



Invited Commentary

Maternal education is essential but may not be sufficient to prevent child stunting: a commentary

The recent focus on linear growth retardation and stunting has facilitated communication with policy makers, enabled successful advocacy for nutrition and mobilised policy makers and donors to pay attention to undernutrition and its consequences⁽¹⁾. The current worldwide prevalence of stunting among children under the age of 5 years is of the order of 25 %, and its reduction by 40 % is the global target for 2030. With the dramatic impact of the current COVID-19 pandemic on food security and nutrition, reaching this global target will be even more challenging⁽²⁾.

Stunting is usually ascribed to poor access to food and health resources rather than to poor access of caretakers to information. Whilst there is no question that nutrition education is an essential component of any nutrition intervention, the role of nutrition education or counselling as single intervention has been controversial, particularly as regards addressing stunting. Infectious diseases and a combination of dietary inadequacies were shown to be responsible for large attributable factors in all settings⁽³⁾. Environmental enteric dysfunction characterised by intestinal damage owing to poor hygiene conditions is also involved⁽⁴⁾. Fetal growth restriction, which is primarily due to prenatal nutritional inadequacies, emerged as the most important risk factor for stunting according to the analysis of data from 137 countries⁽⁵⁾.

In 2005, a major breakthrough was the report of the positive impact of nutrition education as single intervention on child stunting⁽⁶⁾. This intervention study carried out in the slums of Lima was the first randomised controlled trial to show that context-specific maternal nutrition education delivered by trained facility-based health personnel was effective even in poor urban settings. There have since been quite a few publications on effective nutrition education or counselling, including the recent intervention study reported in the present issue⁽⁷⁾. In this cluster-randomised controlled study, seven villages served as controls for the seven intervention villages where a cohort of mothers was exposed to nutrition education/counselling (NEC) during pregnancy and until the child reached the age of 13 months. Trained community health workers delivered the NEC during monthly home visits. An additional follow-up of mother–child pairs took place during the fifth year of the child. Low birth weights and premature births were reduced in the intervention group. The rate of

stunting was also significantly lower in the intervention group at both follow-ups, but only in male children. The positive outcomes included better feeding and hygiene practices and less morbidity in the intervention group.

Similarly, in a large randomised controlled trial in rural Burkina Faso, it was shown that facility-based education of mothers during pregnancy and until their children reached 18 months of age was effective in improving birth weights, as well as exclusive breastfeeding and complementary child feeding practices. However, there was no difference in child growth or morbidity between the intervention and the control arms⁽⁸⁾. This is at variance with a large intervention study in Bangladesh which showed that the risk of stunting was 25 % lower in areas exposed to nutrition counselling compared with control areas⁽⁹⁾. However, this was not a randomised controlled trial and there was no information on the baseline rate of stunting which could have been already lower in the intervention area. In China, a controlled intervention study showed that personalised nutrition education delivered by trained healthcare providers to caretakers of children from the age of 2–4 months up until 12 months was effective in improving child feeding and hygiene practices⁽¹⁰⁾. Height and weight gains were significantly higher in the intervention group but attained linear growth was not significantly different; catch-up linear growth allowed the intervention group to make up for the lower height at baseline compared with the control group. Similarly, in Pakistan, a cluster-randomised controlled trial showed that NEC delivered by trained health workers improved the feeding knowledge and practices of mothers, but without significant improvement in linear growth⁽¹¹⁾. This suggests that maternal education interventions do not consistently improve linear growth of children. However, interpreting lack of impact on linear growth retardation or stunting as programme failure unnecessarily discounts other important health and nutrition outcomes, such as, say, more responsive child feeding, adequate and timely complementary foods or improved hygiene practices⁽¹⁾. In many cases, maternal nutrition education, while necessary, may not be sufficient, or of sufficient duration, to improve linear growth in a statistically and physiologically significant extent. Furthermore, it is important to consider the affordability of the recommended nutritious foods when designing nutrition education messages.



Therefore, interventions that also integrate components aimed at enhancing economic access to nutritious foods, or healthcare or sanitation, are likely to be more effective. In Ghana, for instance, it was shown that combined with agriculture to improve access to nutritious foods, education was highly effective in improving the intake of high-quality foods by young children as well as their linear growth⁽¹²⁾.

Personalisation of nutrition education is recognised as more effective than more conventional approaches for changing behaviours⁽¹³⁾. In the Nairobi study report⁽⁷⁾, it is stated that the NEC was personalised, but without describing how it was done. This is the kind of information that would be needed for the replication of the intervention. It is assumed that the home-based advice was contextualised, i.e. adapted to the local situation, but it can be argued that it was not personalised which would require first an assessment of the specific nutrition conditions of the mother, her child and the household, including economic, social and personal constraints to abiding by the nutritional guidelines. The content of NEC delivered to the intervention group is clear, with standard recommendations listed (exclusive breastfeeding until 6 months; meal frequency and diet diversity beyond that age; responsive feeding, etc.), but not how these messages were tailored to fit the personal conditions of mother–child pairs. In their intervention study in rural Burkina Faso, Nikiema *et al.*⁽⁸⁾ described in detail how health facility personnel were trained in communication skills for detecting feeding problems and for negotiating with caregivers on possible solutions, adapting feeding recommendations to local and family conditions. As a means of personalising the nutrition counselling, a family history tool was developed to assess the family's social structure, living conditions and domestic habits. An extensive baseline survey had allowed further adjusting the education to the context through documenting the local undernutrition situation, infant and young child feeding practices and morbidity patterns. Similarly, in the nutrition education intervention in China, formative research allowed tailoring the messages to local conditions and culture⁽¹⁰⁾. Additionally, in the latter intervention, important family members (husbands, in-laws) and important community members such as local doctors and village leaders were involved, thereby providing a supportive environment for behaviour change.

In the Nairobi intervention⁽⁷⁾, as well as in several other nutrition education programmes or projects, there is no information on whether or not the education was grounded in a behaviour change theory or strategy. This is at variance with state-of-the-art education approaches that are to be based on appropriate single or combined behaviour change theoretical models, whether pertaining to nutrition behaviours^(14,15) or to health-related behaviours in general⁽¹⁶⁾. Motivational interviewing was shown to be a highly effective counselling strategy, particularly when combined with cognitive behavioural theory⁽¹⁵⁾. However, further research is required to strengthen the

evidence on the effectiveness of various behaviour change strategies for nutrition-related change.

NEC requires training in communication and counselling skills, let alone in the generic practice recommendations for optimal maternal and child nutrition. The process and content of such training are well detailed in the cluster randomised controlled trial in Lahore, Pakistan⁽¹¹⁾. Inter-professional approaches to teaching nutrition counselling are promising⁽¹⁷⁾. Locally relevant nutrition messages and tools to assess individual problems should also be included in the training⁽¹⁸⁾.

Whether through nutrition education or more integrated interventions, addressing child wasting and stunting jointly is recommended⁽¹⁹⁾. Nutrition education should also be relevant to prevent or control overweight as stunting is associated with higher odds of overweight and obesity. More evidence is needed on the effects of multi-sectorial interventions, combining nutrition-specific and sensitive methods and programmes, as well as the effects of 'up-stream' practices and policies of governmental, non-governmental organisations and the business sector on nutrition-related outcomes such as stunting⁽²⁰⁾.

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