

Plenary Session / EC – US Workshop: Early life programming of obesity

Lecture 6: Future perspectives of early nutrition programming to tackle obesity

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Abstract

The lifecourse approach to obesity epidemiology and prevention provides exciting perspectives to address the global obesity epidemic. The concept that interventions during short critical or sensitive periods in early life could have a long-term impact on the risk for obesity – through programming or imprinting – is particularly appealing from a public health perspective. But precisely because these periods are critical or sensitive, the concern about long-term adverse effects is also extremely important. In this presentation, the current evidences for programming of obesity in early life will be reviewed and perspective for future research will be discussed. The top research questions to be addressed in the next decades include the following. Although it has been repeatedly demonstrated in observational studies that intrauterine growth retardation is associated with central fat distribution and cardiovascular risk factors and that excessive intrauterine growth is associated with obesity later in life, little is known on whether and how to influence birth weight. Future studies should investigate interventions to reduce the risk for intrauterine growth retardation (both in high- and low-income countries) and to reduce the risk for excessive intrauterine growth and should include long-term follow-up to investigate their potential impact on later obesity. Other promising approaches during fetal life that require further investigations include interventions among pregnant women to prevent smoking, excessive pregnancy weight gain, or insulin resistance / gestational diabetes as well as to promote a diet that could program the offspring's taste preference towards healthier food choices. The protective effect of breastfeeding on obesity is still controversial. More randomized interventions and follow-up of existing cohorts are necessary to resolve the current discrepancy between observational studies, that support a protective effect, and one intervention study that does not. Data from observational studies also suggest that rapid infancy weight gain is associated with later obesity, but additional research, using randomized interventions, will be necessary to confirm the feasibility of preventing excessive weight gain during infancy – in particular among breastfed infants – and the causal nature of this association. Similarly, additional intervention studies are needed to confirm the feasibility and long-term impact of influencing individual taste preference for healthier choices by exposing infants to specific tastes. These randomized interventions studies will not only address the question of causality in an unbiased way, but will also address the question of feasibility and adverse effects. Careful follow-up therefore needs to be planned from the beginning and should include not only obesity as an outcome, but careful monitoring of possible adverse effects on the physical, neurological, and psychosocial development of the study subjects. Furthermore, metrics need to be developed to measure in comparable units the benefits and adverse effects of such interventions, so that their risk-benefit balance can be assessed. In addition to these intervention studies, prospective and retrospective observational studies are still needed to generate new hypotheses regarding other potential early life factors that could program individuals for later obesity. Finally, research on animal models should continue to define the possible mechanisms and support the causality of associations discovered as part of epidemiological and clinical research.

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