Report on a conference held 19 August 2014 at Deakin University, Melbourne.

Maternal and Infant Nutrition - New Australian Research and More

ILSI Australia and The Omega-3 Centre jointly organised a workshop “Maternal and Infant Nutrition - New Australian Research and More” on 19 August 2014 at Deakin University in Melbourne, with approximately 100 participants. Professor Andrew Sinclair, Deakin University and ILSI SEAR Australasia, and Kevin Krail, Executive Director of The Omega-3 Centre, welcomed participants and opened the meeting.

Dr Manfred Eggersdorfer, Senior Vice President at DSM Nutritional Products was the first speaker. His talk covered quality and safety of food products in maternal and infant nutrition. He noted that allergy is a growing issue; allergic life starts at the earliest age and it is related to the diet. He emphasised infant food manufactures’ commitment to quality assurance over the full value chain of production, including allergen risk, avoidance of water in dry process, hygiene etc. The eight most significant allergens for infants are egg, milk, fish, shellfish, wheat, tree nuts, peanut and soy. As breast feeding is the preferred choice for infant feeding, if there is a need for infant formula, it is better to choose one with the ingredients closest to those found in breast milk. Inadequate nutrient status for mothers/infants is considered a risk factor for development of chronic diseases later in life; folic acid, long-chain Omega-3s, Vitamin A, Lutein and Vitamin D are especially important. He concluded that every child has the right to healthy, nutritious and safe food.

Dr Andrew McPhee, the Women’s and Children’s Hospital, Adelaide, investigated the effects of Omega-3 DHA (Docosahexaenoic Acid) supplementation in neonates in two large randomized controlled clinical trials (RCT). The first trial determined the effects of DHA supplementation effects on preterm neonate’s neuro development. DHA significantly reduced the cognitive function delay between the high and standard DHA groups. Particularly, infant girls whose birth weight was below 1250 g showed better neurodevelopmental scores than boys, and there was also a significant reduction of chronic pulmonary disease in the high-DHA group boys. In the second trial, DHA to Optimize Mother Infant Outcome (DOMInO) trial, DHA supplementation showed positive significant effect by decreasing depression during pregnancy compared with the unsupplemented pregnant women group, prolonged pregnancy and
observed the reduced risk of early preterm births. These important outcomes have prompted further large RCT to address issues directly for clinical practice.

**Dr Barbara Meyer**, Associate Professor of Nutrition, University of Wollongong, presented evidence supporting that pregnant women in Australia lack knowledge on the importance of Omega-3 DHA in pregnancy. She said that pregnant women don’t meet the required recommendation for DHA which is more than 200 mg per day. During pregnancy the nutrient requirements increase to support maternal health and the needs of the growing baby. Particular attention should be given to calcium, folate and folic acid, iron, iodine, zinc, protein as well as polyunsaturated fatty acids (PUFAs). Dr Meyer conducted a study with 118 pregnant women to evaluate the influence of education material on DHA consumption in pregnant women in Australia. Ninety three percent of women found that the DHA pamphlet and shopping card was useful, increased their awareness and knowledge about DHA, and thus increased their fish consumption.

**Professor Peter Davies**, University of Queensland, discussed the updated information on optimal infant breast feeding practices; duration of breast feeding; appropriate age to introduce solids; and specific introductory solids; based on a recent birth cohort study (Feeding Queensland Babies Study). Previous breast-feeding studies indicated that the first 6 months of exclusive breastfeeding confers greatest protection against major health problems (e.g. gastrointestinal infection), medium and long-term risk of morbidity and mortality among infants. Breast feeding for the first six months leads to benefits such as weight loss in the mothers and reduced risk of later obesity in the infant. The previous National Health & Medical Research Council (NHMRC) Infant Feeding Guidelines suggested that early introduction of complementary foods (before 4 months) increased the risk of food allergy and later obesity. The children with exclusive breast feeding for ≥6 months delaying the introduction of appropriate complementary foods had a higher chance of low iron status. The present “Feeding Queensland Babies Study” findings are in contrast with the current NHMRC guidelines and the current data suggests that a) solids can be introduced between 4-7 months because infants have more tolerance to allergies; b) breast feeding in Australia is high, 96% of mothers initiated breastfeeding; c) around 4 months of infant age 24% of mothers had stopped breast feeding completely; d) mothers introduce non-milk foods including combination of chicken by 6 months of age (99%). This research highlighted that the revised NHMRC guidelines should be aware of these practices of mothers in this study.

**Dr Shao Jia Zhou**, Women’s & Children’s Health Research Institute, and The University of Adelaide, looked at the effect of routine iodine supplementation in pregnancy on primary and secondary outcomes in the PINK trial (Pregnancy Iodine and Neurodevelopment). NHMRC recommend iodine supplementation of all women planning pregnancy, pregnant and lactating women 220 ug/d versus 160 ug/d for non-pregnant women. She reported no difference in primary outcomes (development and growth of the children) and secondary outcomes (pregnancy, child mortality and thyroid function) for 59 study subjects.

**Associate Professor Anthea Magarey**, Flinders University, evaluated the impact of universal feeding intervention practices on maternal feeding practices to reduce childhood obesity in NOURISH randomized controlled clinical trial (RCT).
In the NOURISH RCT, a total 698 first-time mothers with healthy term infants were enrolled. The first module commenced immediately when the children were aged 4 to 7 months with an underlying goal of ‘learning to like, liking to eat’ and the second module was started at 14 to 16 months of age to address issues arising from increasing autonomy of the child to self select their food. There was no evidence of differences by group on maternal and infant characteristics in RCT (intervention versus control) at baseline. The results have shown that at 4 years of age with responsive feeding (intervention of the mothers) and appropriate management of neophobia and innate taste preferences could reduce future obesity risk. It was found that a higher proportion of novel food items were accepted by the children in the intervention group compared with the control group. The control group infants had higher BMI than those in the intervention group and were more likely to show rapid weight gain from birth to follow-up. In conclusion, the intervention provided anticipatory advice on protective early feeding practices to support the development of healthy child eating habits and less obesogenic child eating behaviours.

Associate Professor Peter Vuillermin, Deakin University, presented research from the Barwon Infant Study (BIS) which is a population-derived birth cohort study (n= 1,069 infants) with antenatal recruitment, conducted at Barwon, south east of Melbourne. BIS has been designed to investigate the role of specific environmental factors in early life immune dysregulation and in the subsequent development of allergy. He said that up to 10% of one year old infants living in Melbourne have challenge-proven IgE-mediated food allergy. There are a variety of studies that support the importance of the early life microbial environment, for example, studies in rural German consistently showed lower prevalence of asthma and allergic disease among children living on farms. Children living on farms were exposed to a wider range of microbes than the reference group, and this exposure explained a substantial fraction of the inverse relationship between growing up on a farm and asthma. Dr Vuillermin concluded that we should be aware of non-communicable disease which have their origins in early life and characterized by chronic and abnormal inflammation.

Dr Kylie Hesketh, Deakin University, evaluated the effectiveness of a parent-focused intervention on infant obesity-risk behaviours through a community-based, cluster-randomised controlled trial called the Melbourne Infant Feeding, Activity and Nutrition Trial (InFANT) Program. The InFANT program recruited 542 first-time parents and their newborn children (aged 3 months to 5 years) and was conducted from 2008-2010 to promote improved diets for children, feeding practices, physical activity and sedentary behaviour patterns of mothers and their young children. The study found that intervention group observed reductions in sweet snack consumption and television viewing in 20-month-old children compared with controls. Moreover intervention children continued the consumption of sweet snacks at significantly lower levels, and improved parent-child interactions. The findings suggested that there was little statistical evidence of differences in fruit, vegetable, savoury snack, or water consumption or in BMI z-scores or physical activity. The current findings support the hypothesis that a parent focused intervention reduces infant obesity risk behaviours. Follow-up of participants of the Melbourne InFANT Program at 5 years post intervention will allow assessment of longer term intervention
effects, potential mediators and moderators of such effects, longer term outcomes allow a more in-depth understanding of risks childhood obesity.

Prof Katie Allen, Melbourne Royal Children’s Hospital, presented results from The HealthNuts study in Melbourne. More than 1 in 10 of all 1 year old children have clinical food allergy. There are four leading hypotheses for the rise in food allergy: infant feeding, hygiene hypothesis (microbial diversity), vitamin D hypothesis, and genetics and skin barrier function. Infants introduced to cooked egg at 4-6 months old were 5 times less likely to get egg allergy than if introduced after 10 months. Infants with siblings and dogs at home are much less likely to develop food allergy. She reported that 40% of Australian pregnant women develop low vitamin D. Australian born infants with vitamin D insufficiency at 12 months are much more likely to have food allergy. Genes, family history and migration all appear to play a part in food allergy as well as other factors.

The symposium generated interesting questions & audience discussion at the speakers panel presentation.

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