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EDITORIAL

Strategies to address undernutrition in children under five

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Undernutrition is an underlying cause of 45% of child deaths, which mostly occur in low- and middle-income countries (LIMC).[1] At the same time, overweight in children under five is increasing, from 4.9% (30.1 million) in 2000 to 5.9% (40.1 million) in 2018[2] and this contributes to obesity, diabetes and other chronic diseases in adulthood.[1] Prevalence of stunting, wasting and overweight in children under five are primary outcome indicators for three of the six global nutrition targets endorsed by the World Health Assembly.[3] Globally in 2018, 21.9% (149 million) children under five were stunted and 7.3% (49.5 million) were wasted. Overall, the number of stunted children has decreased from 198.2 million (32.5%) in 2000 to 149.0 million in 2018. In Africa (based on figures for the United Nations regions), the prevalence of stunting decreased from 38.0% to 30.0% from 2000 to 2018, yet the number of stunted children increased from 50.3 million to 58.8 million due to the increase in population size.[2]

The nutritional status of individuals depends on their dietary intake and health status, as well as the environment in which they live. Nzefa and co-workers report in this issue of the SAJCN on the prevalence of undernutrition and associated factors in children under five in the Bandja village of Cameroon.[4] In their study, stunting, at 16.4%, was the most prevalent form of undernutrition, which is in line with the global trend in LIMC; although the actual figure is lower than the 2018 estimate of 30.0% for Africa.[2]

Stunting, a well-established risk factor for poor child development, reflects long-term undernutrition due to chronic inadequate intake of energy and/or micronutrients. Stunting, however, is also associated with a range of environmental risk factors such as, for example, foodborne mycotoxins, lack of adequate sanitation, dirty floors in the home, poor quality cooking fuels, and inadequate local waste disposal.[5] According to a recent global risk assessment analysis of 18 stunting risk factors using country level data for 137 countries, foetal growth retardation and on-going poor sanitation are the leading risk factors for stunting in developing countries.[6] In addition, maternal characteristics such as low education, age (< 20 years) and low body mass index (< 18.5) have also been shown to be associated with stunting in children under five in sub-Saharan Africa.[7] Interventions should therefore not focus solely on children and infants, but should also target mothers and families.[6] The importance of maternal nutrition is encompassed in the "first thousand days" (the period from conception to the child's second birthday), which is globally recognised as a critical period for optimal child growth and development.

The association between current breastfeeding and underweight reported in the paper by Nzefa and co-workers[4] should, however, be interpreted with caution as seemingly all children under five were included in their analyses. It can therefore be assumed that the currently breastfed children were on average significantly younger than those no longer being breastfed, and therefore more susceptible to infectious diseases. In their systematic review that focused on undernutrition in children in sub-Saharan Africa, Akombi and co-workers reported that being breastfed for longer than 12 months was associated with both stunting and underweight.[7] Recommendations are that infants should be exclusively breastfed for the first six months; thereafter breastfeeding alone is no longer sufficient to sustain child growth, and nutritionally adequate and safe complementary foods need to be introduced, while continuing with breastfeeding up to two years or beyond.[8] Because of high nutrient requirements and small amounts of foods consumed, complementary foods should be nutrient dense.

Different forms of malnutrition co-exist in communities, households and even individuals, requiring integrated approaches to address the full range of different forms of malnutrition.[9] A healthy diet should be sufficient in quality, quantity and safety. Cost and affordability of diets should also be considered, particularly in LIMC. Various techniques are available and can be used to plan nutrient-dense more-affordable diets. For example, nutrient-profiling models can be used to rank or classify foods based on their nutrient composition,[10] and can be used, in combination with food prices, to identify foods that are healthy and affordable.[11] There are also tools available that can be used to identify nutrient gaps in the diet using linear programming, and then developing guidelines to maximise the use of local foods to fill these nutrient gaps.[12] Food choices are, however, affected by the food environment, which is broadly defined as 'the collective physical, economic, policy and sociocultural surroundings, opportunities and conditions that influence people's food and beverage choices and nutritional status'.[13] Both governments and business therefore have an important

role to play in creating food systems and environments that enable healthy eating across all life stages.[9]

Nutrition strategies on their own will not be sufficient to eliminate childhood malnutrition, and they have not done so. Rather, combined nutrition-specific interventions addressing immediate determinants of malnutrition, and nutrition-sensitive interventions addressing underlying causes of malnutrition are needed.[9] A systematic review by Hossain and co-workers[14] showed that nutrition-sensitive components most frequently included in effective intervention programmes aimed at addressing stunting in LIMC are nutrition education and counselling, growth monitoring and promotion, immunisation, sanitation and hygiene promotion (WASH), and social safety net programmes. To be most effective, the combination of components needs to be country and context specific. Intervention packages that were effective, regardless of setting, were those that included health and nutrition outcomes and social safety nets. These diverse intervention packages are complex and strong political commitment, multi-sectoral collaboration, community service delivery platforms and active community engagement are needed.[14]

To plan and monitor health and nutrition interventions as well as track a country's progress towards the global nutrition targets, population-based anthropometric data, disaggregated by geography, socioeconomic status and gender, are needed. Countries therefore need capacity to carry out data collection and analysis, and present results in a manner that is easy to use and interpret.[9] Also, accuracy of the data is critical to ensure that the information provided to, for example, policy makers is reliable. Recently the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) published a set of *Recommendations for data collection, analysis and reporting on anthropometric indicators in children under 5 years old*, with the aim to enhance quality reporting for the global nutrition targets (childhood stunting, wasting and overweight).[15]

In conclusion, to effectively address child undernutrition, integrated- and context-specific nutrition-specific and nutrition-sensitive strategies that address all forms of malnutrition as well the multiple determinants of child undernutrition, with strong political commitment and community engagement are needed.

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