

Research priorities for nutrition of school-aged children and adolescents in low- and middle-income countries

This is a summary of the following paper: *Lelijveld N, Wrottesley S, Aburmishan D et al (2023) Research priorities for nutrition of school-aged children and adolescents in low- and middle-income countries. PLOS ONE, 18, 1, e0280510. <https://doi.org/10.1371/journal.pone.0280510>*

Background

Nutritional status during middle childhood (5-9 years) and adolescence (10-19 years) influences physical, cognitive and social development with implications throughout the life course and for future generations. However, the limited availability of prevalence data and a lack of nutrition targets for children and adolescents 5-19 years of age is hampering the development of policies and interventions to tackle malnutrition in this age group.

This paper presents the results of a research prioritisation exercise conducted by Emergency Nutrition Network in 2021 to stimulate and guide future research. Using the Child Health and Nutrition Research Initiative (CHNRI) method, a list of 48 research questions was compiled covering all forms of malnutrition (micronutrient deficiencies, thinness, stunting, overweight/obesity and suboptimal dietary quality) in children and adolescents 5-19 years of age in low- and middle-income countries. A stakeholder survey was used to rank questions according to their answerability, deliverability, effectiveness and potential to improve equity with an overall aim of achieving measurable reductions in the prevalence of malnutrition in the next 10 years.

Findings

Between 85 and 101 stakeholders with a broad geographical spread responded per research question. Of the overall top 10 ranked

questions presented in Box 1, half focused on delivery strategies for interventions targeting school-age children and adolescents and the other half on improving existing interventions. The question that ranked highest focused on tailoring antenatal and postnatal care for pregnant adolescent girls. This question also ranked highest within the sub-category of questions for pregnant adolescent girls, as well as for having the greatest potential to improve equity. The ranking of questions was similar across age sub-categories thereby streamlining priority research questions across middle childhood, early adolescence (10-14 years of age) and late adolescence (15-19 years of age). There was higher expert agreement for questions related to in-school children and adolescents than for those related to out-of-school adolescents.

Conclusion

Overall, the CHNRI prioritisation exercise highlighted the need for implementation research to inform the delivery of effective nutrition interventions to school-age children and adolescents, beginning in schools. The findings also identified a need for academic research to inform the development and tailoring of existing interventions with a focus on how to package multi-sector programmes and how to better reach vulnerable and underserved sub-groups, including those out-of-school.

Box 1 Top 10 research questions according to the Child Health and Nutrition Research Initiative (CHNRI) exercise

1. How should antenatal and postnatal care interventions be adapted to effectively and cost-effectively support the specific health and nutritional needs of pregnant adolescents?
2. What strategies are effective for delivering interventions in schools to improve quality of diets and nutritional outcomes of school-age children (SAC) and adolescents?
3. What strategies are effective at involving SAC and adolescents in defining their own context-specific solutions to nutrition problems and does their involvement result in more effective interventions?
4. What are effective, context-specific, behaviour change communication strategies to improve diets and nutritional status of SAC and adolescents?
5. What improvements can be made to local food systems to support access to healthy diets in schools?
6. Does sex and/or gender impact the response to nutrition interventions (e.g., obesity prevention interventions) and how can interventions be better tailored to girls and boys?
7. What are the optimal delivery platforms (health, education, social protection, media/technology etc.) for effective uptake of nutrition interventions for SAC and adolescents, taking into account scale, sustainability and youth engagement?
8. What are the optimal delivery platforms for reaching the sub-groups of SAC and adolescents identified as highest priority?
9. What is the impact of peer education programmes on nutrition of adolescents and SAC in different contexts?
10. What combined package of existing interventions is effective at addressing malnutrition in SAC and adolescents?

Hot weather impacts infant feeding practices in low- and middle-income countries

This is a summary of the following report: *Edney JM, Kovats S, Filippi V et al (2022) A systematic review of hot weather impacts on infant feeding practices in low- and middle-income countries. Frontiers in Pediatrics, 10, 930348. <https://doi.org/10.3389/fped.2022.930348>*

Due to concern that increased hot weather led to a rise in supplemental feeding rates due to infants requiring additional fluids or the perception that infants are dehydrated, the authors conducted a systematic review of published studies to understand how hot weather conditions may impact infant feeding practices. They first reviewed evidence to consider whether exclusively breastfed infants could maintain hydration levels under hot weather conditions, assessing indicators of infant hydration such as urine concentration measures, total fluid intake or infant weight changes. They then examined the available literature on infant feeding practices in hot weather.

The 18 studies that met the inclusion criteria after they were assessed according to predetermined quality checklists showed no evidence that exclusively breastfed infants required additional water or other liquids. The authors found that exclusively breastfed infants maintain normal hydration levels without concentrating urine to maximal levels. Supplementary water also does not appear necessary for exclusively breastfed infants that are low birthweight or born near-term.

The authors describe multiple potential pathways by which hot temperatures and weather may influence infant feeding practices, including fear of infant dehydration and the belief that infants require water and/or other liquids alongside breastmilk in hot weather or seasons. Other factors that are highly seasonal and/or weather-dependent, and which could be associated with reduced time spent breastfeeding, include demands on a woman's time (work or childcare); the infant's season of birth, which modifies the mother's experience of social support and infant feeding practices; school holidays taking place during hot, dry months and placing more childcare responsibilities on breastfeeding mothers; and periods of higher prevalence of diarrhoeal disease, when women are less inclined to supplement breastfeeding for fear of giving infants contaminated water. In some settings, healthcare providers and relatives continue to advise water supplementation in hot weather or during the warm seasons.

Increased rates of exclusive breastfeeding could significantly improve infant survival in low- and middle-income countries. The authors conclude that, overall, there is evidence to support the WHO and UNICEF guidelines recommending that healthy infants should be fed exclusively with breastmilk, regardless of weather conditions. However, they still call for further research in countries bearing the brunt of climate change. Families and healthcare providers should be advised that exclusive breastfeeding is recommended even in hot conditions.