

Plenary Lectures

**PL-001** **Capacity Building in Nutrition: leadership from within**

Plenary

*Dr Ted Baartmans**The Leadership Group, Bloemendaal, The Netherlands.*

Abstract: In December 2013 Rose Ann Dimairai-Ghalili et al, published an article: "Capacity building in nutrition science: revisiting the curricula for medical professionals". They reviewed the current nutrition education curricula for students in U.S. medical schools, and schools of other health professions, such as nursing and oral health. They found evidence as these curricula do not provide enough opportunity to gain knowledge of the interactions among micro- and macronutrients, their role in maintaining optimal body functions, factors that interfere with these interactions, or, importantly, how to integrate this knowledge into medical practice. There is a need to better prepare healthcare professionals for identifying nutrition risk and managing hospitalized patients, especially those with chronic conditions, using an inter-professional, team-based approach.

Dr Ted Baartmans will take the opportunity to get to the origin of the term "capacity building" since it was introduced in the United Nations Programs. Capacity building takes place on an individual level, an institutional level and the societal level. In his presentation Ted will focus on the individual level. What kind of leadership does this term or approach requires for Iran? How does it connect to the study of Dimairai-Ghalili? How does it refer to encourage so called constructive dissent?

Studying 'Capacity Building in Nutrition' unfolds the blind spots of leadership within the sector. Let's illuminate these spots in this international gathering to understand, accept and respect our leadership responsibilities and behavior for the greater good.

PL-002 **Advances in Public Health Nutrition**

Plenary

*Prof Catherine Geissler**Professor Emerita, Department of Nutrition and Dietetics, King's College London; President, The Nutrition Society of the UK and Ireland; Secretary General, International Union of Nutritional Sciences.*

Abstract: Although great strides have been made worldwide in the science of nutrition there remain many problems of under-nutrition and increasingly of obesity and related chronic diseases. However much has been learned over the past few decades about what works in the translation of science to practical policies and programmes to prevent and alleviate problems of nutrition. There is also increasing coordination of agencies and donors to support this effort. The need for capacity building in Public Health Nutrition has been stressed for many years by a range of academics, national and international organisations. The main emphasis in capacity building has been on the nutrition and health workforce but the causes of malnutrition are multifactorial and require collaboration across sectors in their solution. This means that Public Health Nutrition capacity building has to go beyond the immediate health workforce to policy makers in other sectors. There are many obstacles to the application of scientific knowledge apart from training and education, including lack of resources, unqualified advisers, media misinterpretations, public re-

sistance to directives and conflicts of interest. These will be explored briefly in the presentation.

PL-003 **Eating fish for two: A review of data from the Seychelles Child Development Study**

Plenary

*JJ Strain¹, AJ Yeates¹, MS Mulhern¹, EM McSorley¹, E van Winjgaarden², CF Shamlaye³, PW Davidson² and GJ Myers²**¹Northern Ireland Centre for Food and Health (NICHE), Ulster University, Coleraine, Northern Ireland, UK**²School of Medicine and Dentistry, University of Rochester, New York, United States**³Child Development Centre, Ministry of Health, Mahé, Republic of Seychelles*

Corresponding author: Professor JJ Strain, Northern Ireland Centre for Food and Health (NICHE), School of Biomedical Sciences, Ulster University, Cromore Road, Coleraine, Northern Ireland, BT52 1SA, UK. Tel: +44 (0)28 7012 4795 Fax: +44 (0)28 7012 4965 E-mail: jj.strain@ulster.ac.uk

Abstract: Fish makes a valuable contribution to nutrient intakes worldwide. Populations with high fish consumption also have a greater exposure to methylmercury (MeHg), a known neurotoxicant which is present in varying amounts in all fish. Research is continuing to investigate the dose of MeHg exposure which might, during pregnancy, result in impaired child development. Current UK and US guidance on fish consumption for pregnant women are more focused on the avoidance of risk rather than promotion of the benefits associated with eating fish. This review describes current guidance and policy on maternal fish consumption and reviews data from the on-going Seychelles Child Development Study (SCDS). Overall, the SCDS has consistently shown no adverse associations of prenatal MeHg exposure from high maternal fish consumption (up to 12 fish meals per week) on child developmental outcomes. Instead, findings suggest that nutrients provided by fish, specifically long chain polyunsaturated fatty acids (PUFA), may offer a beneficial effect on developmental outcomes and may modify the toxic effects of MeHg. Recent expert consultations have concluded that the health benefits of fish consumption outweigh the risks posed by MeHg exposure and have argued the need for improved education and guidance to highlight the importance of encouraging fish consumption during pregnancy for optimal child development.

Keywords: methylmercury, fish consumption, child development, risks and benefits, LC-PUFA, Seychelles Child Development Study

PL-004 **Intestine, systemic inflammation and cardiovascular disorders**

Plenary

*Prof Mohammad Navab**David Geffen School of Medicine at UCLA, Los Angeles, CA, USA P*

Abstract: Inflammation contributes to different degrees to most if not all pathological conditions. The GI system including small intestine plays a major role in systemic inflammation and thus cardiovascular wellbeing. We have reported that anti-inflammatory peptides that do not get

absorb significantly and are not present in high concentrations in circulation reduce inflammation due to high fat-high cholesterol diet (Western Diet) in preclinical studies. This was paralleled by reduction in atherosclerotic lesion formation. Therefore the site of action of the peptides is likely the intestine. We have observed that small intestine appears to be a major site for this effect. One mechanism of action seems to be the action of the lysophosphatidic acid, a powerful growth promoter that has an extremely high affinity for toxic oxidized fatty acids and phospholipids. Reduction in these toxic oxidized lipids was shown to correlate with liver SAA and circulation SAA. The fascinating phenomenon for which a hypothesis is gaining strength is the effect on the intestinal microbiota. The high fat-high cholesterol diet (Western Diet) results in changes in the micro flora of the small intestine. It would be important to show the effect of the anti-inflammatory peptides on reversal of the Western diet, on systemic inflammation and on cardiovascular physiology and pathology.

PL-005

Plenary

Obesity and Non-Communicable Diseases: Role of Nutrition and Physical Activity

Prof Mohsen Meydani, DVM, PhD, FASN, FAAA. Vascular Biology Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University. Boston, MA, USA.

Abstract:Non-communicable diseases (NCDs) are responsible for more than 80% of all deaths in the United States and about 75% of all deaths in developing countries, which exceeds all communicable, maternal, prenatal and nutrition-related deaths combined. NCDs are chronic conditions associated with commonly shared modifiable risk factors including tobacco use, unhealthy diets, physical inactivity, and drinking alcohol. These risk factors lead to metabolic conditions such as high blood pressure, high blood cholesterol, overweight and obesity, all of which are linked to NCDs. NCDs are emerging as a global threat. Among NCDs, cardiovascular diseases (CVD) are the leading cause of death (48% of total NCDs), followed by cancer (17% of total NCDs), followed by diabetes and respiratory disease such as COPD and asthma. In the U.S. and in the Islamic Republic of Iran with high to medium incomes, NCD deaths account for 88% and 76% of total deaths, respectively, whereas in Zambia and Zimbabwe, countries with lower to middle incomes, NCD deaths are 23% and 31%, respectively, while communicable diseases are the major killers. Overweight and obesity, which are intimately associated with the major forms of NCDs, have reached to global epidemic proportions such that over the past 40 years, they have increased from 25% to nearly 70% of the U.S. population. Overweight and obesity are associated with several co-morbidities including hypertension, type II diabetes, dyslipidemia, breathing disorders, certain cancers and major CVDs. Obesity has a major impact on CVD including heart failure, coronary heart disease, atrial fibrillation and low survival rates. A low-grade, chronic inflammation is present in obese patients and an increased concentration of both CRP, an inflammatory marker, and leptin, a hormone produced by adipocytes, can together be good predictors of increased risk of major cardiovascular events. Along with increasing low-grade systemic inflammation, obesity increases insulin resistance, hypertension, dyslipidemia, and endothelial dysfunction.

The main underlying mechanisms that link obesity to cancer development and progression is the presence of low grade chronic systemic inflammation, alteration in the levels of adipocyte-derived factors such as adiponectin, increased insulin resistance, IGF-1 system, and production of endogenous sex hormones. In addition to hyperglycemia, hypertension, dyslipidemia, physical inactivity, overweight and obesity are the major risk factors for developing type II diabetes. The economic impact of NCDs in developed and developing countries is enormous. While selecting a healthy diet and including at least 150 minutes physical activity per week are recognized to be effective means to improve health and prevent or delay onset of NCDs at individual levels, implementing policies, strategies and action plans nationally to integrate shared risk factors of several NCDs is needed to reduce harmful use of tobacco and alcohol, to promote physical activity and healthy diet through national guidelines, protocols and standards to manage major NCDs in a population. Supported by USDA contract# 58-1950-0-014.

PL-006

Plenary

Issues with Dietary Assessment for Diverse Populations

Prof Katherine L Tucker, PhD, Professor of Nutritional Epidemiology, University of Massachusetts Lowell, Lowell, MA, USA, 01854

Abstract:The world is currently experiencing an explosion of chronic disease due to greater access to total energy intake, but with poor nutrient adequacy. Understanding this nutrition transition requires quantification of dietary intake. Traditional methods of dietary intake include self-reported diet records, interviewer-administered 24 hour recalls, and longer term food frequency questionnaires. Diet records require educated participants and even then, are known to lead to underreporting of usual intake due to under-eating on days recorded. 24 hour recalls with trained interviewers are excellent for population based surveys of intake and have the advantage of being open ended to allow for individual variation in recipes. However, while valid for population means, any single day is likely to misrepresent the usual intake of individuals, due to large intra-individual variation in intake patterns. This limits the utility of this method for studies of association with body weight or chronic disease outcomes, generally biasing relationships toward the null. With at least two 24-hour recalls per person, calculations for intra/inter individual variability can be used to correct the magnitude of likely associations. Still, these cannot fully correct for nutrients with very high variability, like vitamin A, nor place individuals in correct intake categories for more complex analyses. Food frequency questionnaires (FFQ) have the advantage of capturing usual intake in a single administration, which is important as usual long-term intake is what matters in relation to chronic disease. However, FFQ are limited by the food list, which is often based on the majority population and, therefore, may underestimate intake in sub-populations with differing dietary patterns. Further, they depend on aggregated food groups to limit length, which reduces the ability to detect important inter-individual variation. Because most of these errors reduce our ability to assess true correlations with outcomes, the importance of dietary intake choices on health outcomes has been underestimated. Better dietary assessment methods



are critically needed to improve our understanding of diet and health in diverse populations, so that appropriate policies and interventions may be implemented to reverse the current trend toward premature death from diabetes, heart disease and other chronic conditions. This is particularly important in emerging economies, which are seeing increasing risk of obesity and diet related chronic disease, with insufficient infrastructure to deal with this crisis.

PL-007

Plenary

Challenges of Changing Nutrition behavior to prevent communicable disease: individual-based vs. social-based interventions

Drs Nasrin Omidvar¹ & Nastaran Keshavarz²

¹Department of Community Nutrition, School of Nutrition Sciences and Food Technology

ShahidBeheshti University of Medical Sciences, Tehran, Iran.

²School of Public Health, ShahidBeheshti University of Medical Sciences

Nutrition is one of the major modifiable determinants of non-communicable diseases (NCD), including diabetes, cardiovascular disease and obesity. Therefore, promoting healthy nutrition behaviors has become a priority in NCD prevention programs. However, changing eating behavior has proved to be a challenging task. It is an emerging phenomenon and product of interplay of multiple influences across different contexts and hence complex. Traditionally interventions aimed at changing eating behaviors have focused on educating people of the risks they face and the potential benefits of change. However, such approaches are shown to have either modest or no effects on health-harming behaviors. This presentation aims to provide a more comprehensive understanding regarding diverse individual and environmental determinants of eating behaviors in order to assist us to plan more effective and comprehensive strategies for changing eating behaviors. Drawing from Social ecological models, individual's food behaviors will be explained. In addition, pros and cons of individual-based as well as social-based interventions will be compared and discussed. Finally practical lessons learnt from this perspective would be extracted.

Keywords: Nutrition behavior, NCD, individual-based interventions, social-based interventions