

Contributing to the evidence base to improve stunting reduction programmes IAEA Inter-regional project

Stunting is caused by multiple factors ranging from household food insecurity and unhealthy environmental conditions to inadequate nutrition and a lack of access to health care. Under the Scaling Up Nutrition (SUN) movement, many low- and middle-income countries have adopted national policies to promote nutrition and reduce stunting in children under 5 years of age. Varying from country to country, the programmes that aim to improve the nutritional status of children under 5 years of age are in the implementation phase or have been launched. Evaluating the effectiveness of these programmes is often given marginal importance or is limited to the monitoring of programme implementation. However, in resource limited settings, policy makers need an evidence-base to select the most efficient interventions that result in the reduction of stunting. This is where the International Atomic Energy Agency (IAEA) in its efforts to promote nutrition for better health can assist by establishing partnerships between policy makers and scientists to track the progress and effectiveness of programmes in order to inform evidence-based decisions.

Overall objective: The inter-regional project aims to provide objective tools for the assessment of nutrient absorption and environmental enteropathy as underlying causes of stunting, the coverage of breastfeeding promotion programmes and the assessment of the quality of growth, which complement current/planned surveys for programme monitoring and impact evaluation. The project will also build and strengthen existing capacity of the target countries in the use of stable isotope techniques in nutrition as a means to promote health.

Assessment of the integrity and function of the small intestine via ^{13}C -labeled substrate breath test: Chronic environmental enteropathy (EE) is characterized by abnormalities of structure and function of the small intestine. EE is associated with a reduction in nutrient absorption and an increase in infectious vector infiltration, and has been identified as a major cause of growth faltering and childhood morbidity in low- and middle-income countries. Additionally, reduced nutrient absorption, due to EE, is one of the assumed causes for the small to moderate effect of nutrition-specific interventions targeting the promotion of growth. The use of selected stable isotopes in a breath test can provide an accurate and direct assessment of the absorptive capacity of the small intestine.

Assessment of breast milk intake and breastfeeding patterns: Exclusive breastfeeding during the first 6 months of age reduces the incidence of diarrhea and acute lower respiratory infection, as well as infant mortality. It is expected that breastfeeding promotion strategies will have an impact on child nutritional status, both by preventing growth deficit and overweight and obesity later in life. The evaluation of education and counselling programmes that promote good breastfeeding practices are based on maternal reporting, which is easy and cheap to conduct, but has major limitations. Subjects can over-report their adherence to the practice, in order to gain the approval of the interviewer, or underreport because of lapses in memory. The deuterium oxide 'dose-to-mother' technique can be used to objectively assess whether a child is exclusively breastfed or not, and what amount of breast-milk is consumed by the child during the continued breastfeeding period.

Assessment of body composition using stable isotope techniques: A balanced diet provides carbohydrates, fat, protein and most of the micronutrients necessary for energy, growth and body repair, maintenance, and protection. In settings with sub-optimal nutritional care, catch-up growth in weight is more easily achieved by nutrition-specific interventions than linear growth. An imbalance between protein and energy could be one of the factors that contribute to a failure in achieving the potential linear growth of a child. Additional factors include micronutrient deficiencies, such as zinc, and infections. Deposition of lean mass is an important indicator of a balanced protein:energy intake, as well as of the provision of required essential micronutrients (e.g. zinc). Protein requirements for growth in height might be greater than those for

weight gain. The assessment of body composition using stable isotope techniques indicates the relative amounts of fat mass and fat free mass. It is an important indicator of the quality of the diet and can be used to determine whether fortification or food supplementation programmes with/without a behaviour change component improve the quality of growth.

Targeted countries:

The use of selected stable isotope techniques will be used in 8 – 10 potential countries in Sub-Saharan Africa, Asia and Latin America where:

- 1- Stunting is a public health problem and a development concern in the country;
- 2- Planned or implemented programmes include the reduction of stunting in early life (ideally from birth to 2 years of age) as one of their objectives;
- 3- Programmes include one or more of the evidence-based interventions: promotion of exclusive breast-feeding and continued breastfeeding; promotion of healthy, rich and diverse complementary feeding, with or without provision of food supplements; preventive zinc supplementation; micronutrient supplementation that includes zinc; hand washing or interventions that target improvement of hygiene (WASH benefit as an example);
- 4- Programmes are implemented as a multi-partner initiative led by the Ministry of Health or any other Government line Ministry with a strong monitoring and evaluation component either existing or planned;
- 5- The coverage of the programme is either national or covers regions and/or specific groups in the country;
- 6- Research institution, laboratory or team of recognized researchers is available to engage in the country.

Timeline:

- December 2014 – March 2015: Contact between IAEA and UNICEF regional offices/other UN agencies to nominate potential countries in the three regions with the above described criteria.
- April 2015: UNICEF/other UN agencies advise IAEA on potential lead-counterpart from Ministry of Health/other Government line Ministry and Research Institution in each country.
- April – June 2015: IAEA together with identified country teams works on further refining project design.
- June 2015: Meeting at the IAEA headquarter to finalize the project design and discuss the next steps of the project.
- January 2016: Start of the project.

Entry points:

Possible entry points for adding on the proposed indicators depending on the local context:

- 1- An already implemented or planned evaluation survey (routine survey) by UNICEF, WFP, HKI, Ministry of Health or others.
- 2- A planned evaluation of a programme targeting reduction of stunting that is already implemented in the country or planned in the near future (2016).
- 3- A research study on the large scale (national) effect of one of the above cited interventions to reduce stunting (longitudinal studies) conducted by a local research institution with/without the collaboration of international research institutions.

Roles of stakeholders:

- 1- Ministry of Health or any Government Institution in each country to lead and coordinate the programme, in which a strong evaluation component is included.
- 2- Local research institutions to conduct data collection and all laboratory related tasks.
- 3- UNICEF/other UN agency to facilitate and advise on the programming.
- 4- IAEA to contribute to capacity building through training, support expert advice on evaluation aspects, provide consumables for assessing the additional indicators, cover cost for sample analysis and support data management and analysis.

Contact: Ms Cornelia Loechl, Nutrition Specialist, IAEA, C.Loechl@iaea.org