlled trial in 58 postmenopausal overweight women with HDL-cholesterol<1.6 mM.

They were subjected to (i) a 4-week dietary intervention with daily consumption of a cream-cheese containing 12g of milkfat randomly including either 0g (control, n=19), 3g (n=19) or 5g (n=20) of MPL, and to (ii) 8h-postprandial explorations after a test meal, before and after intervention (i.e. 2 visits). Lipid markers were measured in plasma and in the chylomicron fraction; stools were collected for RT-qPCR analysis of major bacterial species of the gut microbiota. The effect of MPL dose was tested through a linear mixed model (SAS®).

Results: The 5g MPL dose decreased fasting and postprandial total cholesterol and plasma triglycerides, and decreased fasting total/HDL-cholesterol and ApoB/ApoA1 ratios (effects different from control, $p<0.05$). The 5g MPL dose decreased both chylomicron-cholesterol and -triglycerides ($p<0.01$), suggesting impact on lipid metabolism can be due to lower intestinal lipid absorption and/or increased clearance. We found no major effect of MPL on tested bacterial families in the gut microbiota.

Conclusions: Altogether, our data suggest that a dietary strategy based on milk lipid quality, including MPL, can contribute to improve the cardiometabolic health of postmenopausal women.

[1] CarMeN Laboratory, INSERM, INRA, INSA Lyon, Université Claude Bernard Lyon 1, Oullins, France
[2] CRNH Rhône-Alpes, Pierre-Bénite, France
[3] Université Clermont Auvergne, INRA, Unité de Nutrition Humaine, CRNH Auvergne, Clermont-Ferrand, France
[4] Université Clermont Auvergne, CNRS, SIGMA Clermont, Institut Pascal, Clermont-Ferrand, France
[5] CHU Clermont-Ferrand, Unité de Biostatistique, Clermont-Ferrand, France
[6] Hospices Civils de Lyon, France
[7] Laboratoire de Biochimie, Centre Hospitalier Lyon Sud, France
[8] ACTALIA, Surgères, France
[9] ITERG, Canéjan, France
[10] STLO, INRA, Rennes, France
[11] Université Clermont Auvergne, INRA, UMR 454, MEDIS, Clermont-Ferrand, France

Corresponding author:
Marie-Caroline MICHALSKI
INRA UMR1397 - INSERM U1060 – Laboratoire CarMeN - Bâtiment IMBL, INSA-Lyon, 15 avenue Jean Capelle, 69621 VILLEURBANNE cedex, France
arie-caroline.michalski@inra.fr

Fruit and vegetable intake of adolescents living in a Swedish multicultural area

P 37

WANSELIUS Julia[1]
BERG Christina[1]
LARSSON Christel[1]

[1] University of Gothenburg Department of Food and Nutrition, and Sport Science Visiting address: Läroverksgatan 5 Box 300, 405 30 Göteborg, Sweden

Corresponding author:
WANSELIUS Julia
University of Gothenburg Box 300
405 30 Gothenburg
Visiting Address: Läroverksgatan 5
julia.wanselius@gu.se

Dietary related diseases have increased alongside with an increase in body weight in young people during the last decades, and so have also socioeconomic inequalities within youth health. Fruits and vegetables are of great importance for health and contribute with important vitamins, dietary fibre and antioxidants. Thus, people over 10 years of age in Sweden are recommended to eat at least 500 grams of fruits and vegetables per day.

Objective: The aim was to compare reported fruit and vegetable intake of adolescents living in a Swedish multicultural area characterized with low socioeconomic status (SES), to the intake of adolescents in a national sample.

Methodology: Dietary intake was assessed with food frequency questionnaires among adolescents in 7th grade, mean age 13 years old, (n=118) living in a Swedish multicultural area characterized with low SES, as well as among a national sample of adolescents (n=2292) in the same age. Dietary information was collected in 2014.

Results: Adolescents living in the multicultural area had higher frequencies of fruit intake than the national sample ($p<0.001$). Differences were also seen in number of adolescents who had a daily consumption of fruits ($p<0.001$), where the multicultural sample had a higher proportion of daily consumers (44 %) than the national sample (25 %). No difference was seen between the groups in frequency of vegetable intake, and neither in daily consumptions of vegetables, where 41 % in the multicultural sample and 38 % in the national sample had a daily consumption respectively.

Conclusion: Adolescents living in a Swedish multicultural area characterized with low SES had higher intakes of fruit than adolescents in general. However, intakes of fruits and vegetables need improvement among all groups of Swedish adolescents since not even half of the studied populations had a daily consumption.

The School Fruit Scheme as an effective strategy leading to positive changes in some eating behaviours of children

P 38

WOLNICKA Katarzyna[1]
TARASZEWSKA Anna[1]
JACZEWSKA-SCHUETZ Joanna
JAROSZ Mirosław[1]
NIEWIAROWSKA Monika[2]

[1] Institute of Food and Nutrition, Poland
[2] National Support Centre for Agriculture, Poland

Corresponding author:
WOLNICKA Katarzyna
Institute of Food and Nutrition
61/63 Powsinska Str.
Warsaw, Poland
kwolnick@izz.waw.pl

Objectives: The School Fruit and Vegetable Scheme (SFVS), one of the priority activities of the European Commission, aims at the development among children of a habit of eating fruit and vegetables (F&V). The aim of the survey was to identify both the strengths of the scheme and areas requiring further support.

Methods: The study was conducted in randomly selected 85 primary schools among 1255 students of grades I-IV, which participated in the program (intervention group) and control group. At IVth class both groups didn't participate in SFVS. F&V consumption of pupils was evaluated on the basis of 3-day food record method; others behaviours by questionnaires.

Results: Over the three years of the implementation of the SFVS (class I-III), fruit consumption significantly increased (by about 30 g a day, i.e. by 18%), ($p < 0.0001$). Consumption of fruit after the third year of the program was significantly higher by 13.5% netto in the intervention group compared to the control group ($p=0.0001$).Vegetable consumption remained at a similar level in both groups (no significant differences). Other positive effects of the SFVS included statistically significant changes: increase in children's knowledge on the health aspects of fruit and vegetables and the levels of their consumption, the less frequent occurrence of barriers to fruit and vegetable consumption in relation to the control group, greater willingness to eat fruit and vegetables, higher preferences for fruit in general and peppers as a vegetable, lower preferences for sweet drinks/sweets. The enhanced variety of vegetables provided in the third school year could have contributed to significant increasing the percentage of children who mentioned vegetables as products which they liked.

Conclusion: In order to further strengthen the achieved positive effects, the SFVS should be supported by activities of the school covering the whole environment e.g balanced school lunches, healthy products at school shops, intensified educational activities which should also involve parents. Teachers need tools for education. Consideration should be given to the enhancing the frequency of F&V availability, more then 2-3/w.

Nudging young adults to choose more vegetables in mass eating context: Findings from field studies

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YI Sunghwan[1]
BRAUER Paula[1]

[1] University of Guelph

Corresponding author:
YI Sunghwan
Dept. of Marketing and Consumer Studies
University of Guelph, Canada
syi@uoguelph.ca

Objectives: Although health advantages of eating sufficient amounts of vegetables are recognized among young adults, their consumption of vegetables remains low. Although conventional health education approaches have increased awareness of the issue among public, their effectiveness in changing choice and intake of vegetables has been limited. Nudge (Thaler and Sunstein, 2008) offers a promising framework by introducing subtle changes to the immediate food choice environment so that choosing vegetables becomes easier and more natural for consumers at the moment of decision. With the University of Guelph Hospitality Services' support, we are conducting a series of field studies in student cafeterias by introducing nudges designed to increase the choice of vegetables. In this paper, we are reporting three nudge-based strategies recently implemented.

Methodology: Three interventions for nudging were selected after brainstorming with students and hospitality managers. They were implemented in different sections of a centrally located cafeteria on campus. First, a short prompt for adding kale or spinach for only $1 was placed next to the server receiving orders for smoothie for 9 weeks. The number of customers who added kale or spinach was compared between the implementation weeks and the earlier baseline weeks (Weeks 1-3). A similar prompt was used in the custom-made sandwich section. Lastly, large plates instead of the usual medium-sized plates were placed in prime locations for taking salad bar items, and the display was alternated day by day. Weight of salad bar items sold daily was compared between large versus small plate days. Data came from the University of Guelph Food Services, and the number of students using all the cafeterias on campus daily is about 10,000.

Results: ANOVA analyses showed that sales of the target items were significantly higher on days the nudge was in place versus removed.

Significantly more sandwiches with spinach were sold on days the nudge poster was placed than the baseline (M=10.91 vs. 1.23; F (1,58) =8.79, p<.01). Similarly, significantly more smoothies with kale or spinach were sold on days the nudge poster was placed than the baseline (M=16.5 vs. 6.9; F (1,58) = 21.66, p<.01). However, the weight of salad bar items did not significantly vary depending on the size of plates placed in the salad bar section.

Conclusion: Our findings indicate that simple nudge-based interventions placed at the point of food choice can increase the choice of vegetables among young adults whose eating patterns are less healthy than older people in most advanced countries.

PARTICIPANTS

PARTICIPANTS		ORGANIZATION	FUNCTION	COUNTRY
ABADIE	**Aline**	Université Lyon Est	Interne en médecine	France
ADENOT-DECREUX	**Laétitia**	Interfel	Responsable réseau diététiciens	France
AGBO	**Akwuavi Delali**	Réseau des jeunes pour l'Environnement	Animatrice de projet	Togo
ALAN	**Pauline**	Eldora - ONU Genève	Diététicienne Nutritionniste - Responsable Nutrition et Environnement	France
ALLAIN	**Guillaume**		Interne en médecine	France
AMIOT-CARLIN	**Marie-Josèphe**	INRA Centre Provence Alpes Côte d'Azur	Directrice Adjointe de Laboratoire	France
ANDRÉ	**Perrine**	INSERM U1219 - Bordeaux Population Health Research Center Bordeaux University, ISPED	PhD student	France
ANTONIAZZI	**Armelle**	Interfel	Diététicienne	France
APAIX	**Patricia**	Libéral	Diététicienne	France
ARNAUD	**Geneviève**		Médecin généraliste	France
ARTER	**Eliz**	Eastern Mediterranean University	Senior Lecturer	Cyprus
ASSYAG	**Patrick**	APHP	Cardiologue	France
AVRIL	**Valérie**	ANEEFEL	Directrice	France
AZEMAR	**Brigitte**	Libéral	Diététicienne-Nutritionniste	France
BADEA	**Gabriela**	WONCA	Cardiologue	Romania
BAILLY	**Mélina**	Laboratoire AME2P	Doctorante	France
BARNAT	**Saida**	Aprifel	Directrice scientifique	France
BARROS	**Carla**	Interfel	Attachée de direction	France
BART-GAUDINO	**Audrey**	Libéral	Sage-femme Puéricultrice	France
BATISTA	**Ana**	Centro Hospitalar Lisboa Ocidental	Medical Doctor	Portugal
BEDOUARD	**Johanna**	Interfel	Diététicienne	France
BELOUZE	**Maud**	Université Lyon Est	Interne en médecine	France
BERAUD	**Romane**	Ligue contre le cancer - Comité de la Loire	Diététicienne	France
BERNI CANANI	**Sibilla**	CREA	Chercheure	Italy
BERTHE	**Christian**	Marché de Gros Lyon-Corbas	Président	France
BERTHOMIER	**Barbara**	Libéral	Diététicienne et infirmière	France
BINARD	**Philippe**	Freshfel Europe	General Delegate	Belgium
BOTTOLLIER-CURTET	**Marylise**	Université de Lyon	Interne en médecine	France
BOYLAND	**Emma**	Université de Liverpool	Senior Lecturer | Appetite & Obesity Research Group	United Kingdom
BREDA	**João**	WHO Europe	Head of the NCDs	Russia
BRUNEL	**Marie**		Etudiante	France
BURGEVIN	**Malorie**	Interfel	Diététicienne	France
BUSSY	**Caroline**		Etudiante	France
CALVARIN	**Johanna**	Aprifel	Chef de projets scientifiques	France
CAROLI	**Margherita**	ECOG	Nutritionniste et Pédiatre	Italy
CART-TANNEUR	**Marie**		Médecin généraliste	France

PARTICIPANTS		ORGANIZATION	FUNCTION	COUNTRY
CHABANIS	**Jérémie**	Syngenta	Value Chain Partnership Lead EAME	Spain
CHAISSE	**Mathieu**	Indépendant	Graphiste	France
CHAPON	**Anne**	CNED	Etudiante	France
CHARDON	**Marion**	Eovi Mcd mutuelle	Diététicienne - chargée de projets en prévention	France
CHARTIER	**Jérôme Franck**	Universidade Federal Fluminense	Etudiant	Brazil
CHETITAH	**Annabelle**	Libéral	Diététicienne	France
CHEVASSU	**Nathalie**		Etudiante	France
CHOLLET	**Céline**	Libéral	Diététicienne	France
CHOUX	**Sandrine**	Saveurs Commerce	Directrice	France
CLEQUIN	**Anastasia**	Elior restauration	Diététicienne	France
COLOMBET	**Zoé**	UMR MOISA - INRA	Doctorante	France
CONDEMINE	**Linda**	CNED	Diététicienne	France
CORNILLAT	**Muriel**	CNED	Etudiante	France
COUMES	**Sandrine**	CSO Grenoble-Arc Alpin	Praticien hospitalier et coordinatrice du CSO Grenoble-Arc Alpin	France
CZERNICHOW	**Sébastien**	Hôpital européen George Pampidou	Chef de service nutrition	France
DAHEL-MEKHANCHA	**Corinne Colette**	Université Constantine	Enseignante Chercheure	Algeria
D'ALESSIO	**Patrizia**	AISA Therapeutics	Enseignante Chercheure	France
DANIEL	**Georges**	FCD	Membre de la commission Fruits et Légumes de la FCD	France
DE BRAUER BUSCAIL	**Camille**	Equipe de Recherche en Epidémiologie Nutritionnelle	AHU/CCA	France
DE FRANCHIS	**Raffaella**		Chercheure	Italy
DE LARMINAT	**Julia**	Université Lyon Est	Interne en médecine	France
DE PERGOLA	**Giovanni**	University of Bari	Professor from Department of Biomedical Sciences and Human Oncology	Italy
DELAHAYE	**Angélique**	Parlement Européen	Député Européen	France
DELGADO	**Sofia**	Centro Hospitalar Lisboa Ocidental	Medical Doctor	Portugal
DELZENNE	**Nathalie**	Louvain Drug Research Institute	Head of the Research Group in Metabolism and Nutrition	Belgium
DEMANGE	**Emmanuel**	Interfel	Directeur Produits & Qualité, Coordination des actions régionales	France
DEREN	**Katarzyna**	University of Rzeszów	Chercheure	Poland
DESBOUIS	**Zoé**	Libéral	Diététicienne-Nutritionniste	France
DEVAUX	**Marion**	OECD	Analyste des politiques de santé	France
DI MARCO	**Cynthia**	Association 2ChosesLune	Service civique jardin potager alimentation équilibrée	France
DOGLIANI	**Priscillia**		Diététicienne-Nutritionniste	France
DOUGKAS	**Anestis**	Institut Paul Bocuse	Research Group Leader	France
DRARENI	**Kenza**	Institut Paul Bocuse Research centre	PhD Student	France
DRATLER	**Laure**	Libéral	Diététicienne	France
DUBOIS	**Jean-Pierre**	Université Claude Bernard Lyon 1	Professeur d'université	France
DUMONT	**Anne**		Etudiante diététique	France
DUMOULIN	**Juliette**	Interfel	Animatrice du Comité Régional AURA	France

PARTICIPANTS		ORGANIZATION	FUNCTION	COUNTRY
DUPONT	**Bruno**	Interfel	Président	France
DUPUYDAUBY	**Céline**	Interfel	Diététicienne	France
DURIN	**Virginie**	Familles de France	Vice-presidente	France
DURRER-SCHUTZ	**Dominique**	Département Maladies Communautaires et Enseignement Thérapeutique University Hospital Geneva (HUG)	Médecin associée HUG	Swiss
EL JAAFARI	**Assia**	Hospices Civils de Lyon	Chercheure	France
EL MOUDNI	**Véronique**	Libéral	Diététicienne	France
ERHET	**Marianne**		Médecin généraliste	France
FABRE	**Adeline**		Interne en médecine	France
FABUREL	**Paul**	GEFeL	Délégué Général	France
FAURE	**Aymeric**	Faculté de médecine Lyon sud	Etudiant et ergotherapeute	France
FAURIE-GAUTHIER	**Céline**	Mairie de Lyon	Conseillère Municipale Déléguée	France
FAYOLLE	**Isabelle**		Naturopathe	France
FENAUX	**Gabriella**	Interfel	Responsable IDF	France
FERRETTI	**Gianna**	Polytechnic University of Marche	Professor	Italy
FESSI	**Sabrine**	Postgraduate en parodontologie implantologie - Paris Diderot	Dentist	France
FIALHO	**Sónia**	Coimbra Health School	Teacher	Portugal
FILLON	**Marie**	Aprifel	Responsable Informations	France
FILLON	**Alicia**	Laboratoire AME2P	Doctorante	France
FOLKVORD	**Frans**	Behavioural Science Institute	Junior researcher - Teacher - Communication Science	The Netherlands
FOTIADI	**Hélène**	Interfel	Diététicienne	France
FOUCAN	**Dania**	Libéral	Diététicienne	France
FOURETS	**Stéphanie**	Interfel	Diététicienne	France
FRANCK	**Delphine**	DIETACOACH	Diététicienne-Nutritionniste	France
FRELUT	**Marie-Laure**	Hôpital Bicêtre - Service d'endo-crinologie pédiatrique	Pédiatre	France
FROMONT	**Francoise**	Interfel	Diététicienne	France
GACHEIN	**Adeline**	Bureau interprofessionnel du kiwi	Directrice	France
GAIME	**Elvire**	IREPS-ARA	Chargée de projets	France
GALLO	**Santiago**	Universidad Iberoamericana	Professor	Mexico
GARDETTE	**Valérie**	EPA European Parents'Association /APEL France	Membre du conseil d'administration	France
GAZAN	**Rozenn**	MS-Nutrition	Ingénieur statisticienne	France
GBODZOETO	**Komla Mawufemo**	AHVD	Animateur de projet	Togo
GENEST	**Victoire**	Interfel	Chargée de projets Relations Presse	France
GHAMARZAD SHISHAVAN	**Neda**	Digestive Disease Reserach Institute	Researcher	Iran
GIBAULT	**Thierry**	Hôpital de la Pitié Salpêtrière	Médecin endocrinologue	France
GIBOIREAU	**Agnès**	Centre de Recherche de l'Institut Paul Bocuse	Directrice	France
GIRARD	**Fanny**	Université Lyon Est	Interne en médecine	France
GOLFIDIS	**Costa**	DG Agriculture and Rural Development	Chef adjoint d'unité	Belgium

PARTICIPANTS		ORGANIZATION	FUNCTION	COUNTRY
GONZALEZ	Fy Lan	Education Nationale - Santé scolaire	Médecin scolaire	France
GORI	Stéphane	Les Pousses de Stef'	Directeur Général	France
GORJI	Zahra	Faculty of Nutrition, Tehran University of Medical Sciences, Tehran, Iran	Researcher	Iran
GÖTTINGER	Marc	Gesundheitszentrum Göttinger	Medical Doctor	Germany
GRANGE	Sarah	Libéral	Diététicienne-Nutritionniste	France
GRIL-ANDAS	Aïcha	Libéral	Diététicienne	France
GROELE	Barbara	Polish Association of Juice Producers	Secretary General	Poland
GROUSSARD	Christelle	Interfel	Responsable Relations Publiques et Communication Digitale	France
GUIMARAES	Emmanuelle	Université Lyon 1	Interne en médecine	France
GUNTHER	Amandine	Honeycom	CEO	France
GUTKOWSKA	Krystyna	Polish Association of Juice Producers	Professor	Poland
GUYOT	Erika	Institut Paul Bocuse Research Center	PhD Student	France
HACHET	Céline		Infirmière puéricultrice	France
HALFORD	Jason	Université de Liverpool	Chair in Biological Psychology and Health Behaviour, Head of Department Psychological Sciences	United Kingdom
HASS	Julia	German Federation for Food Law and Food Science	Research Associate	Germany
HATTINGER	Johann	ECOG	Psychologist and dietitian	Austria
HELGEGREN	Hannah	University of Gothenburg	Clinical Dietitian, PhD student	Sweden
HENRIQUES	Patricia	Universidade Federal Fluminense	Professor	Brazil
HUART	Julie		Diététicienne du sport	France
HUET	Aurélie	Interfel	Chargée de Projet contenus grand public	France
JACZEWSKA-SCHUETZ	Joanna	Institute for Food and Nutrition	Food and Nutrition Specialist	Poland
JALKANEN	Henna	University of Eastern Finland	Nutritionist, PhD student	Finland
JAMES	Philip	London School of Hygiene and Tropical Medicine	Honorary Professor of Nutrition	United Kingdom
JAMMES	Emilie	Eovi Mcd mutuelle	Diététicienne - chargée de projets en prévention	France
JEANNE	Kristina		Etudiante	United Kingdom
JUNET	Astride	IREPS ARA	Chargée de projets régionale / Référente nutrition et rythmes de vie	France
KAHANE	Rémi	CIRAD	Chercheur	France
KAKUNZE	Claudia	Fondation Stamm	Responsable du centre d'accueil des enfants mineurs en situation de rue	Burundi
KALAMARZ	Wojciech	Commission Européenne	Head of Unit	Luxembourg
KHAMMASSI	Marwa	Laboratoire des Adaptations Métaboliques à l'Exercice en conditions Physiologiques et Pathologiques (AME2P)	Doctorante	France
KIKI	Emmanuela		Interne en médecine	France

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KIM	**So-Young**	Soonchunhyang Univ.	Professor	Republic of Korea
KIRSANOFF	**Helene**	Interfel	Responsable Actions Regionales	France
KOMATI	**Nathalie**	Aprifel	Assistante scientifique	France
KRASNIQI	**Leonard**	Qkmf Rahovec	Doctor	Kosovo
KUUSIPALO	**Heli**	THL	Senior researcher	Finland
LACROIX	**Valentin**	Libéral	Diététicien	France
LAMARD	**Marianne**	Libéral	Diététicienne	France
LAMBOLEY	**Claire**	Featness	Diététicienne	France
LAPLACE	**Sabrina**	La nutrition à croquer	Stagiaire	France
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LAUGERETTE	**Fabienne**	Laboratoire CarMeN	Maître de Conférences	France
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LAVILLE	**Martine**	Centre Hospitalier Lyon-Sud	Chef de service adjoint- Service endocrinologie, diabétologie, maladies de la nutrition	France
LE BAIL	**Véronique**	CSIF	Déléguée générale	France
LE BARZ	**Mélanie**	Laboratoire CarMeN	Post-Doctorante	France
LE MAGUERESSE	**Brigitte**	Laboratoire CarMeN	Directrice de recherches INSERM	France
LECERF	**Jean-Michel**	Institut Pasteur de Lille	Médecin nutritionniste et endocrinologue	France
LEE	**Hye Ah**	Ewha Womans University	Research Assistant professor	Republic of Korea
LEGRAND	**Valérie**	Libéral	Diététicien	France
LEKA	**Sofia**	ECOG	Pediatric endocrinologist	Greece
LETRILLIART	**Laurent**	Université Claude bernard Lyon 1	Professor and General practitioner	France
LEVY	**Francis**	Cabinet médical	Médecin	France
LEVY	**Chantal**	Cabinet médical	Médecin	France
LIBERT	**Thérèse**	EFAD	Diététicienne-Nutritionniste	France
LINOS	**Athena**	Institute of Preventive Medicine Environmental & Occupational Health	Président	Greece
LLAURADÓ	**Elisabet**	Universitat Rovira i Virgili	PhD	Spain
LOCK	**Karen**	LSHTM	Professor of Public Health	United Kingdom
LOULIER BASSET	**Laurence**	Cabinet médical	Médecin généraliste	France
LOUREIRO	**José**	Interfel	Responsable de secteur-Diététicien	France
LUBYTE	**Agne**	Vilnius University Hospital Santaros Clinics	Medical Doctor	Lithuania
LUSZCZKI	**Edyta**	ECOG	Dietitian	Poland
MAILLOT	**Matthieu**	MS-Nutrition	Président	France
MAITROT	**Maïlys**	Interfel	Apprentie	France
MANSOS	**Catarina**	Centro Hopitalar Lisboa Ocidental	Medical Doctor	Portugal
MARINIER	**Ghislaine**	Conseil Départemental de Seine et Marne	Médecin	France

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MARTIN	**Fabienne**	Education Nationale	Médecin	France
MARTIN	**Ambroise**	Université Claude Bernard Lyon 1	Professeur de Nutrition	France
MARTÍNEZ	**Magda Lilia**		Marketing et étudiant nutrition 1 année	France
MARTINS DA MATTA	**Virgínia**	Embrapa	Scientific Researcher	Brazil
MASSEY	**Camille**	Institut Paul Bocuse	PhD Student	France
MBAE	**Chifaou**	Interfel	Chef de Projet Medias et Distribution	France
MCAULIFFE	**Fionnuala**	National Maternity Hospital, Dublin 2	Chair and Professor of Obstetrics & Gynaecology	Ireland
MCCARTHY	**Mary**	UEMO	General Practitioner - Vice-President UEMO	United Kingdom
MEDICO	**Maria Guilia**	European Commission DG Agriculture and Rural Development	Policy officer School scheme	Belgium
METHE	**Claudie**	Ligue contre le cancer - Comité de la Loire	Diététicienne	France
MEUNIER	**Pierre-Yves**	Université Lyon 1	Interne en médecine	France
MICHALSKI	**Marie-Caroline**	INRA UMR1397, CarMeN laboratory	Research Director	France
MIGUET	**Maud**	AME2P	Doctorante	France
MILESI	**Eva**	Libéral	Diététicienne-Nutritionniste	France
MILON	**Mélanie**	Interfel	Chef de projet RP	France
MOLIERE	**Béatrice**	CH St Symphorien sur Coise	Diététicienne	France
MOÑINO	**Manuel**	AIAM5- Global Alliance to Promote Fruit and Vegetable Consumption "5 a Day"	Coordinateur	Spain
MULTIGNER	**Luc**	INSERM	Senior Researcher INSERM	France
NAVILLE	**Danielle**	INSERMU1060	Chargé de Recherches	France
NESSLER	**Katarzyna**	ECOG	General Practitioner	Poland
NGANDU	**Tiia**	National Institute for Health and Welfare (THL)	Associate professor	Finland
NICOLINO	**Marc**	Hôpital universitaire Femme-mère-enfant, Lyon	Professeur de pédiatrie et chef du service d'endocrinologie pédiatrique et du métabolisme	France
NIEWIAROWSKA	**Monika**	National Support Centre for Agriculture	Chief Expert	Poland
NINDJIN	**Charlemagne**	Centre Suisse de Recherches Scientifiques en Côte d'Ivoire	Enseignant-Chercheur	Ivory Coast
NORAT	**Teresa**	Imperial College London	Principal Research Fellow	United Kingdom
NORMAND	**Sylvie**	Centre de Recherche en Nutrition Humaine Rhône-Alpes	Coordinatrice scientifique et qualité	France
OBERTI	**Marie-Agnès**	FranceAgriMer	Déléguée pour les filières Fruits et Légumes	France
OGIER	**Jean-Louis**	Coordination Rurale	Responsable de la section Fruits & Légumes	France
OGONOWSKA	**Ewa**	Employers Association Poro-zumienie Zielonogórskie	Medical Doctor	Poland

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PEDROSA VARANDA	**Sophie**	Interfel	Responsable Marketing opérationnel & Media	France
PEILLON	**Mathilde**	Faculté de médecine lyon est	Interne en médecine	France
PELLAY	**Hermine**	Isped - BPH U1219 - Inserm	Doctorante	France
PEREZ-LIZAUR	**Ana**	Universidad Iberoamericana	Director Graduate Studies	Mexico
PERIQUET	**Alain**	Université de Toulouse	Toxicologue	France
PERIQUET	**Brigitte**	CHU Toulouse	Directeur de recherches	France
PERRODON	**Patrick**	Couleurs primeurs	PDG	France
PERSON	**Geraldine**	EHPAD ET LIBERAL	Diététicienne	France
PIERRON	**Claire**		Médecin généraliste	France
PISANO	**Nicola**	Freshfel Europe	Communications Officer & Policy Advisor	Belgium
PLANUS	**Isabelle**	Libéral	Médecin généraliste	France
POINSOT	**Romane**	MS-Nutrition	Doctorante	France
POINT	**William**	CUMG	Interne en médecine	France
POIX	**Caroline**	Cabinet de sage-femme	Sage-femme	France
POMAREDE	**Benedicte**		Etudiante	France
PRADIER	**Aude**	Ville de Saint-Etienne	Infirmière	France
PRALY	**Cécile**	VEGETABLE	Journaliste	France
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PRUDHOMME	**Sarah**	bioMérieux	PhD	France
QUELENNEC	**Hélène**	Libéral	Diététicienne	France
QUINON	**Pascale**	Restalliance	Référente Nutrition	France
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RANCHIN	**Isabelle**	Cabinet de médecine générale	Médecin généraliste	France
RANCON	**Céline**		Médecin généraliste	France
RAULIO	**Susanna**	National Institute for Health and Welfare	Senior researcher	Finland
REAT	**Jeremy**	Faculté de médecine	Médecin généraliste	France
RENOU	**Stéphane**	Interfel	Diététicien	France
REYNOLDS	**Christian**	Knowledge Exchange Research Fellow	Research fellow	United Kingdom
RIBERAC	**Corinne**	Ville De Saint-Etienne	Responsable Promotion de la Santé	France
RIBOLI	**Elio**	Humanitas University	Full Professor Hygiene and Public Health	Italy
RICHIER ROUSSEAU	**Dominique**	Conseil en Micronutrition	Micronutritionniste	France
RICHONNET	**Céline**	MOM Materne Mont Blanc	Directeur Nutrition	France

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RITO	**Ana**	National Institute of Health INSA	Director- CEIDSS	Portugal
RIVAL	**Bertrand**	Légumes de France	Directeur	France
RODOPAIOS	**Nikolaos**	Medical School of University of Crete	PhD Candicate, Dietician	Greece
ROLLAND	**Tatiana**	Interfel	Responsable du réseau des diététiciens	France
ROUSSET	**Marie Christine**	Cabinet Enéide Sain Bel	Diététicienne	France
ROUX	**Virginie**	Interfel	Diététicienne	France
ROYER	**Nathalie**	Libéral	Diététicienne-Nutritionniste	France
SADEK	**Dounia**	Libéral	Sage-femme	France
SAUVAITRE	**Daniel**	Association Nationale Pommes Poires (ANPP)	Président	France
SCAZZOCCHIO	**Beatrice**	Italian National Institute of Health	Chercheure	Italy
SCHNEIDER	**Julia**	ProVeg Deutschland e.V.	Head of V-Label & VegNed	Germany
SCIGLIUTO	**Aurélie**		Diététicienne-Nutritionniste	France
SENE	**Valérie**	Interfel	Directrice Marketing & Communication	France
SERVIANT-FINE	**Thibaut**	Université Claude Bernard Lyon 1	Attaché à l'enseignement et la recherche / Pharmacien d'officine	France
SIEWNIAK-ZALEWSKA	**Beata**	Zdrowa Rodzina Przychodnia Lekarska sp. zo.o.sk.	Medical Doctor	Poland
SIGURDARDOTTIR	**Gudrun Agusta**	WONCA		Denmark
SILVA	**Ana**	Universidade do Minho	Professor	Portugal
SIMEONI	**Umberto**	Université de Lausanne	Professor of Paediatrics	Swiss
SINNO	**Lina**	Indépendent	Diététicienne	France
SMITH	**Marion**	Interfel	Diététicienne	France
SOURDOT	**Ariane**		Interne en médecine	France
STARTEK	**Elžbieta**	Employers Association Poro-zumienie Zielonogórskie	Medical Doctor	Poland
STAVDAL	**Anna**	WONCA Europe	Président	Norway
STORCKSDIECK GENANNT BONSMANN	**Stefan**	European Commission, Joint Research Centre (JRC)	Scientific Project Officer- DG JRC	Italy
STOS	**Katarzyna**	Institute of Food and Nutrition IFN	PhD, Professor of IFN	Poland
STRANGES	**Saverio**	Western University	Professor and Chair	Canada
STUBBS	**James**	Université de Leeds	Professor of Behaviour Change and Weight Management	United Kingdom
SCHUTZ	**Yves**	Université de Lausanne	Physiologiste spécialisé en nutrition et obésité	Swiss
SYLVAIN	**Ange**	TerreAzur Groupe Pomona	Directeur Régional	France
SZULTA	**Monika**	Interfel	Chef de groupe affaires européennes	France
TABET	**Mohamed**		Primeur	France
TABTIA	**Soufiane**	Formalis	Etudiant	France
TALVIA	**Sanna**	University of Eastern Finland	Nutritionist, PhD	Finland

PARTICIPANTS		ORGANIZATION	FUNCTION	COUNTRY
TANGHE	**Ann**	Zeepreventorium	Psychologue	Belgium
TARASZEWSKA	**Anna**	Institute of Food and Nutrition	MSc, Food and nutrition specialist	Poland
TARRO	**Lucia**	Universitat Rovira i Virgili	PhD	Spain
TEYSSEDRE	**Christel**	Aprifel	Présidente	France
THARREY	**Marion**	INRA	Doctorante	France
THIEBAULT	**Carole**		Naturopathe	France
THIVEL	**David**	Université Clermont Auvergne	Membre ECOG	France
TILLIER	**Claire**	FLD	Rédactrice en chef	France
TINDO	**Ngoumo Lydie**		Médecin généraliste	France
URIACH TIMONEDA	**Violeta**	EUROPREV	Médecin généraliste	Spain
UUSITUPA	**Matti**	Institute of Public Health and Clinical Nutrition	Professor	Finland
VAILLANT	**Marie-France**	Université Grenoble Alpes	Chef de projet	France
VALCKE	**Mathieu**	Institut national de santé publique	Conseiller scientifique spécialisé	Canada
VAN KANN	**Dave**	Fontys University	Researcher Lectorate "Move to Be"	The Netherlands
VANIA	**Andrea**	Université Sapienza de Rome	Chef du service diététique et de nutrition pédiatrique du Département de pédiatrie	Italy
VASSEUR	**Marianne**	Maison de Santé de Versonnex	Médecin généraliste	France
VENY	**Muriel**	Interfel	Responsable des relations institutionnelles	France
VERSCHUREN	**Monique**	National Institute for Public Health and the Environment	Head of the Department 'Determinants of Chronic Diseases	The Netherlands
VICENTE	**Sandra**	Le progrès événements	Responsable des partenariats	France
VICTOR	**Aline**	RESTALLIANCE	Responsable Nutrition	France
VIDAL	**Sophie**	Interfel	Diététicienne	France
VIEUX	**Florent**	MS-Nutrition	Directeur général/chercheur	France
VIRICEL	**Danièle**		Sage-femme	France
WALLS	**Helen**	London School of Hygiene and Tropical Medicine	Assistant Professor	United Kingdom
WANSELIUS	**Julia**	University of Gothenburg	PhD Student	Sweden
WEGHUBER	**Daniel**	ECOG	Vice president	Austria
WICKRAMASINGHE	**Kremlin**	WHO Europe	Technical Officer - NCDs	Russia
WOLNICKA	**Katarzyna**	National Food and Nutrition Institute	Professor Assistant	Poland
YI	**Sunghwan**	University of Guelph	Associate professor	Canada
ZARE JAVID	**Ahmad**	Ahvaz Jundishapour University of Medical Sciences	Chercheur	Iran

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PARTNERS

AFDN
French Association of Nutritionists
www.afdn.org

CSO Rhône-Alpes
http://obesite-lyon.fr

ECOG
European Chilhood Obesity Group
www.ecog-obesity.eu

EFAD
European Federation of the Associations of Dietitians
www.efad.org

EUROPREV
European Network for Prevention and Health Promotion in Family Medicine and General Practice
europrev.woncaeurope.org

Pasteur Institute – Lille
www.pasteur-lille.fr

N8 Agrifood
www.n8agrifood.ac.uk

UEMO
European Union of General Practitioners/ Family Physicians
www.uemo.eu

University College of General Practice (CUMG)
www.univ-lyon1.fr

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GLOSSARY

ASL: Local Health Authority (Azienda Sanitaria Locale)

COFACE: Confederation of Family Organizations of the European Community

CNRS: National Center for Scientific Research

CREA: Council for Agricultural Research and Economics

DG: Directorate General

EC: European Commission

ECOG: European Childhood Obesity Group

EFAD: European Federation of the Associations of Dietitians

EFSA: European Food Safety Authority

EUROPREV: European Network for Prevention and Health Promotion in Family Medicine and General Practice

INSA: National Institute of Health (Instituto Nacional de Saúde)

INSERM: National Institute of Health and Research (Institut National de la Santé et de la Recherche Médicale)

INSPQ: National Institute of Public Health Quebec (Institut National de Santé Publique Québec)

JRC: Joint Research Center

LSHTM: London School of Hygiene & Tropical Medicine

OECD: Organization for Economic Co-operation and Development

PMU: Paracelsus Medical School

RIVM: Dutch National Institute for Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu)

WHO: World Health Organization

WONCA: World Organization of Family Doctors

COUNTRIES :

AT: Austria

BE: Belgium

CA: Canada FR: France

CH: Switzerland

FI: Finland

GR: Greece

IE: Ireland

IT: Italy

LU: Luxembourg

NL: the Netherland

NO: Norway

PT: Portugal

RU: Russia

UK: United Kingdom