ABSTRACT BOOK

XIV *International*

MEDITERRANEAN DIET CONFERENCE

BARCELONA ✻ March 20th & 21st 2024

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ORGANIZERS

Fundación Dieta Mediterránea

CON LA COLABORACIÓN DE:

COLLABORATORS

PRESIDENT OF THE CONFERENCE

Dr. Ramon Estruch, president of the Paralelo 40 – World Mediterranean Diet Surveillance System, is a senior consultant in the Internal Medicine Service of the Hospital Clínic de Barcelona and Associate Professor at the Faculty of Medicine of the University of Barcelona.

He is also a member of the Steering Committee of the CIBER Pathophysiology of Obesity and Nutrition (CIBERobn) of the Carlos III Health Institute (Ministry of Science and Innovation, Government of Spain), principal investigator of the Cardiovascular Risk, Nutrition and Aging Group (Consolidated Group of the Generalitat, 2017SGR1717) of Area 2 Biopathology and respiratory, cardiovascular and renal bioengineering, of IDIBAPS-CELLEX and member of the Advisory Committee of the European Foundation for Alcohol Research (ERAB) of the European Union. Within the framework of CIBERobn he is a main investigator of the group.

He is the coordinator of the PREDIMED study, the largest multicenter Mediterranean Diet intervention study ever conducted in the world (7447 participants with high cardiovascular risk, average follow-up of 5 years) and in which research groups from all over Spain have participated. In addition, it participates and collaborates in several multicenter randomized Mediterranean Diet nutritional intervention trials with patients at risk of cardiovascular disease and cancer, such as the PREDIMED-Plus Study (6874 participants with Metabolic Syndrome, 6-year follow-up), the SI program randomized intervention trial (1200 adolescents, 6-year follow-up), the IMPACT study (1,200 pregnant women with intrauterine growth retardation), and the MEDCARS cohort study (14,000 workers from SEAT factories).

He has published over 5 books, over 50 book chapters and over 630 original articles in high-impact journals including The New England Journal of Medicine, JAMA, Lancet, Annals of Internal Medicine, Annals of Neurology and American Journal of Clinical Nutrition. He currently maintains a permanent relationship with multiple universities and teams such as Columbia University in New York, Loma Linda University in California, Harvard School of Public Health in Massachusetts, Human Nutrition Research Centre at Tufts University (Massachusetts, USA), Jefferson University

(Philadelphia, USA), Ernest Gallo Clinic and Research Center (University of California, San Francisco), University of Oulu (Oulu, Finland), Institut des Vaisseaux et du Sang (Paris), Faculty of Medicine and Dentistry of King's College (London, UK), Mario Negri Sud (Santa Maria d'Imbaro, Italy), CSIC, Cardiovascular Research Center, Hospital de la Santa Creu i Sant Pau in Barcelona, CNIC in Madrid, and PREDIMED and PREDIMED plus centers throughout Spain.

PROGRAM

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A Look to the Future

PROGRAM-MARCH 20

10.00 h –10.45 h.	Registration & Welcome Coffee
10.45 h.-11.30 h.	**OPENING CEREMONY**
11.30 h.-12.00 h.	**OPENING CONFERENCE** **Dietary Patterns and Healthy Aging** Fernando Rodríguez Artalejo, Preventive Medicine and Public Health Universidad Autónoma de Madrid, CIBERESP and IMDEA-Food. Madrid, Spain.
12.00 h.-13.30 h.	**SESSION 1. PAST, PRESENT, AND FUTURE OF THE MEDITERRANEAN DIET** **Moderator: Emilio Ros**, CIBEROBN, IDIBAPS. Barcelona, Spain. •**The Mediterranean diet in the 1960s in Mediterranean countries. Antonia Trichopoulou**, Center for Research and Education in Public Health, Academy of Athens. Athens, Greece. •**Are we losing adherence to the Mediterranean diet? Gregorio Varela Moreiras**, School of Pharmacy, Universidad San Pablo-CEU. Madrid, Spain. •**A Look at the Future of the Mediterranean diet.** Licia Iacoviello, IRCCS Neuromed. Pozzilli, Italia.

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13.30 h.-14.15 h. **SESSION 2. PLANETARY DIET: UPDATE OF THE EAT LANCET DIET**

- **Walter Willett,** Harvard T.H. Chan School of Public Health. Boston, USA.

14.15 h.–16.00 h. **LUNCH BREAK**

Scientific Communications Display

16.00 h.-17.30 h. **SESSION 3. HEALTH EFFECTS OF THE MEDITERRANEAN LIFESTYLE**

Moderator: Cristina Sáez, journalist and science communicator. Barcelona, Spain.

- **Physical activity as a fundamental component of a healthy lifestyle. César Bustos**, Spanish Society of Obesity. Madrid, Spain.
- **Sleep, diet and health. Giuseppe Grosso**, School of Medicine, University of Catania. Catania, Italy.
- **Mediterranean lifestyle and the workplace. Stefanos N. Kales**, Harvard Medical School. Boston, USA.

17.30 h.-19.00 h. **SESSION 4. MEDITERRANEAN DIET AND SUSTAINABILITY**

Moderator: José Luis Gallego, environmental communicator. Barcelona, Spain.

- **Water and climate change. Noam Weisbrod**, Blaustein Institute for Desert Research and Sde Boker Campus, Ben-Gurion University of the Negev. Negev, Israel.
- **How to combine seasonality and food waste? José Miguel Herrero**, General Directorate of the Agri-Food Industry of the Ministry of Agriculture, Fisheries and Food. Madrid, Spain.
- **Sustainability and climate emergency. Carlos Alberto González**, Catalan Institute of Oncology. Barcelona, Spain.

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PROGRAM-MARCH 21

10.30 h.-11.30 h. **SESSION 5. CULTURE AND DIET MEDITERRANEAN**

Moderator: Irene Lapuente, communicator. Barcelona, Spain.

- **Carmen Cabrera,** Cultural Heritage. GD.. of Cultural Heritage and Fine Arts. Ministry of Culture. Madrid, Spain.
- **Carles Vilarrubí,** Catalan Academy of Gastronomy and Nutrition. Barcelona, Spain.
- **Enric Herce,** chef and writer. Girona, Spain.
- **Rais Esteve**, chef. Barcelona. Spain.

11.30 h.-12.15 h. **SESSION 6. SUSTAINABILITY AND MEDITERRANEAN DIET IN HAUTE CUISINE**

Moderadora: Mónica Ramírez, gastronomic journalist. Barcelona, Spain.

- **Jordi Vilà,** chef at Alkimia restaurant. Barcelona, Spain.
- **Artur Martínez,** chef at Aürt restaurant. Barcelona, Spain.

12.15 h.-13.45 h. **SESSION 7. THE BASIC PILLARS OF THE MEDITERRANEAN DIET**

Moderator: Josep Corbella, journalist for La Vanguardia. Barcelona, Spain.

Introduction: Ramon Estruch, president of the XIV International Mediterranean Diet Conference, CIBEROBN. Barcelona, Spain

- **Bread, pasta and cereals. Latest Scientific Evidence: Wholegrain or Refined?** Roberto Volpe, National Research Council. Rome, Italy.

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- **Anti-inflammatory and antioxidant effects of extra virgin olive oil.** **Valentini Konstantinidou**, Nutrigenetics Researcher, DNANUTRICOACH . Athens, Greece.
- **Effects of moderate wine consumption within the Mediterranean diet.** **Maira Bes Rastrollo**, Department of Preventive Medicine and Public Health, Faculty of Medicine, University of Navarra. Pamplona, Spain.
- **Vegetable versus animal protein.** **Raúl Zamora**, Catalan Institute of Oncology, Bellvitge Biomedical Research Institute. Barcelona, Spain.
- **Dairy products and cardiovascular health. Whole or low-fat?** **Javier Fontecha**, Spanish National Research Council. Madrid, Spain.
- Health effects of cooking techniques. **Rosa Lamuela-Raventós**, CIBEROBN, School of Pharmacy, University of Barcelona. Barcelona, Spain

13.45 h –14.15 h. **SESSION 8: MEDITERRANEAN DIET AND EMOTIONS**

Moderator: **Carme Gasull**, journalist. Barcelona. Spain.

- **Sílvia Congost,** psychologist. Barcelona, Spain.
- **Iolanda Bustos,** chef. Girona, Spain.

14.15 –14.45 h. **XIV INTERNATIONAL MEDITERRANEAN DIET CONFERENCE SCIENTIFIC COMMUNICATIONS AWARDS**

CONCLUSIONS

- **Ramon Estruch,** president of the XIV International Mediterranean Diet Conference, CIBEROBN. Barcelona, Spain.

OPENING CONFERENCE

Fernando Rodríguez Artalejo

Is Professor and Director of the Department of Preventive Medicine and Public Health at the Autonomous University of Madrid, Scientific Director of the CIBER of Epidemiology and Public Health, and coordinator of the Cardiovascular and Nutritional Epidemiology Group at IMDEA Food in Madrid. He has investigated the natural history of cardiovascular disease (CVD), obesity, frailty and disability in the elderly, and has contributed to identify some of their dietary determinants. His research, has supported the National Strategies for the Prevention and Control of CVD, the NAOS Strategy and the Strategy for the Prevention of Fragility and Falls in Older Adults. He is also principal investigator of the Seniors-ENRICA-1 and 2 cohorts. He has been a member of the WHO-EURO European Advisory Committee on Health Research (2015-2019), the Scientific Committee of AESAN (2004-2008), and the International Scientific Committee of Nutri-Score (2020-present). He has also chaired the scientific committee of the Advantage Joint Action of the European Union (2028-019), and has presided over the Observatory of Nutrition and Study of Obesity of the Ministry of Consumer Affairs (2019-2023). In 2010 he received the "Dr. Carles Martí Henneberg" award for his scientific career in nutritional research.

Dietary Patterns and Healthy Aging

Healthy aging (HA) is the process of promoting and maintaining the functional capacity that enables well-being in old age for as long as possible (WHO, 2015). In fact, functional capacity refers to the ability to do the things one is interested in, such as self-care, managing one's own home, taking care of others, and actively participating in society. HA is very important for older individuals, first because it reflects many of their life aspirations and second because it's possible to be ill and yet age reasonably healthily. This presentation reviews the main evidence on the role of major dietary patterns in HA based on the results of large studies such as the ENRICA cohorts, Nurses' Health Study, and UK Biobank, among others. Specifically, it will be shown that a Mediterranean-type dietary pattern, based on plant-origin foods and environmentally sustainable, is associated with a lower risk of frailty, lower accumulation of health deficits, and greater physical resilience, which are the most common indicators of assessing HA. The role of sufficient protein intake, especially from plant or dairy sources, whole grains, and low consumption of ultra-processed products will be emphasized. It is not necessary to consume alcoholic beverages to reap the benefits of this diet, and furthermore, coffee can be part of this healthy diet.

SESSION 1. PAST, PRESENT, AND FUTURE OF THE MEDITERRANEAN DIET

Emilio Ros

He was the creator and head until 2016 of the Lipid Unit, Department of Endocrinology and Nutrition at the Hospital Clínic, Barcelona. Currently, he is an Emeritus Researcher at the August Pi Sunyer Biomedical Research Institute (IDIBAPS), Barcelona. Former principal investigator and currently a member of the CIBEROBN group, Carlos III Health Institute, Madrid.

His postgraduate training took place in the USA, 1970-1976 (New York and Boston), where he obtained the American Board of Internal Medicine and the American Board of Gastroenterology. He was a founding member of the Spanish Society of Arteriosclerosis (SIGUI) and founder and editor of its official journal Clínica i Recerca en Arteriosclerosis. He is a member of the European Atherosclerosis Society (EAS), International Atherosclerosis Society (IAS), American Society of Nutrition, and American College of Cardiology. He was president of the Iberolatin American Society of Atherosclerosis (SILAT) 2000-2005.

Dr. Emilio Ros's scientific contribution to the fields of nutrition, lipidology, and atherosclerosis has been recognized by being considered part of the top 1% of the world's most cited and influential scientists by Clarivate Analytics 2018-2021. He has published in journals with an IF: 530 original articles, 95 reviews, and 30 editorials, in addition to over 90 book chapters (Google Scholar h-index: 113; ORCID identifier 0000-0002-2573-1294). In recognition of his scientific career, he has received awards for the best scientific career in nutrition from the Danone Foundation 2013, SIGUI 2014, and the Catalan Nutrition Center 2015. Dr. Emilio Ros was responsible for the nutritional intervention in the pioneering PREDIMED clinical trial of the Mediterranean diet for primary cardiovascular prevention.

Antonia Trichopoulou

Antonia Trichopoulou M.D., Member of the Academy of Athens, Head for the Academy of Athens Centre for Public Health Research and Education, Professor adjunct at Yale University, Professor emeritus of the University of Athens School of Medicine. She was Director of the World Health Organisation (WHO) Collaborating Centre of Nutrition for over twenty years at the University of Athens Medical School and the Athens School of Public Health, Greece.

Her scientific work focuses on public health and nutritional epidemiology, emphasizing the health effects of the Mediterranean diet and traditional foods.

In 2011, she received the Federation of European Nutrition Societies (FENS) Award for her "outstanding nutritionist career". Named in Thomson Reuters 2014 "World's Most Influential Scientific Minds" List and awarded as a Highly Cited Researcher by Clarivate Analytics in 2018 and 2021, she is recognized in Greece and abroad, culminating in being decorated with the Golden Cross of Honour for work in preventative medicine and nutrition by the President of the Greek Republic.

Past of the Mediterranean Diet: The Diet in the 1960s in Mediterranean countries

The Mediterranean diet is a scientific concept that reflects the traditional dietary pattern that prevailed in the olive tree-growing areas of the Mediterranean basin before the mid-1960s, that is, before globalization had its influence on lifestyle, including diet. The first scientific evidence indicating the health benefits of the MedDiet came from the seminal report, led by Keys and colleagues, called the Seven Countries Study. These investigators documented incidence and mortality due to cardiovascular disease (CVD) among men using standardized criteria in 14 areas of seven different countries from the Mediterranean region. Is worth mentioning that the discussion of the Mediterranean diet as a dietary pattern was part of a Rockefeller Foundation study in Crete in 1948. Allbaugh et al. describe Cretan diets at the time as ".....olives, cereal grains, pulses, fruit, wild greens and herbs, together with limited quantities of goat meat and milk, game, and fish consist the basic Cretan foods... no meal was complete without bread . .. Olives and olive oil contributed heavily to the energy intake ... food seemed literally to be 'swimming' in oil".

Fast forward to today, and it's not amazing to see that the Mediterranean eating style has earned the title of best overall diet for the sixth year in a row, according to the U.S. News & World Report 2023 ratings.

Gregorio Varela Moreiras

Professor of Nutrition and Bromatology at the Faculty of Pharmacy of the San Pablo-CEU University in Madrid, and Director of the CEU University Institute "Food and Society". Head of the Research Excellence Group "Nutrition for Life", and President of the Spanish Federation of Nutrition, Food and Dietetics Societies (FESNAD). Fellow of the Royal European Academy of Doctors, and of the Royal Academy of Gastronomy, and Corresponding Fellow of the Royal Academy of Pharmacy of Galicia, and founding member of the Spanish Academy of Nutrition and Food Sciences. He has published more than 250 indexed scientific articles, more than 50 book chapters, and is the editor of 15 books. Among others, he has been awarded the following distinctions: Encomienda Orden Alfonso X El Sabio; International award HIPÓCRATES of medical investigation about human nutrition; Awars Dr. Marañón for the Best Scientific Work in the Food Field; or the Grand Prix of the International Academy of Gastronomy President of the Scientific Committee of the Health and Mediterranean Diet Agency, , Member of the Patronato and scientific council of IMDEA-Food (Community of Madrid), and of the Nutrition Committee of the Spanish Heart Foundation.

Are we losing adherence to the Mediterranean Diet?

With the significant changes that have occurred in our society, many of them positive, there has also been a rupture of our Mediterranean heritage. This has led to a state of nutritional and gastronomic transition. Indeed, as highlighted in various studies, there is a loss of adherence to the Mediterranean Diet (MD) and associated lifestyles, mainly among the younger population. Undoubtedly, the diet is becoming increasingly salty and sweeter. It is necessary to recognize, moreover, that the current situation of economic crisis requires greater effort and imagination, not only to increase adherence, but even to maintain it, paying special attention to the most vulnerable groups.

There is growing evidence linking various social aspects of nutrition with better compliance with the Mediterranean Diet Pyramid. The analysed trends are largely turning us into almost new cavemen. Moreover, the entire process from shopping to eating is almost done without communication... what we could call "eating in silence," and we also know that nutritionally, when food is not shared, the quality of the diet deteriorates, and one is less happy.

The objective of the presentation is, precisely, to review the patterns of the current diet, the determinants associated with the Mediterranean lifestyle, as well as its evolution in recent years. All of the above advocating for a necessary global vision of nutrition.

To all of the above, we must add the situation of vulnerability and food insecurity, which is already manifesting itself in a very worrying way in the decrease in economic resources of the population. Indeed, the importance of the economy in food choice is evident: people with fewer resources may have difficulty buying enough food or modifying their diet for health reasons.

With the significant changes that have occurred in our society in a few years, and although they should generally be considered very positive (industrialization, new transportation and food preservation systems, new rhythms and ways of

life...), there has been a certain rupture of teaching and food traditions, in short of our Mediterranean legacy, in its broadest sense. This has led to a state of nutritional transition, often associated with disorientation, a lack of guidelines on which to base the organization of daily meals, with an almost infinite supply of products, which is also making it increasingly complex to scientifically understand what we eat and drink. But it is also due to the fact of not prioritizing what takes up more time in our lives, that is, the act of feeding ourselves, and also to the errors and myths surrounding food and nutrition, many of them unintentional, but others seem to be committed consciously and voluntarily.

Licia Iacoviello,

Licia Iacoviello MD, PhD, full Professor of Hygiene and Public Health at the LUM University, Casamassima (BA), directs the Department of Epidemiology and Prevention of IRCCS Neuromed, Pozzilli (IS) and its Center for Big data and Personalised Health, Neurobiotech, Caserta.

She has been working on the impact of genes and environment and their interaction on cardiovascular risk and on the role of dietary habits in the development of metabolic disorder and chronic degenerative diseases.

Since 2005 she is coordinating the Moli-sani Study, a large population-based cohort study involving over 24,000 adult people in Southern-Italy, in order to assess risk factors related to lifestyle (notably dietary habits) and genetics for chronic-degenerative and metabolic diseases and from 2018, the PLATONE Study a clinical research network for Big-data, machine Learning and personalized health.

In the last 20 years her activity has been mainly devoted to provide scientific bases to the healthy effect of the Mediterranean diet and to understand the determinants of Mediterranean diet adhesion.

Licia Iacoviello has published over 560 scientific articles in international "peer reviewed" journals. She has been listed by in the Top Italian Scientists and in the World's top 2% scientists.

A look at the future of the Mediterranean Diet

In 2010 the traditional Mediterranean Diet (MD) was awarded the recognition of UNESCO as an Intangible Heritage of Humanity. MD is a complex interplay between several factors, including skills, knowledge, processing, cooking, conviviality, as well as promotion of local food, seasonality and biodiversity. As a consequence, the traditional MD cannot be seen as a mere food shopping list, but rather as a unique cultural dimension that has guaranteed for centuries long life to the populations of the Mediterranean basin. In the last decades, however, MD and other traditional diets based on a variety of fresh and minimally processed foods and freshly prepared meals, have been progressively displaced by ultra-processed foods (UPFs). UPFs are defined as formulations mostly of cheap industrial sources of dietary energy and nutrients plus additives, using a series of processes, containing little or no whole food. All these traits clash strongly with the concept of a traditional MD that is mostly based on a huge consumption of unprocessed or minimally processed foods.

Future challenges for a traditional MD therefore include confrontation with a global food market massively oriented towards promoting foods that are intentionally produced to be hyper-palatable and attractive, with long shelf-life, that can be consumed anywhere at any time. Also, given the essential connection of the MD with its territory and traditions, its simple export at marketing level only, to non-Mediterranean setting is questionable, if it is not accompanied by the cultural transfer of a set of knowledge, skills and traditions that have been peculiar of the Mediterranean territories. Rather, the Mediterranean lesson should emphasize the promotion and rediscovery of the traditional healthful food peculiarities of each country worldwide, also in consideration of their environmental sustainability.

SESSION 2. PLANETARY DIET: UPDATE OF THE EAT LANCET DIET

Walter Willett

Is a physician and epidemiologist and Professor of Epidemiology and Nutrition at the Harvard T.H. Chan School of Public Health. He served as Chair of the Department of Nutrition at Harvard for 25 years. Much of his work has been on the development of methods, using both questionnaire and biochemical approaches, to study the effects of diet on the occurrence of major diseases. He has applied these methods starting in 1980 in the Nurses' Health Studies I and II and the Health Professionals Follow-up Study. Together, these cohorts that include nearly 300,000 men and women with repeated dietary assessments are providing the most detailed information on the long-term health consequences of food choices. Dr. Willett has published over 2,000 research papers, primarily on lifestyle risk factors for heart disease and cancer, and has written the textbook, Nutritional Epidemiology, published by Oxford University Press. He also has four books for the general public. Dr. Willett is the most cited nutritional scientist internationally. He is a member of the National Academy of Medicine and the recipient of many national and international awards for his researc

Planetary Diet: Update of the Eat Lancet Diet

The world is facing a health crisis due to increasing rates of obesity and diabetes, and the consequences will accumulate over the coming decades. Simultaneously, climate change is accelerating and is already having devastating effects; these changes will undermine the ability to produce adequate healthy food for the world's growing population. A rapid shift away from fossil fuels to green energy is essential, and adoption of diets that are largely plant-based must play an important role; this will have major benefits for both human and planetary health. The traditional diets of the Mediterranean region have been shown to promote excellent health and have been sustainable over thousands of years; similar traditional diets exist in many parts of Asia, and they can serve as examples are healthy, sustainable, enjoyable and satisfying.

SESSION 3. HEALTH EFECTS OF THE MEDITERRANEAN LIFESTYLE

Cristina Sáez

Is a journalist specializing in science and health. He writes regularly for media outlets such as La Vanguardia and the public science news agency Sinc. She collaborates in magazines such as National Geographic, universities and research centres, and institutions such as the Centre for Contemporary Culture of Barcelona or the Museum of Natural Sciences of Barcelona, for whom she curates courses, writes articles or moderates conferences. Currently, he works for TV3. He was a scriptwriter for the TV programme 'Redes', on TVE, directed by Eduard Punset. Together with the Alícia Foundation, he has written the book "The science of the microbiota. How to feed your gut bacteria and take care of your health by cooking" (Cúpula, 2022). Her work has been recognized with several awards, such as the Concha García Campoy, Boehringer Ingelheim and Accenture Health Journalism Awards.

César Bustos

Degree in Sciences of Physical Activity and Sport (INEF- Madrid) Col. 12215. Accredited by the European Accreditation Council for Continuing Medical Education (EACCME), ASCEND Certificate. Expert in personal training and sports performance by the National Strength and Conditioning Association. NSCA - CPT, CSCS. Expert in training with people with obesity

Physical activity as a fundamental component of a healthy lifestyle

Physical activity and exercise represent a keystone in the primary prevention of at least 35 chronic diseases. Today, exercise has a role as medicine in non-communicable diseases (NCDs), which do not manifest themselves primarily as musculoskeletal disorders.

499.2 million new cases of serious preventable NCDs would occur worldwide by 2030 if the prevalence of physical inactivity remains unchanged, with direct health care costs of $520 billion. The global cost of inaction on physical inactivity would reach approximately $47.6 billion per year.

The main cause of death in Spain is still cardiovascular pathology but we see how in the last decades non-communicable diseases are being one of the biggest battles of medicine and health care.

Currently, research studies are focusing a large part of their research on how skeletal muscle can be used as a drug, at zero cost, which relates to the body through various neurotransmitters (myokines and Exerkines), which are able to activate different organic processes capable of improving or reducing the problems associated with different NCDs. In this session, we will see how very simple actions can improve our health, improving our lifestyle, because there are NO EXCUSES to take care of yourself

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Giuseppe Grosso

Prof. Giuseppe Grosso's research focuses on evidence-based nutrition. His main interests include the study of the relationship between dietary patterns, specific food groups, and individual compounds on major chronic non-communicable diseases. The main goal of Prof. Grosso's research is to produce evidence synthesis aimed to generate policy-oriented research in the area of public health nutrition. Prof. Grosso's research also aims to measure planetary health, including the potential impact of nutrition at global level.

Sleep, diet and health

The Mediterranean diet has been extensively investigated for its effects on human health and the environment. Emerging evidence suggests the potential role of the Mediterranean diet on sleep quality. Diet and sleep are strongly connected as both lifestyle behaviors that impact health and quality of life. Sleep features have historically been considered an important aspect of the Mediterranean lifestyle (characterized by morning chronotype, afternoon naps, early dinner, and sleep time). Sleep is a key physiological process for the human body that when affected may be a prodromal symptom of mental or neurodegenerative disorders.

Findings from observational studies conducted in the Mediterranean basin show a significant association between a higher adherence to the Mediterranean diet and a lower likelihood of having poor sleep quality, inadequate sleep duration, excessive daytime sleepiness, or symptoms of insomnia. Also, investigations conducted outside the Mediterranean basin report a relationship between the adoption of a Mediterranean-type diet and sleep quality, suggesting the existence of biological aspects through which adherence to this diet can influence health. The findings from mechanistic studies support the hypothesis that various dietary components may modulate the cellular signaling pathways involved in sleep regulation and brain functioning, including modulation of neuro-inflammation, membrane stability and fluidity, signal transduction, and regulation of the gut-brain axis. Current evidence suggests a link between adherence to the Mediterranean diet and overall sleep quality and different sleep parameters advocating that the promotion of a balanced diet could be a valid strategy for improving sleep quality and its features.

Stefanos N. Kales

Dr. Kales is a Professor of Medicine at Harvard Medical School, and Professor & Director of the Occupational Medicine Residency at the Harvard Chan School of Public Health (HSPH). He is also Chief of Occupational Medicine /Medical Director- Employee Health at the Cambridge Health Alliance, a Harvard-affiliated hospital system. He organized and hosted Harvard's groundbreaking 2014 Mediterranean Diet Conference, and he was Scientific Chair of the landmark 2017 Mediterranean Diet & Health Conference in Greece. In 2019, Dr. Kales received competitive funding from Harvard's Radcliffe Institute for Advanced Study to organize and host the invitation-only Exploratory Seminar: "Mediterranean Diet: Promotion and Dissemination of Healthy Eating". He is the founder of the Hellenic Center for Excellence in Health & Wellness, and was the scientific organizer of the 2022 Cretan lifestyle conference.

Dr. Kales has participated in a wide range of medical/public health research, advisory and teaching activities on five continents resulting in over 225 publications and wide recognition nationally and

internationally. He serves on the editorial boards of several biomedical journals and is a faculty member in Harvard's Cardiovascular Epidemiology Program and Harvard Medical School's Division of Sleep Medicine.

Dr. Kales has received numerous honors, including the 2013 Kehoe Award for Excellence in Education and Research and 2014 Harriet Hardy Award for outstanding scientific contributions to the field. He has also received honors from the International Association of Fire Chiefs and was inducted into the Order of Emperor Dom Pedro II by the Federal Corp of Brazilian Military Firefighters. He has also received several million dollars in competitive US federal funding, including an ambitious Mediterranean Diet Intervention trial ("Feeding America's Bravest: Survival Mediterranean Style) among Midwestern firefighters which was awarded the 2017 Silver Medal for Health Research by the Oleocanthal International Society, and another recent grant to create a Healthy Lifestyle smartphone application.

Dr. Kales grew up around traditional Greek foods prepared by his beloved grandmother in the family kitchen and expanded these formative experiences through extensive travels in Greece, Cyprus, Spain and Italy. As a health educator, he seeks to lead by example; following a Mediterranean diet, practicing regular physical fitness and good sleep hygiene. Based on his combined medical and public health training, his research and clinical practice, he is convinced that lifestyle measures like Mediterranean nutrition are the most accessible, effective and valuable means of chronic disease prevention and control. Dr. Kales' ultimate goal is to use innovative approaches to disseminate healthy Mediterranean eating in schools, workplaces and hospitals. Dr. Kales recently co-authored the "Textbook of Lifestyle Medicine", from Wiley & Sons publishers, which emphasizes olive oil and Mediterranean lifestyle as the gold standard for healthy living. In May 2022, he participated as an invited speaker in the Pontifical Academy of Sciences symposium: "The Art & Science of Olive Oil" at the Vatican. He also co-organized and led a conference in Cyprus on lifestyle for dementia prevention under the auspices of the A. G. Leventis Foundation. He was also recently invited to participate as an expert advisor to Greece's National Public Health Organization (EODY). He is the President and scientific organizer of the 2022 and upcoming 2023 Cretan lifestyle conferences

Mediterranean Lifestyle and the Workplace

The traditional Mediterranean diet is considered the world's most evidence-based eating pattern for promoting health and longevity. Workplaces provide a unique opportunity to deliver health promotion interventions to their employees, and expert consensus has identified the Mediterranean diet as the easiest to follow among healthy eating patterns. However, institutional food environments often sacrifice health benefits for the convenience of faster and cheaper foods that are of lower quality and are more processed. Additionally, workplaces often encourage sedentary behaviors.

Myriad workplace lifestyle interventions have been attempted, but are limited by practical obstacles to implementing rigorous study designs. Intervention studies have focused on four health domains: (1) multicomponent wellness programs, (2) healthy diet interventions, (3) physical activity interventions, and (4) mental health/sleep interventions.

Within each group of studies, there was significant heterogeneity in study length, intervention components, and worker populations. Nonetheless, most studies across all categories showed positive associations between healthy lifestyle interventions and improved worker health. Several studies have focused specifically on "Mediterranean" interventions and have also found modest to considerable positive benefits.

Further research should include rigorous (cluster-randomized designs), longer follow-up periods, interventions that include technology, and more objective measures of wellbeing and evaluation of worker performance.

SESSION 4. MEDITERRANEAN DIET AND SUSTAINABILITY

José Luis Gallego

He is an environmental communicator, writer and advisor on sustainability for companies and institutions. A contributor to the main media, he currently directs the environmental section of the newspaper El Confidencial, where he writes regularly, and collaborates with Julia Otero on her programme on Onda Cero. Director and presenter of documentaries and television series, he has published more than thirty books on nature and the environment, which have been translated into several languages.

Noam Weisbrod

Noam Weisbrod is a Professor of Hydrology at the Zuckerberg Institute for Water Research, in the Jacob Blaustein Institutes for Desert Research (BIDR) at Ben-Gurion University of the Negev, which he joined in 2002. Since 2018, he serves as the Director (Dean) of the BIDR, presiding over 65 faculty members, 90 staff members and 300 graduate students.

Weisbrod's degrees are from the Faculty of Agriculture, Food and Environment, Hebrew University of Jerusalem (Soil Sciences and Hydrology). He was a postdoctoral fellow and a research assistant professor in the Department of Bioengineering at Oregon State University, USA.

Weisbrod took part in various international delegations to assess local water realities, in places such as Chile, Inner Mongolia, Namibia, Uganda, Zimbabwe, and the Galapagos. In addition to leading numerous national and international research projects, he was a member of the steering committee for the BGU–Northwestern University cooperative projects in water sciences, and for "BusinessH2O: Water management best practices from the USA and Israel."

Weisbord supervised more than 50 master's degree and PhD students and postdoctoral scholars, and co-authored more than 110 papers in the subjects of Hydrology, Agriculture, Aquifer Recharge, and Environmental Sciences.

Water scarcity and climate change: Where do we stand

Water is the most crucial resource on earth. It is essential for all lifeforms, and humankind cannot survive without it. Less than 1% of the water on our planet is available for human needs, while the remainder resides in oceans and ice sheets. Globally, over 70% of that 1% is used for food production. In other words, water scarcity threatens food security. Due to overexploitation, contamination, societal changes, population growth, and inefficient management, our potable water resources are rapidly diminishing, in both quality and quantity. While 25–30 years ago, water scarcity was an issue faced by impoverished countries and rural areas, currently, it is a common problem throughout the world. According to UN reports, in a few years, almost 50% of the world population will be living under water shortage. It is evident that climate change, including global warming, more extreme weather events, and desertification have dramatically increased the level of water insecurity. In this talk, the water crisis and the water-food nexus will be presented, together with some potential solutions. Israel has pioneered numerous water-related solutions that will be discussed, including desalination, efficient irrigation, wastewater treatment and reuse, and centralized management.

José Miguel Herrero

Education: Agricultural Engineer. Specialization in Agricultural Economics. Polytechnic University of Madrid. Master's degree in foreign Trade (800 hours). Official Chamber of Commerce and Industry of Valladolid. University Expert in "Data Analysis in Social and Market Research" (250 hours). Complutense University of Madrid. Introductory Course in Research (postgraduate) in Marketing. Faculty of Economics and Business. Complutense University of Madrid.

Professional Experience: General Director of the Food Industry. Ministry of Agriculture, Fisheries, and Food. Director of the Food Information and Control Agency. Ministry of Agriculture, Food, and Environment. MAGRAMA. Director of the Olive Oil Agency. Ministry of Agriculture, Food, and Environment. MAGRAMA. Deputy General Director of Food Chain Structure. Ministry of Agriculture, Food, and Environment. MAGRAMA. Deputy General Director of Food Chain Structure. Ministry of Environment and Rural and Marine Affairs. MARM. Deputy General Director of Industries, Innovation, and Agri-food Commercialization. Ministry of Agriculture, Fisheries, and Food. Deputy General Director of Agri-food Industries, Marketing, and Distribution. Ministry of Agriculture, Fisheries, and Food. Author of publications in various national specialized journals on distribution and consumption topics. Participation as a speaker in courses, congresses, seminars, forums and events related to agriculture, food and the food chain.

How to combine seasonality and food waste?

Carlos Alberto González

Medical epidemiologist. Master in Public Health and Doctor of Medicine. Emeritus Researcher and ex Head of the Nutrition, Environment and Cancer Unit. Catalan Institute of Oncology (ICO). He was Coordinator of the European Prospective Investigation into Nutrition and Cancer (EPIC) in Spain, promoted by the European Agency for Research on Cancer (IARC-WHO) with the participation of 10 European countries, in a cohort of 500,000 individuals. Co-author of more than 350 scientific publications in international journals on nutrition, cancer and chronic diseases, and of several books. Among them "Nutrition and Cancer: what science teaches us" (Editorial Médica Panamericana, 2016) and the recent one on "Climate emergency, food and healthy life". (Editorial Icaria 2020). He has been president of the Catalan Society of Public Health of the Academy of Medical Sciences of Catalonia and the Balearic Islands. He has received several awards for his professional career, including the Danone Scientific Foundation and the Institut d'Estudis Catalans (IEC-CCNIEC). Former Professor of Cancer Prevention, Master in Public Health, UPF/UAB (Barcelona) and Professor of the Master in Nutrition and Health at the UOC.

Sustainable food and climate change

Sustainable food is defined as a healthy diet, with low environmental impact, economically accessible and compatible with our culture. Food production generates 30% of all greenhouse gases (GHG) that cause climate change. This is why it has been warned that to mitigate climate change it is not enough to replace fossil fuels (coal, oil, gas) with renewable energies (solar and wind), it is also essential to change our food model.

Food production is very important, especially because of the weight of livestock farming. The 3 GHGs are CO2 (carbon dioxide), which is generated by the use of fossil fuels, is concentrated in forests, and when they are cut down (as in the Amazon) to grow cereals or create grazing fields, it is released into the atmosphere. CH4 (methane) is generated by enteric fermentation of ruminants (cattle and sheep) and N2O (nitrous dioxide) is generated by fermentation of cattle manure and pig urine (purines). Livestock farming consumes 35% of the world's grain production, and consumes 8% of the world's drinking water. To produce half a kg of meat requires 6,000 litres of water.

In a study conducted on a cohort of 40,000 individuals in Spain, we showed that 60% of the GHGs in the diet of the participants came from meat, 20% from dairy products and less than 15% from all plant foods combined (fruit, vegetables, legumes and cereals). Scientific evidence has clearly demonstrated that foods of animal origin, which generate the most GHGs, are detrimental to human health. On the contrary, those of plant origin, which generate the least GHGs, are beneficial to human health (they reduce the risk of vascular diseases, diabetes, stroke, various types of cancer and obesity). Paradoxically, the Mediterranean Diet, which is the most compatible with our culture and the healthiest model for the planet and human beings, has a higher cost than a Western-type diet where animal-based foods predominate. It is therefore necessary to implement a fiscal policy, following WHO recommendations, that increases the price of unhealthy foods and subsidises plant-based foods in order to increase their consumption.

SESSION 5. CULTURE AND DIET MEDITERRANEAN

Irene Lapuente

Director and founder of La Mandarina de Newton, a cultural company focused on science, technology and transdisciplinarity. She is a specialist in promoting projects that enhance and cross the scientific method, design thinking and creative processes. She designs participation and co-creation processes in culture, art, education, science, health and innovation. He graduated in Physics from the University of Barcelona (UB) and has completed different postgraduate courses in Science Communication (UPF) and Creation of Scientific Documentaries (UPF)

Carmen Cabrera

Director and founder of La Mandarina de Newton, a cultural company focused on science, technology and transdisciplinarity. She is a specialist in promoting projects that enhance and cross the scientific method, design thinking and creative processes. She designs participation and co-creation processes in culture, art, education, science, health and innovation. He graduated in Physics from the University of Barcelona (UB) and has completed different postgraduate courses in Science Communication (UPF) and Creation of Scientific Documentaries (UPF)

Enric Herce

Enric Herce, through a culinary career spanning almost fifty years, has stood out for the promotion of Girona and Empordà cuisine, contributing with his unique and multifaceted vision. He has published influential works such as "Girona, cuina a cuina", awarded at the Gourmand World Cookbook Awards. His commitment to culinary culture has led him to explore Mediterranean gastronomic narratives in recent works such as " L'Odissea culinària" and "Deliciós Mar, receptes i històries del Mediterrani".

Rais Esteve

Currently, she is an I+D chef at 100%Chef, a writer at 7Caníbales, a culinary consultant in gastronomic businesses and a creative advisor in signature restaurants.

Pastry chef with more than 10 years of experience in the sector, she has been part of the hard core of great houses (Hotel Mercer 5*GL, Dani García Restaurante ***, ARCO by Paco Pérez, Restaurant Disfrutar ***), both in Spain and abroad.

Passionate about food, Rais lives gastronomy as a way of life, with the firm belief that every bite can be the seed of great change.

Apasionada de la comida, Rais vive la gastronomía como forma de vida, con la firme creencia de que cada bocado puede ser la semilla de un gran cambio.

Carles Vilarrubí

Carles Vilarrubí, born in Barcelona on February 2lst, 1954, is a prominent and versatile economist and entrepreneur. Married and father of three children.

Currently, he is a Senior Advisor at ROTHSCHILD & CO in London (United Kingdom). One of the leading independent groups in the global financial advisory field, after twenty years serving as vice president at ROTHSCHILD ESPANYA, S.A. Since 2016, he has been the president of the CATALAN ACADEMY OF GASTRONOMY AND NUTRITION. The Academy is a public entity whose purposes are the observation, research, and dissemination of Catalan cuisine and gastronomy

SESSION 6. SUSTAINABILITY AND MEDITERRANEAN DIET IN HAUTE CUISINE

Mónica Ramírez

Professional with more than 25 years in the publishing world, the last 20 as a journalist specialized in gastronomy in offline, online and radio media. He has directed publications such as Vinos y Restaurantes or 7Caníbales; He has written for magazines such as Objetivo Bienestar, Foodie Culture and Cuina and collaborated on projects with Larousse Editorial and Ara Llibres. At the same time, he has taught courses on wine etiquette; He has presented papers at different congresses and events and participated in the writing of the exhibition of the Celler de Can Roca at Palau Robert, in Barcelona. She is co-author of books such as Kumato and Guía de restaurantes de la Barceloneta.

Artur Martínez

Trained at the Joviat Hospitality School of Manresa, Artur Martínez has made an indelible mark on the culinary scene. His restaurant, Aürt, has held a Michelin Star since 2019, has been awarded 2 Sols in the Repsol Guide 2021, was named the Best Restaurant in a Hotel in Spain in 2021 and 2022, and is positioned in the TOP7 of the Macarfi Barcelona Guide 2023. Aürt Restaurant reflects Martínez's passion and dedication to gastronomy, offering a unique culinary experience that blends innovation and tradition. His exemplary trajectory continues to be a source of inspiration for the Catalan gastronomic scene, for both his cuisine and his role as an educator.

Jordi Vilà

Trained at the Joviat Hospitality School of Manresa, Jordi Vilà has held a Michelin star since 2004. In 2021, he was awarded the maximum distinction of 3 Sols by the Repsol Guide for his pioneering vision of Catalan cuisine. His restaurants, Alkimia and Al Kostat, embody his passion for gastronomy. Alkimia stands out for its focus on the evolution of Catalan cuisine, while Al Kostat offers a close and personal experience with a fresh and shareable menu. Vilà, a culinary master, continues to captivate with his creativity and gastronomic excellence.

SESSION 7. THE BASIC PILARS OF THE MEDITERRANEAN DIET

Josep Corbella

Academic background: degree in Information Sciences (specialising in Journalism), Autonomous University of Barcelona.

Prensa escrita: 1986-1988. "Carrer Gran" Editor of the Culture section, 1988-1990. Diario de Barcelona" Newspaper, Contributor to the Opinion section, 1988-1990. Editor of the Society section, 1989-1990. Coordinator of the weekly Medicine section, Since 1990. "La Vanguardia, 1990-1992. Editor of the supplement "Medicine and Quality of Life", 1992-2007. Editor of the Science and Medicine section in the Society section, 2007-2008. Editor of Societat, Since 2008. Editor of Science and Medicine with the category of editor-in-chief, Since 2010. Coordinator of the "Avantguarda de la Ciència" award, Since 2012. Coordinator of the scientific information channel Big Vang, Director of the 64-page special supplement "Beyond the Moon".

Radio: Since 2001. RAC1, 2001-2007. Contributor to "El món a RAC1", Since 2012. Coordinator of a weekly science section in "Versió RAC1", 2004-2005. Punt Radi, Collaborator in a weekly science talk show on "Campoy al punt", Desde 2001. RAC1, 2001-2007. Colaborador de "El món a RAC1", Desde 2012. Coordinador de una sección de ciencia semanal en "Versió RAC1", 2004-2005. Punto Radio, Colaborador de una tertulia de ciencia semanal en "Campoy en su punto".

Television: From 2020. La Sexta, Collaborator of "Roent" to analyse the cholera pandemic and subsequent scientific news, From 2020. TV3, Collaborator of "Tot és mou" to analyse the cholera pandemic and follow the scientific news, Desde 2020. La Sexta, Colaborador de "Al rojo vivo" para analizar la pandemia de covid y posteriormente la actualidad científica, Desde 2020. TV3, Colaborador de "Tot es mou" para analizar la pandemia de covid y posteriormente la actualidad científica

Books:

Sapiens. El largo camino de los homínidos hasta la inteligencia (Edicions 62, written with Eudald Carbonell, Salvador Moyà and Robert Sala). Translated into Spanish (Ed. Península. Sapiens. El largo camino de los homínidos hacia la inteligencia).

La ciencia de la salud (Ed. Planeta, co-written with Valentín Fuster). Translated into Catalan (Planeta. La ciencia de la salud), English (Ed. Harper. The Heart Manual), Italian (Ed. Tea. La vostra salute la meva sta a cuore), Roman (Ed. Corint, Invata sa traiesti sanatos) and Chinese (Ed.l Booklife de Taiwan).

La cuina de la salut (Ed. Planeta, co-written with Ferran Adrià and Valentín Fuster). Translated into Catalan (Ed. Planeta. La cuina de la salut), Italian (Sperling & Kupfer. La buona cucina della salute) and Portuguese (Senac. A cozinha dóna saúde).

La ciència de la llarga vida (Ed. Planeta, co-written with Valentín Fuster). Translated into Catalan (Ed. Planeta. The Science of a Long Life) and English (Ed. Hearts of Our Children. The Science of a Long Life).

La meravellosa història del teu cos (Ed. Columna). Translated into Spanish (Ed. Cúpula. La meravellosa història del teu cos)

The arrival of Pere Mir (Ed. Cellex)

2022.Baselga, el metge que volia canviar el món (Ed. Navona)

Outstanding awards: Journalism award from the Spanish Society of Medical Oncology for the article "Carlos Cordón: 'els meus dos combats contra el càncer' " (Magazine de La Vanguardia, 10/12/2006), Award from the ADANA Foundation for "the work of La Vanguardia in improving the quality of life of people with ADHD", National Gastronomy Award from the Royal Academy of Gastronomy in the category of "Best publication" for the book La cuina de la salut (shared with Valentín Fuster and Ferran Adrià), National Research Award from the Generalitat de Catalunya in the category of "Scientific Communication" to La Vanguardia, Mathematics and Society Award from the Institut d'Estudis Catalans for "El cervell matemàtic" (a series of 42 articles published in the summer of 2011), Concha García Campoy Science Journalism Award in the Lifetime Achievement category, awarded by the Television Academy, Panther Award from the Arca de Noé Association for "the public service provided as an information professional during the COVID-19 pandemic".

Ramon Estruch

president of Paralelo 40 - Observatorio de la Dieta Mediterránea, is a senior consultant in the Internal Medicine Service of the Hospital Clínic de Barcelona and Associate Professor at the Faculty of Medicine of the University of Barcelona.

He is also a member of the Steering Committee of CIBER Physiopathology of Obesity and Nutrition (CIBERobn) of the Instituto de Salud Carlos III (Ministry of Science and Innovation, Government of Spain), principal investigator of the Cardiovascular Risk, Nutrition and Ageing Group (Consolidated Group of the Generalitat, 2017SGR1717) of Area 2 Biopathology and respiratory, cardiovascular and renal bioengineering, of IDIBAPS-CELLEX and member of the Advisory Committee of the European Foundation for Alcohol Research (ERAB) of the European Union. In the framework of CIBERobn he is principal investigator of the group.

He is the coordinator of the PREDIMED study, the largest multicenter intervention study on the Mediterranean Diet ever carried out in the world (7447 participants with high cardiovascular risk and an average follow-up of 5 years) in which research groups from all over Spain have participated. He also participates and collaborates in several multicenter randomized nutritional intervention trials with the Mediterranean Diet with patients at risk of cardiovascular disease and cancer, such as the PREDIMED-Plus Study (6874 participants with Metabolic Syndrome, 6-year follow-up), the randomized intervention trial of the SI programme (1200 adolescents, 6-year follow-up), the IMPACT study (1200 pregnant women with intrauterine growth retardation), and the MEDCARS cohort study (14,000 workers in SEAT factories).

He has published more than 5 books, more than 50 book chapters and more than 630 original articles in high impact journals including The New England Journal of Medicine, JAMA, Lancet, Annals of Internal Medicine, Annals of Neurology

and American Journal of Clinical Nutrition. He currently maintains ongoing relationships with multiple universities and teams such as Columbia University in New York, Loma Linda University in California, Harvard School of Public Health in Massachusetts, Human Nutrition Research Centre at Tufts University (Massachusetts, USA), Jefferson University (Philadelphia, USA), Ernestine Ernestine Clinic and Research Center (Philadelphia, USA), Ernestine Clinic and Research Center (New York) and Ernestine University (New York, USA).), Ernest Gallo Clinic and Research Centre (University of California, San Francisco), University of Oulu (Oulu, Finland), Institute des Vaisseaux et du Sang (Paris), King's College School of Medicine and Dentistry (London, Great Britain), Mario Negri Sud (Santa Maria d'Imbaro, Italy), CSIC, Cardiovascular Research Centre, Hospital de la Santa Creu i Sant Pau in Barcelona, CNIC in Madrid, and PREDIMED and PREDIMED plus centers throughout Spain.

Roberto Volpe

Medical doctor (MD), specialized in Liver and Metabolic Diseases (AMS), PhD in Atherosclerosis (Preventive Cardiology), researcher at the National Research Council (CNR) of Rome, Italy. Professor of First Aid at the University "La Sapienza" of Rome and of Internal Medicine at University "Nostra Signora del Buon Consiglio" of Elbasan, Albania. Head of national and international projects on nutrition and cardiovascular prevention. Author of 2 books and of more than 250 scientific publications. Member of the "Cardio-cerebrovascular alliance" of the Italian Ministry of Health; member of REPRISE (register of Scientific Experts set up at the Italian Ministry of Education, University and Research) for scientific popularization; member of the scientific and directors board of the Italian Society for the Cardiovascular Prevention (SIPREC), and representative to the European Heart Network (EHN) of Brussels, Belgium; member of the scientific board of the Mediterranean Diet Foundation. Participation in national radio and tv programs which dealt with nutrition, hypercholesterolemia and cardiovascular prevention.

MD at Olympic Games of Rio 2016 (at the golf tournament).

Bread, pasta and cereals. Latest scientific evidence. Integral or not integral?

The Guidelines of the International Medical Societies/Foundations that work on cardiovascular prevention promote the uptake of whole grains (WG) as a part of a healthy and sustainable diet. Indeed, WG grains offer a great source of fiber and other important nutrients, such as B and E vitamins, mineral salts, phytosterols, phytonutrients. However, above all in Southern Europe, the daily intake of WGs is very low, both in adults and in children, and we know that, after a diet high in sodium, a diet low in WG is the second main dietary risk factor for cardiovascular diseases. On the contrary, meta-analyses indicate that a consumption of about 50 grams of WG per day (corresponding to only 3 portions of WG foods per day), is associated to -20% of mortality for cardiovascular diseases, and -12% for cancer. Therefore, a relatively minor increase in WG intake, by reducing diseases and mortality, could lead also to a substantial economic benefits by reducing healthcare expenses and lost productivity.

However, Aune meta-analysis also demonstrate the zero risk for refined grains and that the fibers and phytic acid can lead to some mineral deficiency by impairing their absorption. Moreover, WG needs an accurate cleaning practices to reduce their concentrations of contaminants possibly present in the bran and in the germ. These data suggest that the best choice is make half of our grains refined and half whole (clearly, above all staple and not indulgent grain foods).

Valentini Konstantinidou

Dr. Valentini Konstantinidou, is a registered dietian-nutritionist, a food technologist and a researcher in the field of nutritional genomics. She owns a PhD in Biomedicine from Pompeu Fabra University, she has published numerous scientific articles, and dissemination material for science communication in spanish, greek and english languages. She is also a collaborator professor of the Universitat Oberta de Catalunya (UOC). Her research focuses on mediterranean diet and virgin olive oil health effects in humans.

She is also the founder of DNANUTRICOACH® in Barcelona and in Athens, a startup company that accurately translates nutrigenetic knowledge into tangible nutritional recommendations for health promotion and longevity. She helps individuals and corporates not only to live longer but also better starting from improving their nutrition and eating behavior.

Anti-inflammatory and antioxidant effects of extra virgin olive oil

Why is olive oil much more than a healthy fatty acid?

Why do people have to learn to consume extra virgin olive oil for all their culinary preparations, from raw to fried? The presentation summarizes the 5 basic reasons that we always need to remember and the ways we have to teach people to take extra virgin olive oil in the context of the Mediterranean diet.

Maira Bes Rastrollo

Maira Bes-Rastrollo is Professor of Preventive Medicine and Public Health at the University of Navarra. She is a researcher in charge of the "Diet and Lifestyles" group at the Institute of Health Research of Navarra (IdiSNA), member of CIBERobn and coordinator of the working group on nutrition of the Spanish Society of Epidemiology. She is the author of more than 280 scientific publications in the field of nutritional epidemiology and public health. She has been cited more than 14,000 times.

She has supervised 13 doctoral theses which have obtained the highest marks. She currently supervises 5 doctoral students and has participated or participates in 23 national and international research projects, being the principal investigator in 14 of them.

Effects of moderate wine consumption within the Mediterranean Diet

The World Health Organization warns about the risk posed by alcohol consumption for the development of certain types of cancer, such as breast cancer, stating that there is no safe level of alcohol consumption. Therefore, it makes sense to discourage alcohol consumption to follow a healthier Mediterranean pattern. However, red wine consumption has been proposed as one of the traditional components of the Mediterranean Diet. Well-designed observational studies have found that moderate wine consumption is associated with a decrease in cardiovascular disease (CVD) and overall mortality. Therefore, this is a highly controversial issue. Age, sex, and consumption pattern are likely important modifiers of the effect.

Data from the EPIC-Greece cohort conclude that excluding moderate alcohol consumption from the definition of the Mediterranean Diet results in a 23.5% decrease in its protective effect against total mortality. Preliminary results using data from the Predimed study observe that excluding alcohol from the definition of the Mediterranean pattern decreases protection against CVD by more than 12%.

Therefore, we should tailor the public health message regarding alcohol consumption: for men and women under 50 and 55 years old, respectively, the message should be zero alcohol, even in the context of a Mediterranean Diet. For men and women aged 50 or 55 years and older, very moderate alcohol consumption following the Mediterranean pattern could be beneficial for their health.

Raúl Zamora

Raul works as Principal Investigator and Co-Head of the Nutrition and Cancer Unit at the Bellvitge Biomedical Research Institute (IDIBELL). He graduated in Human Nutrition and Dietetics and in Food Science and Technology and also holds a master's degree in Statistics and Epidemiology. Raul obtained his PhD from the University of Barcelona in 2008. His postdoctoral stays were at IDIBELL, International Agency for Research on Cancer (IARC, Lyon) and the University of Cambridge, before rejoining IDIBELL in 2016. His research interests focus on dietary factors, especially polyphenols and diets rich in these compounds, and the development of chronic diseases. To date, Raul has authored more than 150 scientific articles (>6,000 citations, h-index: 46) and more than 10 book chapters in his field.

Vegetable Protein vs. Animal Protein: Which one is healthier?

Protein is an essential nutrient and plays a fundamental role in health and disease prevention. Protein can be classified by its source into animal and vegetable protein. Animal protein has higher biological value, but its production also has a greater environmental cost. The recommended protein intake is between 0.8 and lg/kg of body weight/day and under special conditions up to l.5g/kg/day. However, from a health prevention standpoint, mainly focusing on mortality and chronic diseases, is all protein equally healthy? This presentation will discuss whether the source of protein affects its associations with disease risk and mortality and if all animal-origin proteins are equally healthy. Finally, the debate will address whether there is enough scientific evidence to make recommendations for Public Health.

Javier Fontecha

PhD in Science (specializing in Biochemistry) from the Autonomous University of Madrid (Extraordinary Doctoral Thesis Award). Currently: Research Scientist at the Spanish National Research Council (CSIC) at the Food Science Research Institute (CIAL). Madrid. Department "Bioactivity and Food Analysis". Head of the Research Group: "Lipid biomarkers in food and health". Lines of research: Nutritional improvement of the lipid fraction of food and its relationship with human health (especially in bioactive dairy lipids).

Scientific contributions: More than 140 JRC high impact scientific publications and 33 book chapters (3 as Editor). 9 Doctoral Theses supervised (4 more in progress). Principal Investigator of numerous National Research projects or international actions. Responsible for a large number of R&D contracts with companies. 4 patents registered

Stays in foreign centers: Pre-doctoral: Univ. College Cork (Cork, IRL), Post-Doctoral: North Carolina State Univ. (Raleigh, NC USA), Researcher (Univ. California San Diego, USA), Researcher (Dublin Institute of Technology, Dublin, IRL), Researcher (Dundee Univ., Scotland UK), Researcher (Ohio State University, USA),

Other scientific activities: Member of 2 IDF (International Dairy Federation) Expert Groups, Regular reviewer of several international scientific Journals SCI, Management experience as project evaluator for several national and international agencies, Member of the Board of Directors of the Fulbright Spain Association.

Dairy products and cardiovascular health. Whole or low-fat?

Full-fat ("whole") dairy products have been vilified for their high content of saturated fatty acids and cholesterol. Their consumption has been linked to an increased risk of CVD. Their inclusion in the diet continues to be debated mainly by clinicians, nutritionists and the public.

However, these potentially harmful effects are being reconsidered by the scientific community after reviewing clinical studies and meta-analyses conducted over the last decades. It has become clear that the consumption of whole dairy products either has no effect or even has a protective effect against CVD. These results are generating a paradigm shift for the following reasons:

1- Dairy fat incorporates numerous bioactive compounds into the diet. It is the main natural source of short-chain fatty acids such as butyric acid and others that are a quick source of energy, and which do not accumulate in adipose tissue or increase LDL-Col. It is also notable for the exclusive presence of conjugated linoleic acid (CLA), which has been attributed with protective effects against CVD due to its anti-arteriosclerotic and anti-diabetic properties. It is also worth mentioning the protective role of fat-soluble vitamins (A, D, E and K) against multiple pathologies.

2- In whole milk products, fat is part of the milk matrix, which is rich in nutrients, and there is evidence that the interaction of the components provides health benefits.

In conclusion, the reason behind the limitation of dairy fat consumption is a consequence of the traditional reductionist approach of linking a nutrient to a health effect, without taking into account the other components

Rosa Lamuela-Raventós

Professor in the Department of Nutrition and Bromatology at the University of Barcelona, she is the founder and leader of the Polyphenol Research Group SGR 00334 2021 (polyphenolresearch.com), which forms part of the scientific excellence groups of the CIBEROBN. She currently holds the position of principal investigator of the María de Maeztu Unit of Excellence of the Institute of Nutrition and Food Safety of the UB, INSA-UB.

For five consecutive years (2017-2021), she has been included in the list of the world's most influential scientists published by Clarivate Analytics (Highly Cited Researchers). She has published more than 400 scientific articles with over 46,000 citations, resulting in an H-index of 98 (Scopus). In recognition of her excellence, in 2018 she was awarded the XXV Danone Institute Award for Scientific Career "Dr. Carles Martí Henneberg".

Cooking techniques and effects on health

There is a popular belief that extra virgin olive oil (EVOO) is not the most suitable for cooking. In many homes, EVOO is only used raw, to dress or dress salads, vegetables and greens. However, there are currently several scientific studies that have shown that this myth is false. Not only is EVOO safe to cook with, but it is the most stable and safe cooking oil on the market.

We evaluate the influence of cooking end the effects on health outcomes, specifically focusing on the utilization of Extra Virgin Olive Oil (EVOO). Olive oil, particularly of the extra virgin variety, has numerous health benefits attributed to its high content of monounsaturated fatty acids and bioactive compounds. This study aims to elucidate the impact of cooking, on the bioactive compounds and the health benefits of EVOO-enriched dishes. By shedding light on the relationship between cooking methods and the health-promoting properties of EVOO, this study seeks to provide valuable insights for culinary practices aimed at optimizing both flavor and nutritional value in the context of a healthy diet.

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SESSION 8: MEDITERRANEAN DIET AND EMOTIONS

Carme Gasull

Graduate in Information Sciences from the Autonomous University of Barcelona (UAB), she collaborates with various gastro-food media, including the magazine 'CUINA' and the programme 'Un restaurant caníbal a Berlín' on Catalunya Ràdio. Co-founder of the website Gastronomistas.com, she is a regular moderator and presenter at talks, presentations and culinary demonstrations at trade fairs, conferences and congresses in the sector. She is the author of the books 'Catalunya en el paladar' (Austral Media, 2004), 'Petita història de la Festa de la Ratafia' (Editorial Mediterrània, 2016), 'El Safrà. Com preparar-lo 10 vegades' (Sd Edicions, 2018) and the booklets 'Temps de MercatsI' (IMMB, 2021, 2022 and 2023). She is also co-author of 'Enganchado' (Libros Cúpula, 2023), the story about the hard road that chef Raül Balam Ruscalleda has faced due to his drug addiction, and has participated in the writing of 'Nikkei' (2019) and 'Cócteles, coctelería y bartenders' (2019), volumes of the collection Sapiens de la Bullipedia.

Sílvia Congost

Psychologist, expert and world reference in self-esteem, emotional dependence and relationships, lecturer and author of 11 successful books.

Inspirational leader in the media and social networks. With more than 20 years of professional experience in the field of psychology, she has 3 centres of her own in Spain, from which she carries out online therapy with patients from all over the world.

Passionate about her work, Silvia dedicates herself body and soul to her mission: to bring awareness and education to the world of relationships so that we suffer less and understand love in a healthier way.

Iolanda Bustos

Iolanda Bustos, born in Baix Empordà, has developed her personal and professional career around nature, the countryside and cooking. Popularly known as #LaChefdelasFlores, she is an expert in edible wild plants. Her work reflects her passion for nature, local products and the territory, inviting everyone, young and old, to savour the landscape and thus cultivate a greater love for the land and its natural treasures.

She is currently a cooker without a restaurant, working as a freelance and private chef. She is the author of the books "Cuina fresca i Natural" and "La millor cuina amb flors, plantes i fruits silvestres". Her latest book is entitled "Cooking with Flowers" and she is currently immersed in a new publishing project on edible forests. She has created the botanical

tasting mural for wines and aoves, incorporating new organoleptic descriptors to the world of wine and oils. As well as being a cooker, trainer and writer, she is a lecturer who collaborates regularly in various media, where she divulges the uses of flowers, herbs, roots and fruits that can be found in forests, fields and beaches. Her recipes radiate life and sensitivity, being an ode to nature and an honest and sincere commitment to the culture and traditions of the territory and the Mediterranean diet.

Committed to social projects of sustainability, towards equality and the environment. She promotes the visibility and dissemination of female rural talent in the countryside and in professional cooking.

Currently, she combines writing with her gastronomy project of experiences in contact with nature. She is an advisor and consultant for the creation of botanical agri-food products. She works as a sommelier for aoves. She cooks, combines and promotes the values of the landscape in wineries, farmhouses and places where nature, oils, wine and food are the protagonists.

You can follow her on different social networks such as @iolandabustos or send her queries to her email bustosiolanda@gmail.com, or visit her website www.iolandabustos.com.

P01-ASSOCIATION BETWEEN THE CULINARY SKILLS WITH THE CONSUMPTION OF ULTRA-PROCESSED FOODS AND THE ADHERENCE TO THE MEDITERRANEAN DIET

Authors

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Objectives

The main objective was to evaluate the association between the culinary skills with the consumption of ultra-processed foods and the adherence to the Mediterranean diet. Specific objectives were: (a) to describe the main validated instruments assessing the culinary skills and the adherence to the Mediterranean diet; (b) to identify the main sources of acquisition of the culinary skills; (c) to characterize the consumption of ultra-processed foods; (d) to assess the association between the level of the culinary skills and the consumption of processed or ultra-processed foods; and (e) to describe changes in the adherence to the Mediterranean diet during the COVID-19 lockdown.

Material and methods

A literature review was conducted through a search of scientific articles in major bibliographic databases: PubMed/MEDLINE, Scientific Electronic Library Online (Scielo), the Universidad Internacional de Valencia's virtual Library, and the Spanish Bibliographic Index in Health Sciences. Keywords used for the search included: Cooking, Culinary skills, Dietary intake, Ultra-processed foods, Mediterranean diet, Surveys and questionnaires, Validation, COVID-19, and confinement. Inclusion criteria were studies published in scientific journals between 2011 and 2022 in English, Spanish, or Portuguese. The initial search used the boolean operator AND and combinations of two or three keywords. Subsequently, refinement was conducted by reviewing abstracts and/or results to exclude articles not specifically related to the study objectives. After this initial review, full-text articles were assessed to determine if the information was aligned with the study's proposal. Articles selected during this process were used for the present study.

Results

In the review, the main validated instruments assessing the culinary skills were the Culinary Skills Index and the Food Skills Questionnaire. Regarding the adherence to the Mediterranean diet, the main instruments were MEDAS (Mediterranean Diet Adherence Screener) and KIDMED (Mediterranean Diet Quality Index in Children and Adolescents). The main sources of acquisition of the culinary skills were found to be mothers and family members, followed by television programs, recipe books and cooking websites. Younger population tend to consume higher quantities of ultra-processed foods compared to older adults. The relationship between the level of culinary skills and the consumption of ultra-processed foods indicates that the development of culinary skills is associated with lower intake of ultra-processed foods. Lastly, changes in the adherence to the Mediterranean diet during the coronavirus lockdown showed increased adherence during that period among the adult Spanish population, as well as a positive impact on home cooking practices. However, results concerning the paediatric population are still controversial.

Conclusions

The development of the culinary skills may be positively associated with lower consumption of ultra-processed foods and higher adherence to the Mediterranean diet. However, this association should be carefully interpreted as the reviewed scientific literature reflects various socioeconomic, cultural, demographic, and dietary patterns specific to the locations where the research was conducted. It is important to promote the maintenance of the observed changes during the COVID-19 lockdown towards a healthier dietary pattern, based on the Mediterranean diet and new culinary habits.

P02-ADHERENCE TO THE MEDITERRANEAN DIET, OBESITY, AND METABOLIC SYNDROME IN CHILDREN AND ADOLESCENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives

The aim of this study is to analyze indicators of adherence to the Mediterranean diet and their association with the prevalence of obesity and metabolic syndrome in children and adolescents, through the development of a systematic review and meta-analysis to evaluate data from studies published to date.

Material and methods

The systematic review was registered in PROSPERO and conducted according to the PRISMA protocol by 2 independent researchers, using PubMed, Cochrane, Scopus, Embase, and SciELO databases, without restrictions on year or country. Included studies were those conducted in humans aged 2 to 20 years, written in English or Spanish, using quantitative methods to examine the characteristics of the Mediterranean diet, obesity and metabolic syndrome indexes. Titles, abstracts and full texts were independently assessed by 2 reviewers, blinded to author names or journals, except for full-text evaluation. A meta-analysis was performed to compare the high adherence to the Mediterranean diet versus the low adherence scores, using mean differences for BMI and waist circumference with 95% confidence intervals. Subgroup analyses were conducted to investigate sources of heterogeneity by comparing results by sex and age.

Results

After the analysis, 36 studies were included; 25 of them used KIDMED, one of these used the Italian version, 3 articles used the Mediterranean Diet Score, 1 used the relative Mediterranean Diet Score, another used the Frequency-Based

Mediterranean Diet Score, and the remaining studies combined various Mediterranean diet assessment indices with other diet quality indices.

Six of the mentioned articles were included in the meta-analysis. Statistically significant results were found in the subgroup meta-analysis by age, particularly in the <12 years group, where children with high adherence to the Mediterranean diet showed lower BMI (MD=0.328 [95% CI 0.012, 0.643]) and smaller waist circumference (MD=1.215 [95% CI 0.495, 1.935]) compared to those with low adherence. For participants over 12 years old, no statistically significant results were found for BMI (MD=-0.125 [95% CI -0.0927, 0.678]) or waist circumference (MD= 0.03 [95% CI -1.252, 1.313]).

Conclusions

Adherence to the Mediterranean diet is associated with lower BMI and waist circumference in children under 12 years old. The use of diet quality indices in paediatric populations is increasingly widespread in epidemiology, although more studies are needed to draw firmer conclusions regarding the risk of developing health problems, such as obesity and metabolic syndrome, in paediatric populations in relation to the adherence to the Mediterranean diet.

P03-ASSOCIATION OF EATING BEHAVIOUR AND ADHERENCE TO THE MEDITERRANEAN DIET IN SPANISH CHILDREN – ALIMENTANDO EL CAMBIO PROJECT

Authors

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Objectives

To investigate the relationship between eating behaviours and adherence to the Mediterranean diet among Spanish children aged 3 to 12 years.

Material and methods

This study used baseline data from the "Alimentando el Cambio" programme, a longitudinal study focusing on preschool and school-aged children recruited from six schools in Spain, with the aim of promoting healthy lifestyles in the school environment. The study sample comprised 1075 participants, 50.7% of whom were girls. Using a cross-sectional design, the analysis specifically examined baseline data collected between January 2020 and March 2020, with a subset of 517 children selected for further analysis. Adherence to the Mediterranean diet was assessed by means of a validated questionnaire consisting of 12 questions on the frequency of food consumption, as well as two questions on eating habits characteristic of the Spanish Mediterranean diet. In addition, eating behaviour was assessed using the validated 35-item questionnaire. The Children Eating Behaviour Questionnaire (CEBQ) is widely recognized as one of the most commonly used psychometric measures to assess eating behaviour in children. Parents responded to the CEBQ items using a Likert-type scale, with scores ranging from 1 to 5 (1= never, 5= always).

Results

The mean age was 7.7 ± 2.6 years. To assess the association between eating behaviour and adherence to the Mediterranean Diet, a binary regression showed an association between the 3 eating behaviour subscales and adherence to the Mediterranean Diet. Satiety responsiveness and food fussiness were positively ($p<0.001$) and enjoyment of food negatively ($p>0.001$) associated with adherence to the Mediterranean Diet.

Conclusions

The interaction between eating behaviour and adherence to the Mediterranean diet underlines its fundamental role in shaping healthy habits. Further research is essential to unravel the complexities of this relationship and to provide crucial information for effective dietary interventions and public health initiatives.

P04-PREVALENCE AND TREND OF THE MEDITERRANEAN DIET IN SPANISH CHILDREN AND ADOLESCENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives

To estimate the prevalence and trend of adherence to the Mediterranean diet in the Spanish population aged 2 to 24 years from 2004 to 2023.

Material and methods

Data from 48 studies on the prevalence of adherence to the Mediterranean diet were collected using the Mediterranean Diet Quality Index questionnaire for children and adolescents from the databases: EMBASE, SCOPUS, PUBMED, and Web of Science. Inclusion criteria were: (i) studies reporting on the prevalence of adherence (high, medium, and low) to the Mediterranean diet or total score of the Mediterranean Diet Quality Index (0-12 points); (ii) observational studies or baseline data from cohort studies; (iii) ages 2-24 years; (iv) no temporal limit; (v) studies published in English and Spanish; (vi) studies published in Spain. Exclusion criteria were: (i) children and adolescents with any pathology; (ii) studies with duplicate data.

Results

37.3% (95% CI: 33.0-41.6) of Spanish children and adolescents have high adherence, and 11.5% (95% CI: 9.6-13.3) have low adherence to the Mediterranean diet. Additionally, the trend of adherence to the Mediterranean diet from the periods 2011-2014 to 2019-2022 showed a decrease in high adherence [-8.70 (-10.0 to -7.5)] and an increase in low adherence [6.0 (5.2-6.8)] with significant differences.

Conclusions

Adherence to the Mediterranean diet among Spanish children and adolescents has been decreasing in recent years. Our results reinforce the concern in Spain about the loss of adherence to the Mediterranean diet.

P05-UNLOCKING THE POWER OF POLYPHENOLS: A PROMISING BIOMARKER OF ANTI-INFLAMMATORY DIET IN ADOLESCENTS

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Objectives

To evaluate total urinary polyphenols as a biomarker of anti-inflammatory diet in adolescents.

Material and methods

In this longitudinal study conducted in 662 adolescents, 51·2% were boys, and 48·8% were girls, with a mean age of 12 (0·38) years at baseline. Total polyphenol excretion (TPE) was measured using a validated Folin-Ciocalteu spectrophotometry method, and the Children´s Dietary Inflammatory Index (C-DII) was calculated from validated food frequency questionnaires. Outcomes were measured at baseline and at two-year follow-up. Multivariate linear regression was

generated to evaluate the relationship of changes in TPE with changes in the C-DII score. An analysis of the ROC curve was performed to assess the potential of TPE as a biomarker of an anti-inflammatory diet.

Results

The relationship between changes in TPE and changes in the C-DII score was stratified by sex with a p-value <0·001 for the interaction. TPE and C-DII were inversely associated in males (-0·13 mg GAE/g creatinine [-0·26; -0·01] per 1-SD increase, p-value=0·037). The ROC curve showed that urinary TPE levels can predict dietary inflammatory potential with an AUC=0·793 (0·725; 0·863) in boys.

Conclusions

Polyphenols excreted in urine are a potential biomarker of anti-inflammatory diets in boys.

P06-WOMEN DIFFERENT RESPONSE TO WINE CONSUMPTION THROUGH A VALIDATED BIOMARKER FOR WINE CONSUMPTION

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Objectives

We explored the relationship between urinary tartaric acid, an objective biomarker reflecting wine consumption, and the risk of a composite clinical CVD event.

Material and methods

A case-cohort nested study was conducted within the PREDIMED trial, involving 1310 participants: 685 incident cases of CVD and a random subcohort of 625 participants (including 78 overlapping cases). Urinary tartaric acid was measured using liquid chromatography-tandem mass spectrometry, while wine consumption was evaluated through self-reported assessments. Weighted Cox regression models were employed to calculate hazard ratios (HR) for cardiovascular disease.

Results

Tartaric acid ranging from 3-12 and 12-35 μg/mL, equivalent to 3-12 and 12-35 glasses/month of wine, was associated with lower risk of cardiovascular disease [HR=0.62 (95% CI: 0.39; 1.00), p-value=0.050 and HR=0.50 (0.27; 0.95), p-value=0.035, respectively] compared to lower and higher concentrations. Stratified analyses by sex revealed similar protective associations for men within the specified ranges [HR=0.41 (0.20; 0.84), p-value=0.015 and HR=0.31 (0.12; 0.79), p-value=0.014, respectively]. In women only concentrations between 3-12 μg/mL tended to be significantly protective [HR=0.52 (0.25; 1.08), p-value=0.080].

Conclusions

Our findings suggest that light to moderate wine consumption, validated through an objective biomarker, is linked to a lower cardiovascular disease risk in men. Notably, for women, a weaker association is observed with light wine consumption.

P08-THE URINARY METABOLOMIC FINGERPRINT IN PAEDIATRIC PATIENTS WITH PHENYLKETONURIA

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Objectives

Phenylketonuria, a common metabolic disorder, demands dietary control to mitigate neurocognitive impairments. This study compares urinary metabolome of phenylketonuria with an age-matched controls.

Material and methods

82 children (62 with phenylketonuria and 20 control children) were recruited at Hospital Sant Joan de Deu. Their urinary metabolomic profile was analyzed using a LC-Q-Tof MS (Agilent).

Results

Preliminary analysis revealed significant metabolic profiles disparities in individuals with phenylketonuria compared to controls, notably in phenylalanine-related metabolites.

Conclusions

Untargeted metabolomics is opening new avenues for in-depth analysis of phenylketonuria, potentially identifying novel therapeutic targets and improving individual PKU patient treatment monitoring.

P09-ASSOCIATION BETWEEN EATING BEHAVIOR, ADHERENCE TO THE MEDITERRANEAN DIET, AND BODY COMPOSITION IN SPANISH CHILDREN. CORAL STUDY

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Objectives

To assess the associations between eating behaviour, adherence to the Mediterranean diet and body composition in Spanish preschool children.

Material and methods

Participants included in the CORAL study aged between 3 and 6 years with anthropometric data and having completed the Mediterranean diet adherence questionnaire and the Child Eating Behaviour Questionnaire. Statistical associations are made using multiple regressions between behaviour, adherence to the Mediterranean diet and children's body composition.

Results

There is a direct association between "Enjoyment of Food" proingestive eating behaviour and adherence to the Mediterranean diet ($p<0.001$). An association is also found between this proingestive scale and BMI ($p<0.001$). On the other hand, an inverse association is observed between adherence to the Mediterranean diet and BMI ($p=0.003$). Regarding the preingestive eating behaviour scale "Food Responsiveness," an inverse association has been found both with adherence to the Mediterranean diet and with BMI ($p<0.001$).

Conclusions

It could be concluded that a child who enjoys food has greater adherence to the Mediterranean diet and this adherence, due to the quality of the diet, may reduce BMI, which would probably increase with another type of diet. Conversely, a child who is very demanding with food has lower adherence to the Mediterranean diet, probably due to a lower variety in their food, which ultimately affects lower intake and lower BMI.

Eating behaviour and adherence to the Mediterranean diet can influence the body composition of Spanish children from a very early age. This could be key as tools to address in the fight against childhood obesity.

P11-BARRIERS TO HOME FOOD PREPARATION AND HEALTHY EATING AMONG UNIVERSITY STUDENTS IN CATALONIA

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Objectives

The aim of this research is to shed light on the multifaceted nature of barriers influencing home food preparation and healthy eating among college students in three universities in Catalonia.

Material and methods

Focus groups, photovoice technique and a validated questionnaire were used. Six focus groups (10 female; 14 males; aged 18-22) were conducted. Using Nvivo9, transcripts were analyzed using an inductive thematic analysis. Two focus groups utilized the photovoice technique to further explore their perceptions about a healthy diet and their barriers for home cooking and healthy eating. The validated questionnaire was sent to obtain data on students' diet quality, food environment and cooking self-efficacy for the focus group's design. Methodological triangulation was used to increase validity and obtain more comprehensive data. This study was conducted in accordance with the UOC ethical guidelines and was approved by the Universitat Oberta de Catalunya (CE23-TE04).

Results

In total, we conducted six focus groups. The sample consisted of 10 (42%) males and 14 (58%) females with a mean age of 20.2.

Four themes emerged from the data: (1) non-realistic perceptions of what it means to have a "healthy diet," (2) negative changes in eating behaviour since starting university, (3) barriers to healthy eating and home cooking according to the socioecological model: lack of motivation, lack of time, lack of culinary knowledge and cooking skills, affordability of healthy foods, peer pressure, lack of prepared kitchen facilities, easy access to prepared foods, and (4) lack of healthy cooking habits.

Regarding cooking behaviour of college students, most of the participants reported that their daily meals consisted of boiled rice or pasta, often accompanied by different types of pan-grilled easy-to-cook proteins, such as eggs, chicken, or

canned tuna. None of them reported including vegetables in their daily meals. Students explained that price and time were the main priorities for cooking, with health and taste being secondary concerns.

Conclusions

Despite being a crucial period for establishing an identity and adopting healthy dietary habits, university students show a low adherence to the Mediterranean Diet. Students reported a negative shift in their dietary patterns since university admission. In contrast to previous research, which identified lack of time as the main barrier to healthy eating, our findings suggest that the primary barrier is a lack of motivation. While students may feel time constraints by academic and social responsibilities, their time constraints are closely linked to personal priorities. Students do not feel motivated to eat healthily, and therefore they do not prioritise their limited free time to prepare and cook healthy food. This lack of motivation seems to stem from a misperception of the effort required to prepare healthy meals and a lack of cooking self-efficacy. Therefore, enhancing students' cooking self-efficacy was found to be a catalyst for overcoming students' time-scarce perceptions. Hence, future culinary interventions should focus on increasing cooking self-efficacy through hands-on and practical experiences to experiment and learn from failure. Furthermore, our research indicates that peer groups have a significant influence on students' food choices, indicating that peer-based approaches and living with peers should be the focus of future interventions.

P12- COMMUNITY INTERVENTION TO REDUCE OBESITY IN AN URBAN HEALTH CENTER. FROM THE "HEALTHY ZONE" TO THE INCORPORATION OF DIETITIANS-NUTRITIONISTS

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Objectives

In 2008, 82% of the population of the Dr. Carles Ribas Health Center (HC) was overweight. We initiated the intensive community strategy "HEALTHY ZONE" to decrease its prevalence. This strategy consisted of panels, talks, and monthly workshops on a topic of nutrition and physical exercise to improve healthy habits. In 2020, the COVID pandemic worsened obesity figures. In 2022, dietitians-nutritionists (DN) were incorporated into primary care with the aim of changing behaviors related to food to improve population nutrition.

Assess the evolution of the prevalence of overweight in the health center and in SAP Esquerra de Barcelona

Assess if the incorporation of dietitians decreases the prevalence of overweight

Material and methods

BMI data analysis for SAP and HC in December 2009, 2021, and 2023 conducted by the Health Systems Evaluation, Information Systems, and Quality Unit of SAP Esquerra

Results

A. Health Center / Primary Care Subdivision 2009 - 2021 - 2023 in %

Overweight: 40,8/40,8- 39,1/38,4 - 39,3/37,2

Obesity: 41,1/28,1 – 38/26,9 – 34/23,8

B. Variation Overweight Health Center / Primary Care Subdivision 2009/2021: -4.8/-3.7

C. Variation Overweight Health Center / Primary Care Subdivision 2021/2023: -3.6/-4.3

Conclusions

In our health center, the Healthy Zone strategy reduced overweight more than the incorporation of dietitians-nutritionists, but they only attend the center one day a week.

It is necessary to incorporate full-time dietitians-nutritionists in all health centers and especially in those with a higher prevalence of overweight.

P13- THE MEDITERRANEAN DIET AS A MEDIATOR OF THE RELATIONSHIP BETWEEN WELL-BEING AND OBESITY: AN OBSERVATIONAL STUDY

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Objectives

To explore whether emotional eating (EE) and diet quality could mediate the association between well-being with obesity

Material and methods

One hundred twenty-three adults (35.6±7.8 years; 78% female; 66.7% overweight/obesity) participated in this cross-sectional study. We assessed EE (Three-Factor Eating Questionnaire-R21), well-being (WHO-5 Well-Being Index), diet quality (17-item MedDiet questionnaire), and physical activity (International Physical Activity Questionnaire). Linear regression models and path analysis adjusted for covariates were conducted.

Results

Our results showed that BMI was significantly associated with EE (β= 3.23 [95% CI: 2.01; 4.45]), well-being (β=-0.71 [95% CI: -0.14; -0.01]), and diet quality (β=-0.87 [95% CI: -1.34; -0.41]). Furthermore, EE and diet quality showed significant associations with well-being (β=-0.01 [95% CI: -0.02; -0.01] & β=0.03 [95% CI: 0.01; 0.05] respectively). After testing for mediation, the results revealed that EE and diet quality played a significant mediating effect in the association between well-being and BMI.

Conclusions

Our findings highlight the role of EE and diet quality as significant mediators of the relationship between lower well-being with obesity. This emphasizes the importance of including coping skills to manage negative emotions and promoting adherence to the Mediterranean diet for the prevention and treatment of obesity.

P14- A MEDITERRANEAN DIET-BASED METABOLOMIC SCORE AND COGNITIVE DECLINE IN OLDER ADULTS: A CASE-CONTROL ANALYSIS NESTED WITHIN THE THREE-CITY COHORT STUDY

Authors

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Objectives

Evidence on the Mediterranean diet and age-related cognitive decline is still inconclusive partly due to self-reported dietary assessment. The aim of the current study is to develop a Mediterranean diet-metabolomic score and investigate its association with cognitive decline in community-dwelling older adults.

Material and methods

This study includes participants from the Three-City Study from the Bordeaux (n = 418) and Dijon (n = 422) cohorts who are free of dementia at baseline. Repeated measures of cognition over 12 years are collected. A Mediterranean diet-metabolomic score is designed based on serum biomarkers related to Mediterranean diet key food groups and using a targeted metabolomics platform. Associations with cognitive decline are investigated through conditional logistic regression (matched on age, sex, and education level) in both sample sets.

Results

The Mediterranean diet-metabolomic score is found to be inversely associated with cognitive decline (OR [95% CI] = 0.90 [0.80-1.00]; p = 0.048) in the Bordeaux (discovery) cohort. Results are comparable in the Dijon (validation) cohort, with a trend toward significance (OR [95% CI] = 0.91 [0.83-1.01]; p = 0.084).

Conclusions

A greater adherence to the Mediterranean diet, here assessed by a serum Mediterranean diet-metabolomic score, is associated with lower odds of cognitive decline in older adults.

P15- ADHERENCE TO MEDITERRANEAN DIET AFTER A NUTRITIONAL INTERVENTION BASED ON BAKERY PRODUCTS IN CHILDREN WITH OVERWEIGHT AND OBESITY. MEDKIDS STUDY

Authors

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Objectives

To assess the adherence to a Mediterranean diet after a nutritional intervention based on bakery products in children aged 6 to 12 years with overweight and obesity.

Material and methods

This study was a randomized cross-over clinical trial with two 8-week experimental periods separated by a 5-week washout period. Participants were assigned to consume either bakery products with an improved nutritional profile (Intervention group) (n=13) or conventional bakery products (Control group) (n=18) as part of their usual diet. In both periods, participants received dietary plans based on the Mediterranean diet, which included the study products. Adherence to the Mediterranean diet was assessed using the Adherence to the Mediterranean diet questionnaire (18 items) at the beginning and at the end of each period. Differences in the adherence score to the Mediterranean diet were calculated for each participant in both periods, considering the intervention and control groups.

Results

A significantly improvement of the score of the adherence to Mediterranean diet was observed at overall level ($p<0.001$), and when comparing the participants during the intervention group ($p=0.033$) and control group ($p<0.001$) as well.

Conclusions

Preliminary results suggest that the inclusion of bakery products could contribute to improve the adherence to a Mediterranean diet in children with overweight and obesity..

P16- DOCUMENTARY SERIES "A LANDSCAPE IN THE POT"

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Objectives
"A Landscape in the Pot" is a documentary series by the Spanish Red Cross (CRE) aimed at promoting mindful eating based on the Mediterranean lifestyle. It's an opportunity to showcase Spain's fabulous gastronomic ecosystem through its chefs and primary sector, touring each of the 19 autonomous communities and cities, presenting 19 foods and products representative of each region's gastronomy. This series highlights agriculture, fishing, and livestock farming, as well as our Mediterranean diet. It demonstrates the importance of mindful eating for many families, while not neglecting two fundamental aspects: sustainability and health. Each episode features the collaboration of Fernando Valladares and Luis Juan Morán Fagúndez, providing environmental and nutritional information. This series is part of the Conscious Eating strategic plan, an initiative by CRE aimed at promoting healthy and sustainable eating habits for our planet.

Material and methods
Documentary series produced by El Cañonazo production company and directed and coordinated by the Health Knowledge area of the Red Cross.
The series consists of 19 episodes of approximately 10 minutes each, available on Youtube: https://www.youtube.com/playlist?list=PLolu8jgUrGiZrPbUBejNztDJIjt4o7Dj

Results
On the Spanish Red Cross's YouTube channel, the series trailer has over 29 thousand views. The total views of all 19 episodes are: 20,203 thousand.
On the Spanish Red Cross's Instagram account, the series trailer has 2,729 thousand views, and the total views of all 19 episodes are 21,000 thousand.

Conclusions

This documentary series has been designed to raise awareness and knowledge of mindful eating and the Mediterranean lifestyle, both for the general population and for those served by the Red Cross. Through screenings and discussions, it has been used as educational material, leading to the implementation of workshops and training activities.

P17- ASSOCIATION BETWEEN DIETARY PATTERNS AND CARDIO-METABOLIC HEALTH IN PRESCHOOL CHILDREN. CORALS STUDY

Authors

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Objectives

Dietary habits are established in early childhood and tend to persist into later stages of life, being related to health outcomes in subsequent years. The aim of this study was to analyze whether dietary patterns are associated with cardio-metabolic risk markers at early ages.

Material and methods

A cross-sectional observational analysis was conducted within the framework of the CORALS project (Childhood Obesity Risk Assessment Longitudinal Study) to relate dietary intake to cardio-metabolic risk markers. The COME-Kids questionnaire, a validated semi-quantitative food and beverage consumption frequency questionnaire with 125 items, was used. Dietary patterns were extracted through exploratory factor analysis, and each subject was assigned a z-score of adherence to each extracted dietary pattern. Cardio-metabolic health risk was analyzed through internal z-scores of body mass index (BMI), systolic blood pressure, HDL cholesterol, triglycerides, and HOMA-IR index. Linear regression models adjusted for confounding factors were constructed between dietary patterns and each cardio-metabolic factor. The BMI variable was used as an adjustment, except in models where it was the resultant variable.

Results

This analysis included 1426 participants from the CORALS study, with a mean age of 4.97 ± 1.11 years. Two dietary patterns (DP) were identified, labelled as "Basic Food DP" and "Processed Food DP". The first was associated with the consumption of vegetables, fruits, nuts, legumes, bread, unsweetened breakfast cereals, olive oil, fish, cheese, eggs, and lean cold cuts; and the second was directly related to the intake of sweetened dairy products, dairy desserts, processed meats, potatoes, sweets, snacks, ready meals, other oils, and soft drinks; and negatively associated with the consumption of vegetables and fruits. Adherence to the "Processed Food DP" was directly associated with z-scores of BMI (B=0.07, p=0.034, R2=4.6%) and triglycerides (B=0.12; p=0.001; R2=4.4%). Additionally, the "Processed Food DP" was inversely associated with z-scores of HDL cholesterol (B=-0.09; p=0.017; R2=2.1%). Adherence to the "Basic Food DP" was not associated with any of the cardio-metabolic risk factors.

Conclusions

The intake of a dietary pattern of processed foods is positively associated with cardio-metabolic health risk markers from preschool age. Long-term follow-up of this cohort will elucidate the impact of early-acquired dietary habits on later health.

P18- HIGH PLANT PROTEIN INTAKE DECREASES ALL-CAUSE MORTALITY IN A MEDITERRANEAN YOUNG COHORT

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Objectives

To evaluate the association between plant protein intake and all-cause mortality and to assess the main sources of plant-protein variability in the SUN Project.

Material and methods

The SUN Project is a prospective, multipurpose, and dynamic Spanish cohort formed of university graduates.

The intake of plant protein was assessed using a previously validated semi-quantitative food-frequency questionnaire (FFQ). Plant protein intake was adjusted for total energy intake using the residuals method separately for men and women. Participants were divided into quartiles according to their plant protein intake.

To assess the association between energy adjusted quartiles of plant protein intake and all-cause mortality, we used Cox regression models using the first quartile as the reference category.

We calculated the protein contribution of each food group to the total plant protein intake and we performed analyses of variability by food groups.

Sensitivity analyses were also conducted to assess the robustness of our findings under different scenarios: using the lst and 99th centiles as limits for total energy intake, excluding subjects with prevalent cancer or cardiovascular disease; excluding subjects following special diets at baseline and excluding deaths in the first 2 years of follow-up.

Results

A total of 19.320 subjects (11.592 women and 7.728 men) were included in the analysis. During 251.363 person-years of follow-up (median follow-up time: 12 years), 654 deaths were identified. The mean age and standard deviation at baseline were 38 ± 12.

The major contributors to plant protein intake were cereals (33.4%), vegetables (32.2%) and legumes (15.3%). Cereals, vegetables, legumes and nuts explained 96% of the between person-variability in plant protein intake.
Participants in the highest quartile of plant protein intake had a 32% lower hazard of all-cause mortality compared with those in the lowest quartile after adjusting for potential confounders (Hazard Ratio (HR): 0.68, 95% CI:0.51-0.92). The fully adjusted model showed a significant dose-response relation between plant protein intake and all-cause mortality (P for trend=0.007). The association between plant protein intake and all-cause mortality persisted after using lst and 99th centiles as limits for total energy intake (HR: 0.68, 95% CI: 0.51-0.90), excluding subjects with prevalent cancer or cardiovascular disease (HR:0.64, 95% CI:0.46-0.90), excluding subjects following special diets at baseline (HR:0.67, 95% CI:0.48-0.92) and excluding deaths in the first 2 years of follow-up (HR: 0.69, 95% CI: 0.51-0.94).

Conclusions

The intake of plant proteins such as proteins from grains, legumes or vegetables reduce all-cause mortality in the context of a Mediterranean population.

P19- METABOLOME BIOMARKERS LINKING DIETARY FIBRE INTAKE WITH CARDIOMETABOLIC EFFECTS: RESULTS FROM THE DANISH DIET, CANCER AND HEALTH-NEXT GENERATIONS MAX STUDY

Authors

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Objectives

Biomarkers associated with dietary fibre intake, as complements to traditional dietary assessment tools, may improve the understanding of its role in human health. Some biomarkers of wholegrain intake have been suggested and evaluated since cereals comprise the main source of dietary fibre in most populations worldwide, however, biomarkers associated with total dietary fibre are lacking. Our main aim was to discover and validate metabolite biomarkers associated with dietary fibre intake and evaluate their performance or applicability to: (i) predict self-reported dietary fibre intake, and (ii) be associated with cardiometabolic risk factors.

Material and methods

We used data and samples from the Danish Diet Cancer and Health Next Generation (DCH-NG) MAX-study, a one-year observational study with evaluations at baseline, six and twelve months (n = 624, 55% female, mean age: 43 years, 1353 observations). Dietary data were collected using web-based 24-hour dietary recalls at the three time-points. Plasma metabolomics analysis was performed with samples obtained at baseline (n = 624), six months (n = 380), and twelve months (n = 349) following a semi-targeted procedure comprising 411 metabolites. Faecal microbiota was analyzed following the 16S rRNA gene amplicon procedure, yielding a final dataset with 150 gut bacteria genera. Dietary fibre intake was categorized by tertiles at each evaluation and sociodemographic characteristics and cardiometabolic risk factors were compared using linear mixed models. The associations between dietary fibre intake and metabolites were assessed by

linear mixed models. Multivariate analyses were conducted using Mixed Graphical Models (MGM). Associations between metabolomics-derived biomarkers and intakes of major and minor food groups, or between metabolomics-based predicted and self-reported fibre intake and cardiometabolic risk factors, were assessed using linear mixed models. Spearman correlations were conducted between self-reported fibre, metabolomics-based predicted fibre, and gut microbiota genera.

Results

No statistically significant differences in sociodemographic and clinical characteristics were observed across tertiles of self-reported dietary fibre intake, except for high-sensitivity C-reactive protein (hsCRP), where participants in the highest tertile were those with the lowest values. Direct associations between fibre intake and plasma concentrations of 2,6-dihydroxybenzoic acid (2,6-DHBA) and indolepropionic acid were observed at the three time-points. Both metabolites showed an intraclass-correlation coefficient (ICC) > 0.50 and were associated with the self-reported intake of wholegrain cereals, and of fruits and vegetables, respectively. Other metabolites associated with dietary fibre intake were linolenoylcarnitine, 2-aminophenol, 3,4-dihydroxybenzoic acid, and proline betaine. Based on the metabolites associated with dietary fibre intake we calculated predicted values of fibre intake using a multivariate, machine-learning algorithm. Metabolomics-based predicted fibre, but not self-reported fibre values, showed negative associations with cardiometabolic risk factors (i.e. hsCRP, systolic and diastolic blood pressure, all FDR-adjusted p-values <0.05). Some microbiota genera Ruminococcaceae UCG-002, UCG-005 and UCG-013, and Eubacterium eligens, were positively correlated only with metabolomics-based predicted fibre, but not with the self-reported one. Bacteroides, a genus involved in polysaccharide metabolism, correlated negatively with both self-reported and metabolomically predicted fibr

Conclusions

The present study positions indolepropionic acid and 2,6-DHBA as metabolite biomarkers linking dietary fibre intake with its cardiometabolic effects in an observational study with three repeated measurements over one year. For the first time, we report associations between self-reported dietary fibre intake and metabolites that were consistent for one year. Furthermore, we showed that a set of these metabolites may summarize information from diet, host and gut microbiota metabolism allowing the identification of individuals with altered levels of cardiometabolic risk factors. As such, we proposed these metabolites as part of a new group of biomarkers that reflect both dietary fibre exposure and, at least to a higher extent than self-reported fibre intake values, its metabolic effects. In conclusion, 2,6-DHBA and indolepropionic acid may represent a new set of biomarkers that reflect diet and host/gut microbiota interactions relevant to the cardiometabolic effects of dietary fibre. Biomarkers reflecting the interactions between specific food components (dietary fibre) and host/gut microbiota may represent a novel measure to guide tailored diets for improved cardiometabolic health.

P20- HEALTH INEQUALITIES: VARIATION IN EXCESS WEIGHT BEFORE AND AFTER THE COVID PANDEMIC IN THE ESQUERRA OF BARCELONA PRIMARY CARE SUBDIVISION

Authors

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Objectives

During the COVID pandemic, excess weight increased globally due to confinement. In the Primary Care Subdivision Esquerra of Barcelona, the prevalences of obesity and overweight vary greatly in different neighborhoods and health centers according to their socioeconomic level.

To correlate excess weight with income level in the different health centers of the Esquerra Primary Care Subdivision.

Evolution of excess weight after the pandemic.

Material and methods

Retrospective study assessing excess weight before and after the COVID pandemic.

BMI data analysis 2019-2023 by the Evaluation Unit, Information Systems and Quality of the Esquerra Primary Care Subdivision.

Urban Heart Barcelona 2020 Report.

Results

Comparison of centers with higher family income: 5A and 5B (192.1) and lower: 3C (40) and 3H (69.3) in the Primary Care Subdivision.

Prevalences of excess weight (2019/2023): 5A 47.3/47.6 5B 48.2/49.4 3C 75.2/73.5 3H 74.5/73.7

Conclusions

The prevalence of excess weight is inversely proportional to the level of income. Post-pandemic, the excess weight reduction is greater in the most depressed center, but which has consolidated a community strategy for this since 2009. Community strategies contribute to the reduction of excess weight at the population level.

P21- ECONOMIC CRISIS, PURCHASING HABITS AND ADHERENCE TO THE MEDITERRANEAN DIET IN OUR ENVIRONMENT

Authors

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Objectives

The economic cost of the weekly grocery shopping has increased over the past year due to the economic crisis.

Our center is located in the La Marina del Prat Vermell neighbourhood of Barcelona, which has the lowest family income index in the city, according to the Urban Heart 2020 report (40.0).

We wish to know if the economic crisis has changed the type of diet of the users to be able to implement improvement strategies in the community.

Assess if the crisis has modified shopping habits.

Assess adherence to the Mediterranean diet.

Material and methods

Prospective study

Weekly shopping and menu record per family unit

Shopping habits questionnaire

Predimed questionnaire on adherence to the Mediterranean diet

Results

10 interviews were conducted. Average age 63.8. Family unit members: 1 (40%), 2 (20%), 3 (30%), 4 (10%). 80% think their diet has been affected by the economic crisis, but 70% do not believe it has worsened. Only 20% have changed the type of

store where they do their weekly shopping, and 100% do look for the best deals. 60% have changed the purchase of some food, mainly fish and olive oil. Adherence to the Mediterranean diet: 30% good adherence (score = or > 9), but in the analysis of the weekly menu questionnaire, only 20% coincided. They met recommendations (referred - real in %) for: olive oil 100%, but only 40% used more than 4 tablespoons a day; vegetables 60% - 20%; fruit 50% - 10%; legumes 20% - 20%; fish 30% - 10%. 50% of family units plan the weekly menu.

Conclusions

There is low adherence to the Mediterranean diet, which worsens when reviewing the weekly menus. When analyzing different foods, respondents report eating more fruit and vegetables than they actually consume and a low consumption of legumes and fish. The economic crisis has affected shopping in that people look for the best deals and have changed the purchase of some foods. Despite being a study with a small number of participants, it helps us plan the community strategy of our center. The low adherence to the Mediterranean diet, lack of planning, and monotony of weekly menus makes us reflect, and we believe it is essential to carry out community activities to improve adherence to the Mediterranean diet, including reinforcing culinary and gastronomic skills.

P22- IS IT POSSIBLE TO FOLLOW A DIET ACCORDING TO THE PATTERNS OF THE MEDITERRANEAN DIET DESPITE THE INCREASE IN GROCERY SHOPPING COSTS?

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Objectives

The economic cost of the weekly grocery shopping has increased over the past year due to the rise in economic inflation. Our center is located in the La Marina del Prat Vermell neighbourhood of Barcelona, which has the lowest family income index in the city, according to the Urban Heart 2020 report (40.0).

We aim to understand the weekly menu of the family unit, its cost, and whether it conforms to the principles of the Mediterranean diet.

Assess if the weekly menu of the users adheres to the patterns of the Mediterranean diet.

Assess the cost of the weekly menu per person per day.

Material and methods

A Prospective study. Weekly shopping and menu record per family unit. Predimed questionnaire on adherence to the Mediterranean diet.

Results

l0 interviews were conducted. Average age 63.8. Family unit members: l (40%), 2 (20%), 3 (30%), 4 (l0%). Adherence to the Mediterranean diet: 30% good adherence (score = or > 9) but in the analysis of the weekly menu questionnaire, only

20% coincided. The average weekly cost per person per day is 7.8275 euros (l2.27 – 5.ll euros). The cheapest menu cost (5.ll euros) corresponded to the unit with the lowest adherence to the Mediterranean diet (score of 4), while that of the family unit with the highest adherence (score of ll) was 5.6 euros per person per day. Most of the weekly menus are very monotonous, both in terms of product use and culinary recipes and techniques.

Conclusions

Despite the economic crisis, it is possible to follow a varied menu according to the pattern of the Mediterranean diet without exceeding costs.

There is low adherence to the Mediterranean diet, resulting in monotonous menus.

It is essential to carry out community activities focused on understanding the principles of the Mediterranean diet, including gastronomy, culinary techniques, menu planning, and knowledge of food sustainability to improve the population's diet.

It would be necessary to carry out more similar studies to increase their reliability and adapt to the needs of the entire population.

P23- ADHERENCE TO A MEDITERRANEAN DIETARY PATTERN IMPROVES HEALTH IN A HOLISTIC WAY

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Objectives

To assess how adopting a dietary pattern based on the Mediterranean diet can comprehensively improve the eating habits of overweight or obese adults.

Material and methods

An epidemiological study conducted on adults aged between 23-70 years, modifying their diet to a holistically healthier one, without strict dietary restrictions but with limitations, and based on the dietary pattern of the Mediterranean diet. The Mediterranean diet adherence questionnaire was administered at the beginning and after three months of the study, along with anthropometric measurements including body mass index, body fat percentage, waist circumference, and hip circumference.

Results

The mean age of the population is 40 years with a body mass index of 28 kg/m2 and a mean weight of 83 kg. There is an improvement in ll out of l4 points on the Mediterranean diet adherence questionnaire. Conversely, there is a decrease in one point (wine consumption). Additionally, decreased by 6.3% and 6%, body mass index.

Conclusions

Following a personalized dietary pattern, without severe dietary restrictions, based on the dietary pattern of the Mediterranean diet allows for greater adherence and improvement in anthropometric parameters.

P24- ADHERENCE TO THE MEDITERRANEAN DIET AND RELATIONSHIP WITH BODY COMPOSITION IN PREADOLESCENTS IN THE METROPOLITAN AREA OF BARCELONA

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Objectives

To evaluate the relationship between the level of adherence to the Mediterranean diet and body composition in preadolescents in the PEANUTY study.

Material and methods

Randomized controlled study of parallel intervention in several schools in the metropolitan area of Barcelona to 83 preadolescents aged 10-12 years. In this study, anthropometric measurements (weight, height, waist circumference and body fat, Body Mass Index) and the KIDMED questionnaire were performed to assess adherence to the Mediterranean diet. They were separated by quartiles of adherence levels to assess differences in body fat, weight, muscle mass and waist circumference.

Results

The mean score of the KIDMED questionnaire was 7.64, showing intermediate levels of adherence. The 52.56% of the participants have an optimal Mediterranean adherence, while the rest have an intermediate adherence to the diet. The mean Body Mass Index is 17.79 based on the percentiles of the WHO age range tables, which are in the 50th percentile. The mean score of waist circumference is 67.08 and body fat is 19.20%. There were no significant differences between genders or schools.

Conclusions

The means between the intermediate and optimal groups are not very variable, with the intermediate mean always being higher, and with a great variability in the sample in the same group. The highest values (in weight, waist circumference,

muscle mass, and body fat) are always shown in the intermediate adherence group, which also has a higher BMI, according to the WHO percentiles. It should be evaluated whether this association will change at the end of the study, taking into account that they are in the growth stage.

P25- COST AND AFFORDABILITY OF HEALTHY AND SUSTAINABLE DIETS IN SPAIN

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Objectives

We present an estimation of the minimum cost of a healthy and sustainable diet in Spain and its affordability when compared with the average income and social assistance benefits.

Material and methods

The cost of the diet was calculated using an improved through an optimized version of the reference budgets methodology, which, as a novelty, included as a departing point the Spanish food based dietary guidelines (FBDG) and the EFSA Dietary Reference Values (DRV). The EAT Lancet recommendations for a healthy and sustainable diet were considered in the sustainable versions of the basket. The pricing of the baskets was conducted in June 2022, in a widely spread supermarket with average costs 10% above the cheapest one, according to the Organization of Consumers and Users (OCU). This procedure follows the guideline for cross-country comparability developed in the H2020 EUSOCIALCIT project.

Results

We present results for seven types of individuals based on sex and age covering the spectrum between 2,5 and >65 years-old, and for four types of households. The results obtained show that the monthly cost of a healthy diet ranges from 81€ for 2,5-year-old children to 208€ for adolescent boys. For the four-members household, that figure increases to 762€. Including criteria of sustainability reduces the cost to 5-12%. The cost of the food basket for an adult male represents between 12 and 15% of the average income in Spain, and around 30% of the social assistance benefits.

Conclusions

Overall, this work provides an overview of the cost and affordability of three food baskets based on healthy and sustainable diets in Spain. Affordability should be evaluated in light of other necessary costs.

P26- SMALL CHANGES FOR BETTER EATING: KEY TIPS IN PICTURES

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Objectives

To improve the understanding of healthy/mediterranean food messages by developing resources adapted from the guide Small Changes for Better Eating, as a tool for professionals working with people with reading difficulties.

Material and methods

Discussion group (30 participants from third sector organisations and primary health care) to reach a consensus, based on the guide, on messages about healthy eating (easy to prepare and affordable), shopping and food safety, in order to develop resources adapted to people with reading comprehension difficulties. Pilot study and dissemination.

Results

Five image-based infographics were designed: "Proposed changes, Basic healthy shopping, Healthy plate, Hygienic food handling and Healthy recipes", and a user guide for professionals. They were piloted in the Drassanes primary care centre (Barcelona) by 26 professionals. The suggested changes were analysed and implemented. Dissemination: webinar with 837 attendees, publication on the web and dissemination among all professionals.

Conclusions

Based on the Small Changes for Better Eating guide, and through transversal work, a response was provided to a need raised by professionals from third sector entities and primary care, to have material aimed at socio-economically vulnerable population and/or with reading comprehension difficulties.

P27- EVALUATION OF THE ENVIRONMENTAL IMPACT OF SCHOOL MENUS IN CATALONIA, BEFORE 2017 AND AFTER 2020

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Objectives

To compare the environmental impact of school menu plans, associated with the change in recommendations from the Healthy Eating in School Stage guidelines of 2012 and 2020, based on the Mediterranean Diet pattern.

Material and methods

An analysis of menu plans before 2017 and after 2020 from 7 schools in Catalonia is conducted. Protein-rich dishes with the greatest environmental impact (white meat, pork and beef, fish, seafood, and eggs) and legumes are analyzed based on four-week menu plans. Standard portion sizes for the population aged 7 to 12 years, as published in the 2012 guidelines, are used for menus prior to 2017, and those from the 2020 guidelines are used for menus after 2020. The "Value of Foods" calculator is used for three indicators: CO_2 generation, water usage, and land occupation associated with food production.

Results

In menu plans after 2020, a 40% reduction in carbon footprint, a 36% reduction in water footprint, and a 38% reduction in land occupation are observed.

Conclusions

Recommendations to reduce the quantity and frequency of animal-derived foods, especially red meats, in school menus have contributed to reducing the environmental impact of current menu plans in line with the Mediterranean Diet recommendations.

P28- ADOLESCENT STUDENTS IN THE HEALTH AREA HAVE A LOW ADHERENCE TO THE MEDITERRANEAN DIET.

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Objectives

To assess adherence to the Mediterranean diet in students who are attending on-site training courses in the healthcare and socio-healthcare fields and who act as health promotion agents in a public centre in Ibiza.

Material and methods

Descriptive analysis in which, after receiving holistic training on healthy eating and comprehensive notions of nutrition, adherence to the Mediterranean diet was determined in students of health and socio-health training cycles at the educational centre by means of a self-administered questionnaire. The socio-health students had an average age of 17 years, while the health students had an average age of 40 years.

Results

In adolescents only 37% have a good adherence to the Mediterranean diet compared to 60% in adults. However, adolescents consume fewer soft drinks or butter compared to adults. On the other hand, they consume more legumes and olive oil. 88% in adolescents versus 95% of adults have holistically modified their eating habits.

Conclusions

Adolescents do not have a good adherence to the Mediterranean diet, in a city where there is a great variety of fresh and seasonal products, despite the fact that they are training as future socio-health professionals.

P29- PREFERENCE FOR THE CONSUMPTION OF LOCAL FOODS BY THE POPULATION OF A SPANISH ISLAND

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Objectives
To assess the consumption of local and organic foods among the adult population on one of the islands of Spain, where the high price of these foods may be a hindrance to consumption.

Material and methods
Análisis descriptivo del consumo de alimentos locales y ecológicos por parte de la población adulta de la isla. Se determinó a través de un cuestionario de frecuencia alimentaria, así como de un cuestionario socioeconómico, el tipo de producto consumido, así como de la periodicidad del consumo y la obtención de dichos alimentos.

Results
Most respondents are aged 31-45 years, with 73% having university education. The most consumed food is vegetables (86%), followed by fish (34%). Fifty-three percent receive local food for free from a family member or have a small garden. Fifty-two percent choose local foods for their quality, and 34% for their excellent taste. Seventy-eight percent find it easy to access local foods, although they have to travel to get them. However, only 21% consume local foods daily.

Conclusions
The intake of local foods is low despite accessibility to such foods.

P30- COMPARATIVE ANALYSIS OF TOTAL POLYPHENOLS IN HERBAL AND TEA INFUSIONS: AS AN INTEGRAL PART OF THE MEDITERRANEAN DIET FRAMEWORK

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Objectives

This research aims to discern tea and herb infusion types with different polyphenolic contents to explore their potential integration within the framework of the Mediterranean diet for their health benefits, thereby furnishing empirical support for the inclusion of tea and herb infusions in dietary practices.

Material and methods

The study measured the total polyphenols content in 30 tea and herb infusions using the well-known Folin-Ciocalteu technique. The bag of herb or tea infusions was systematically prepared by steeping in 200 mL of hot water, then cooling and diluting, replicating common consumption methods. The quantification procedure utilized a gallic acid calibration curve, with absorbance measurements conducted at 765 nm utilizing UV-VIS spectrophotometry to determine the polyphenol concentration. Calibration curves were created with gallic acid standard solutions to precisely measure the polyphenolic content in tea and herb infusions.

Results

After quantification of the 30 tea and herb infusions, samples were classified into three categories based on total polyphenols concentration: low (0-500 mg/L), moderate (500-700 mg/L), and high (700-1000 mg/L). Twenty-one out of 30 samples showed low total polyphenol concentration including Tilla and “Dormir” infusions. Otherwise, green tea varieties showed very high levels of polyphenols, exceeding 700 mg/L, with the most concentrated infusion was "TE Cha Verde Hortla" containing over 939.655 mg/L.

Conclusions

This research shows comprehensive analysis of polyphenolic content in commonly consumed herb and tea infusions with green tea infusions exhibiting the highest polyphenolic content. The consumption of tea and herb infusions are part of common dietary patterns such as Mediterranean diet or other dietary patterns. The different polyphenolic content of these infusions could serve to understand the different consumption in dietary patterns to promote health and prevent disease in a balanced diet.

P31- MHEALTH BASED BEHAVIOURAL TREATMENT FOR LIFESTYLE MODIFICATION IN TYPE 2 DIABETES PARTICIPANTS

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Objectives

This secondary analysis aims to assess whether using Greenhabit (mHealth) Behavioural Treatment can improve nutritional, dietary and Quality-of-Life (QoL) parameters in T2D individuals compared to usual care.

Material and methods

120 T2D individuals participated in this randomized controlled trial with two parallel groups: Greenhabit group (GhApp), that should use the application and received healthy habits recommendations based on Mediterranean diet (MeDiet); or Control group (Control), that followed standard recommendations. At baseline and after 12-weeks intervention, to assess the dietary intake a trained dietitian collected both 151-items food frequency questionnaire (FFQ) and 14-points MeDiet adherence score; and a QoL questionnaire was self-reported through the app.

Results

At 12-weeks, GhApp significantly increased consumption of VOO, nuts, legumes, and total fat and MUFA (those last two were also higher in comparison between groups). By contrast, Controls significantly reduced their vegetable intake and

increased refined cereals, red wine, and pastries, cakes, or sweets consumption. Adherence score increased in GhApp by 0.37 points (−0.15 to 0.89), without achieving significance. For QoL: Energy, Positivity, Happiness, Work-life balance, and Social Engagement increased by 23%, 18%, 13%, 10% and 9% respectively.

Conclusions

A 12-week intervention with Greenhabit (mHealth) Behavioral Treatment had beneficial effects on nutritional, dietary and self-reported QoL parameters in T2D individuals.

P32- DOES A MULTIDISCIPLINARY PREHABILITATION PROGRAM IMPROVE THE MEDITERRANEAN DIET ADHERENCE IN PATIENTS UNDERGOING RESECTION OF COLON CANCER? PRELIMINARY RESULTS FROM THE ONCOFIT STUDY

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Objectives

Globally, colon cancer is the fifth most diagnosed tumour. Surgical resection, although being currently considered the elective treatment, is not exempt from numerous postoperative complications that may be increased by unhealthy dietary patterns. Adhering to a Mediterranean diet pattern could be an alternative for improving patient's prognosis.

This study aimed to determine the effect of a 4-week multidisciplinary prehabilitation program on the Mediterranean Diet pattern in patients undergoing resection of colon cancer.

Material and methods

This preliminary analysis of the ONCOFIT randomized controlled trial included total of 42 participants (n=23 intervention) and (n=19 control). The multidisciplinary intervention included: (i) supervised exercise training, (ii) dietary behavior changes, and (iii) psychological support. The adherence to the Mediterranean Diet pattern was assessed by a previously validated questionnaire.

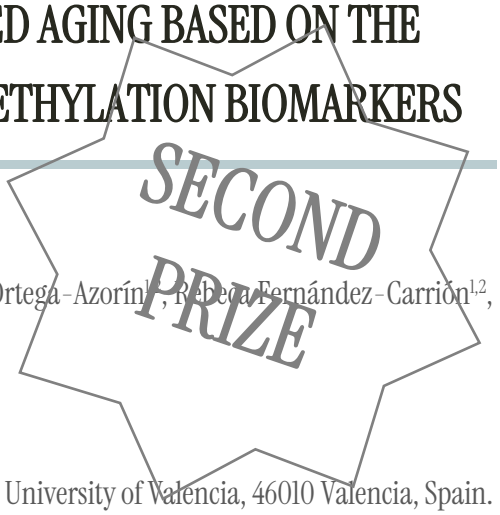
Results

The intervention did not yield statistically significant differences between groups in Mediterranean Diet adherence (usual care = 0.63 ± 1.54 vs. intervention = 0.48 ± 2.29; p = 0.805).

Conclusions

In conclusion, a 4-week multidisciplinary prehabilitation seems not sufficient for enhancing the adherence to the Mediterranean Diet in patients undergoing colon cancer resection.

P33- STRONG INVERSE ASSOCIATION BETWEEN HIGHER ADHERENCE TO THE MEDITERRANEAN DIET AND ACCELERATED AGING BASED ON THE FIRST AND SECOND-GENERATION OF DNA-METHYLATION BIOMARKERS



Authors

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Objectives

Various DNA-methylation (DNAm) biomarkers have been created to measure accelerated aging. An accelerated epigenetic age refers to a situation where a person's DNAm age (a proxy for biological age) exceeds their chronological age. The second-generation epigenetic clocks were trained to reflect aging-related physiological states, while the first-generation clocks were designed to estimate chronological age. Few studies have analyzed the influence of Mediterranean diet (MedDiet) on these biomarkers. Our objective was to study the association between the adherence to MedDiet and biological age acceleration using first and second-generation DNAm biomarkers.

Material and methods

DNA-methylation in blood was analyzed with the Infinium HumanMethylationEPIC (850 K) array (Illumina) in 414 participants from the PREDIMED-Plus-Valencia-Study (aged 55-75y). Following quality control, age acceleration clocks based on first-generation (Hannum) and second-generation (GrimAge) were computed using established machine learning methods. Adherence to MedDiet was obtained from the validated MedDiet-17-item score. Multivariable adjusted models were built

Results

After controlling for sex, age, diabetes, BMI, smoking, physical activity, and education, greater adherence to MedDiet was found to be inversely associated with biological age as measured by both the Hannum (B=-0.28+/-0.09 year-reduction per 1-point-increase; P=0.002) and GrimAge (B=-0.27+/-0.07 y) clocks.

Conclusions

MedDiet adherence is associated with reduced age acceleration

P34- URINARY METABOLOME STUDY IN ADULT PATIENTS WITH PHENYLKETONURIA

Authors

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Objectives

The aim of this work is to elucitade and analyze differences in the urinary metabolome between adult patients with phenylketonuria and control subjects.

Material and methods

This is an observational case-control study including 61 PKU patients and 34 controls (Hospital Clinic of Barcelona). Urine samples were analysed using an Ion Mobility QTOF LC/MS.

Results

Hierarchical Clustering Heatmaps showed elevated 278 mass spectrometry signals, including phenylalanine, in PKU patients. Tryptophan and other 716 signals exhibited lower levels compared to controls.

Conclusions

Preliminary findings reveal differences in the urinary metabolome between patients and controls. Further analysis could unveil potential biomarkers for phenylketonuria enhancing their quality of life.

P35- THE MEDITERRANEAN DIET IS ASSOCIATED WITH GREATER BONE HEALTH IN CHILDREN WITH CELIAC DISEASE

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Objectives

There is a relationship between Celiac Disease and alterations in bone metabolism, which is of greater importance during the growth stage, as children with celiac disease have a higher risk of lower bone mass deposition. Following a gluten-free diet may not always be sufficient to ensure adequate bone status (Nestares et al., 2021), making it essential to monitor the quality of this diet. The benefits of the Mediterranean Diet on bone health and the risk of fractures have been described (Jennings et al., 2020).

The aim of this study was to explore the role of adherence to the Mediterranean Diet on the bone health of children with celiac disease following a gluten-free diet.

Material and methods

An observational, analytical cohort study was conducted on subjects (n=55) in pediatric age diagnosed with Celiac Disease and who had been following a gluten-free diet for at least six months. Adherence to the Mediterranean Diet was assessed using the KIDMED questionnaire, and bone composition was assessed using DXA. A linear regression analysis was performed to evaluate the association between adherence to the Mediterranean Diet and bone mineral density in children.

Results

The regression analysis to assess the association between adherence to the Mediterranean Diet and bone mineral composition showed that higher adherence to this diet was associated with a higher bone Z-Score (p=0.020).

Conclusions

High adherence to the Mediterranean dietary pattern in the gluten-free diet could be a useful tool in the nutritional management of children with celiac disease to help improve their bone health.

P36- EFFECTS OF LOW-MODERATE WINE CONSUMPTION ON CARDIOMETABOLIC HEALTH: A REVIEW OF THE CLINICAL EVIDENCE

Authors

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Objectives

To summarize the findings of randomized controlled trials (RCT) on the effect of low-moderate wine consumption on cardiometabolic health.

Material and methods

A search of PubMed, Web of Science and Scopus was conducted for meta-analysis (MA) and systematic reviews (SR), including only RCT, published until 2022. Research terms included "wine" and headings related to blood pressure (BP), glucose and lipid metabolism and body composition.

Results

After removing duplicates, 55 relevant SR and MA were identified, 6 MA and 2 SR met criteria. 2 of 4 MA found that wine significantly increased the high-density lipoprotein cholesterol level, 1 of 3 MA and 1 of 2 MA found a beneficial effect on

triglycerides and systolic BP, respectively, while others had non-significant results. None of the studies found significant detrimental or improvement changes on low-density lipoprotein cholesterol levels (n=4 MA), body composition (weight, BMI, n=2 MA, both), glucose metabolism (fasting glucose, HbAlc, n=2 MA, both) outcomes and C-reactive protein (n=2 MA) levels. While mixed findings were observed for total cholesterol and diastolic BP.

Conclusions

Mixed results were found, probably due to the large heterogeneity of RCTs. The most consistent findings indicate no significant changes in body composition or glucose metabolism. Thus, meticulously planned clinical trials are advised for more comprehensive and precise findings.

P37- HIGH ADHERENCE TO THE MEDITERRANEAN DIET IS ASSOCIATED WITH LESS SLEEP PATTERN VARIABILITY AND A MORE MORNING CHRONOTYPE: OBJECTIVE MEASURES BY ACTIGRAPHY

Authors

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Objectives

Sleep variability leads to circadian rhythm disturbance and may increase cardiometabolic risk. Diet could have a direct influence on this pattern. The aim was to analyse adherence to the Mediterranean diet (MDD) with the sleep pattern assessed objectively/subjectively.

Material and methods

Sleep variability leads to circadian rhythm disturbance and may increase cardiometabolic risk. Diet could have a direct influence on this pattern. The aim was to analyse adherence to the Mediterranean diet (MDD) with the sleep pattern assessed objectively/subjectively.

Results

Statistical significance was found between WMD and weekly ($p=0.018$) and weekend ($p<0.001$) wake-up times, with the earlier wake-up times for those with high WMD (≥8pts). In actigraphy, these results were not seen ($p=0.180$). High WMD scored higher on the chronotype questionnaire associated with morningness ($p=0.016$). Regarding sleep variability,

higher WMD was associated with lower variability in midpoint sleep (p=0.069) and sleep duration (p=0.0l6). However, this group obtained higher sleep fragmentation(p=0.049).

Conclusions

High ADM is associated with a healthier sleep pattern.

P38- ANALYSIS OF ADHERENCE TO THE MEDITERRANEAN DIET IN THE CATALAN POPULATION RECEIVING FOOD ASSISTANCE CARDS

Authors

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Objectives

To study the degree of adherence to the Mediterranean Diet pattern among households in Catalonia benefiting from food purchase cards distributed by the Red Cross, between January 2016 and June 2022.

Material and methods

Food purchases in Catalan households between 2016 and 2022 were analyzed using reloadable cards distributed by the Red Cross for purchases at Bon Àrea supermarkets. Monthly receipts were recorded, dividing purchases among household members to estimate individual food availability. Sociodemographic data associated with each card include gender, age, nationality, employment status, and educational level obtained from IMAP, Red Cross's internal program. Adherence was measured using a version of the Mediterranean Adequacy Index (MAI) by Alberti-Fidanza. This is calculated by summing the energy percentages of typical Mediterranean Diet food groups (olive oil, cereals, etc.) divided by the sum of energy percentages of less typical ones (sugar, meat, etc.). A higher MAI indicates greater adherence to this diet. All data were processed using the statistical software Statas.

Results

18,449 cards were analyzed for purchases at 450 establishments in Catalonia, totaling 4,742,146 products purchased and recorded monthly. The average MAI score obtained from purchases made by Red Cross users during this period was 0.36. In the yearly analysis, adherence to the Mediterranean Diet was higher in 2016, with an average score of 0.78, compared to 2019, where it was 0.22. Additionally, when examining adherence by Catalan provinces, Girona stood out with the highest score of 0.24. Both employment characteristics and world region of birth and gender are significantly associated with the MAI index. Employed individuals obtained a higher average score (0.94) (Prob>F 0.0043). Similarly, concerning the world region where the user was born, countries with higher scores were Southeast Asia (21.06), Central/Western Asia

(3.46), and the Maghreb (1.20) (Prob>F 0.0000). Finally, the average index score for men is higher (0.52) compared to women (0.30) (Pr(T > t) = 0.00ll). Notably, there is higher vegetable consumption in Southeast Asian (69.86%), South Asian (50.44%), and Maghreb (49.97%) countries, contrasting with a greater tendency towards processed food consumption in Europe, especially Spain (average NOVA index: 2.79). This study has a limitation in considering only foods acquired with these aids, not the total household diet.

Conclusions

Users born in Southeast Asia, South Asia, and the Maghreb show higher consumption of vegetable foods, and Asian countries also stand out for lower purchases of processed products, coinciding with greater adherence to the Mediterranean Diet. It is important to highlight that observed in individuals born in Spain, a Mediterranean region, there is a high consumption of processed products and low consumption of vegetables, which is distancing them from the pattern of the Mediterranean Diet, one of the healthiest in the world, and this is deteriorating the quality of their diet..

P39- DO PEOPLE AT RISK OF SOCIAL EXCLUSION HAVE A GOOD ADHERENCE TO THE MEDITERRANEAN DIET?

Authors

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Objectives

The aim of this study was to evaluate adherence to the Mediterranean Diet among beneficiaries assisted by the Spanish Red Cross in Catalonia by analyzing food purchases made with preloaded cards distributed between 2016 and 2022.

Material and methods

Adherence to the Mediterranean Diet was analyzed based on monthly food purchases made by beneficiaries of the Spanish Red Cross in Catalonia using preloaded cards between January 2016 and June 2022. Purchased foods were classified into food categories (FAO) to facilitate analysis. Purchase receipt information and nutritional composition of foods were provided by the food distribution company BonÀrea. Personal data of beneficiaries such as gender, age, nationality, employment status, and education level were extracted from IMAP, the Red Cross's internal program. Information regarding the beneficiaries' participation in other Red Cross projects was also available. The Mediterranean Diet Quality Index (M-DQI) was used to evaluate adherence to the Mediterranean Diet. This index assigns scores of 0, 1, or 2 to the daily consumption of seven food/nutrient items, resulting in a score ranging from 0 (maximum adherence to the Mediterranean Diet) to 14 (minimum adherence to the Mediterranean Diet). All data were processed using the Stata statistical software.

Results

Purchases made with 18,449 cards were analyzed, resulting in a total of 4,742,146 foods purchased at 450 establishments across Catalonia. The average adherence to the Mediterranean Diet among users over these seven years was 8.07, with the best adherence observed in 2016 (7.88) and the worst in 2020 (8.16). Analyzing the data according to different variables, it was observed that men had higher adherence to the Mediterranean Diet (7.76) than women (8.17). Additionally, users born in the Southeast Asian region showed the highest adherence (4.2), followed by those from the Maghreb region (6.38).

In contrast, the Spanish population had an adherence of 8.41. Regarding results by province, Girona had a score of 7.97, showing the highest adherence to the Mediterranean Diet. The results regarding the percentage of vegetable foods and the classification of ultra-processed foods (NOVA, from 0 little processed to 4 ultra-processed) stand out, with users in Southeast Asia being the ones who have bought the most vegetables (71.14%) and the least ultra-processed foods (1 .61), and those born in the Maghreb with 55.75% vegetables and a score of 2.12 in the NOVA score. Finally, it was observed that there was a trend towards improved adherence with higher economic assistance received by the user.

Conclusions

The adherence to the Mediterranean Diet of users from Southeast Asia stands out positively, with them also making the best purchases. Those from the Maghreb also have good adherence to the Mediterranean Diet; however, their consumption of processed foods is high. In contrast, users born in Spain have relatively low adherence to the Mediterranean Diet, with low vegetable consumption and high consumption of ultra-processed foods, deviating from typical patterns of the Mediterranean Diet. It was also observed that users who received more financial assistance during these years made healthier purchases than those who received a lower amount of economic assistance. Additionally, adherence fluctuated over the years, although the trend was a decrease in adherence to the Mediterranean Diet. These results suggest the importance of promoting the Mediterranean Diet, especially among socially excluded individuals, as an educational strategy to improve population dietary habits and consequently their health. Finally, it should be noted that a limitation of the study was that the analyzed purchases may not represent the total food consumed in the households of the beneficiaries, as only purchases made with assistance received were analyzed, which may not be their only source of food.


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