

Concept - 2017

IAEA/WHO/UNICEF Joint Workshop on Biological Pathways to Better Understand the Double Burden of Malnutrition and to Inform Action Planning

Setting:

Low- and middle-income countries face an increasing double burden of malnutrition and disease: food insecurity, undernutrition and infectious diseases, overweight, obesity and related non-communicable diseases (NCDs) coexist in many countries, communities and households, across all levels of economic development and may occur in the same individual at different stages in the life course¹.

Why:

- Foetal and infant nutrition in the first thousand days: mechanisms by which growth and nutrition during early life influence the long-term health and consequently life span of an individual are not fully understood²⁻⁵; protective benefits of breastfeeding against risk factors for NCDs have been demonstrated, but more research is needed^{6,7}; impact of the timing of solid food introduction on risk of obesity and NCDs in breastfed infants is not fully understood⁸
- Nutrition and health of adolescent girls and mothers (before, during and after pregnancy and lactation): mothers' stored nutrients and turnover of protein and fat in tissues affect foetal nutrition more than the diet during pregnancy; severe caloric restriction at different stages of pregnancy has been associated with obesity, insulin resistance and coronary heart disease in the offspring⁹
- Childhood overweight and obesity and NCDs: overweight and obese children are likely to stay obese into adulthood and more likely to develop non-communicable diseases like diabetes and cardiovascular diseases at a younger age^{2,5,9}
- Environmental exposures that modify the absorptive capacity of the gut and influence nutrient absorption and gut microbiome¹⁰

Hypothesis:

Double burden of malnutrition characterised by co-existence of undernutrition (mainly as stunting), overweight and obesity develops gradually from early life and is driven by factors such as nutrition of adolescent girls, maternal nutrition and health during pregnancy, infant size at birth, growth velocity in infancy and early childhood, infant and young child feeding, environmental exposures that result in modified absorptive capacity of the gut, physical activity and modified dietary practices among others.

Consequences of the double burden of malnutrition:

Nutrition and the risk for NCDs are closely linked; underweight, overweight and obesity, are having a direct impact on the global rise in NCDs. These maladies are associated with:

- Increased infant and child mortality
- Increased infant and child morbidity
- Overweight and obesity in adolescence
- Low psychomotor development and economic potential
- Increased risk of NCDs, disability and death in later life

What is the need?

- Need to better understand biological pathways driving the double burden of malnutrition
- Need to define additional research needs
- Need to identify policy and programme implications of what is known already

Purpose of meeting:

In order to have a better understanding of the biological pathways related to the double burden of malnutrition, the International Atomic Energy Agency plans to host a joint 3-4 day workshop in 2017 in Vienna with the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).

The specific aims of the workshop will be:-

- To review data on exclusive breastfeeding and complementary feeding practices
- To review data on body composition, physical activity, diet, and metabolic risk factors in children and adolescents
- To review evidence on biological pathways through which early nutrition and NCDs and stunting interact

- To identify additional research needed
- To identify policy and programme implications

Organizations hosting the meeting:

The World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) are key players in the realization of nutrition goals. The IAEA is a technical agency that complements the work of other UN agencies, NGO’s and other major players in nutrition and health by encouraging the use of nuclear techniques to develop and evaluate interventions used to combat malnutrition in all its forms throughout the life course. The IAEA has supported the use of stable isotope techniques and related techniques to assess breastfeeding patterns and to measure body composition, physical activity and metabolic risk factors for NCD’s in school children and adolescents.

The following data will be reviewed at the meeting:

Early feeding practices:

- Amount of breast milk consumed by infants at different time points between 6 weeks and 24 months
- Exclusive breastfeeding measured objectively compared to mothers’ reports based on recalls
- Continued breastfeeding up to 12 months
- Body composition of the infant at different time points from 6 weeks to 12 months (to 24 months)

Childhood and adolescent obesity:

- Body composition of school children (6-22 years, cross-sectional, longitudinal data)
- Waist circumference
- Physical activity (questionnaires, Actigraphs, ActiHearts), physical fitness
- Blood pressure, total cholesterol, HDL, LDL cholesterol, triglycerides, fasting glucose, fasting insulin, interleukin-6, CRP, soluble receptor transferrin
- Puberty stage
- SES, diet, knowledge, attitude, behaviour

Targeted audience:

- United Nations Agencies
- Academia
- National and International Organizations

References

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