

## Adolescent nutrition in Ethiopia: A systematic review and meta-analysis

This is a summary of the following paper: *Abera M, Workicho A, Berhane M et al (2023) A systematic review and meta-analysis of adolescent nutrition in Ethiopia: Transforming adolescent lives through nutrition (TALENT) initiative. PLOS ONE, 18, 4, e0280784.*

<https://pubmed.ncbi.nlm.nih.gov/37022989/>

**E**thiopia, like many low- and middle-income countries, has undergone rapid economic growth over the last two decades that could influence the diets and nutrition of young people. With concurrent urbanisation and lifestyle transformations, overweight and obesity are emerging as significant problems among the adolescent population, alongside persisting undernutrition in large sections of the population. Although nutritional interventions are growing rapidly in Ethiopia, most of these are targeted to young children, as well as pregnant and lactating women, leaving adolescents a relatively neglected group. This work reviewed studies on adolescent nutrition to inform future interventions and guide policies and programmes for this age group.

The authors performed a systematic search for studies published in English on the prevalence of and interventions for malnutrition in

adolescents aged 10–19 years in Ethiopia between 2000 and 2020. The results were checked for quality and rated as low, medium, and high using the Joanna Bridge Institute quality assessment checklists for observational and interventional studies. Seventy-eight studies were eligible for inclusion in the meta-analysis. These documented nutrition outcomes in terms of anthropometry, micronutrient status, dietary diversity, food insecurity, and eating habits.

In the meta-analysis, the pooled prevalence of stunting, thinness, and overweight/obesity was 22.4% (95% CI: 18.9, 25.9), 17.7% (95% CI: 14.6, 20.8), and 10.6% (7.9, 13.3), respectively. The prevalence of undernutrition ranged from 4% to 54% for stunting and from 5% to 29% for thinness. Overweight/obesity ranged from 1% to 17%. The prevalence of anaemia ranged from 9% to 33%. Approximately 40% to 52% of adolescents had iodine deficiency and associated risk of

goitre. Frequent micronutrient deficiencies were vitamin D (42%), zinc (38%), folate (15%), and vitamin A (6.3%). About 80% and 60% of adolescents from rural and urban settings respectively were found to have low dietary diversity.

The review showed that undernutrition (stunting, thinness, and micronutrient deficiencies) was more prevalent than overweight. The prevalence of thinness and stunting was higher among boys and rural adolescents, whereas overweight and obesity were higher among girls and urban adolescents. The review also revealed that adolescent food insecurity and low dietary diversity were common. Consequently, a large proportion of adolescents had one or more micronutrient deficiency.

The authors concluded that the adolescent population in Ethiopia faced multiple micronutrient deficiencies and a double burden of malnutrition, although undernutrition was predominant. The magnitude of nutritional problems varied by gender and setting, which calls for context-relevant interventions to effectively improve the nutrition and health of adolescents in Ethiopia.

**“Although the prevalence of overweight is low compared to that of undernutrition, it appears that problems of overnutrition were emerging before Ethiopia has dealt with the burden of undernutrition.”**

## Maternal depression and child feeding practices in Malaysia: A driver of malnutrition?

This is a summary of the following paper: *Din M, Teng N & Manaf Z (2023) Maternal depression and child feeding practices: Determinants to malnutrition among young children in Malaysian rural area. Women's Health, 19, 1–10. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9982386/pdf/10.1177\\_17455057221147800.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9982386/pdf/10.1177_17455057221147800.pdf)*

**B**ased on emerging evidence from other settings, the authors hypothesise that there is a relationship between maternal depression and child feeding practices in malnourished and well-nourished children. To test this, a case-control study was conducted in eight health clinics in Kuala Langat, peninsular Malaysia.

**“Some research has connected maternal depression to potentially harmful feeding behaviours, such as being less likely to establish boundaries or restrict child intake.”**

Participants ( $\geq 18$  years) were sampled from existing district health clinic lists, with 62 mothers of malnourished children selected at random (case) and 62 well-nourished children (control) being assigned. Child age, gender, and residential area were matched between case and control. The case group was defined as any child with weight-for-age (underweight), height-for-age (stunted),

and/or body mass index-for-age (wasted)  $-2SD$  below World Health Organization growth chart means. Controls were  $>-2SD$  to  $<+2SD$  for each of these indices. Children were aged 6–59 months and mothers had no co-morbidities. A translated and locally validated questionnaire was used to determine maternal depression status in mothers.

Adjusted odds ratios indicate that children from depressed mothers had more than twice the odds of malnutrition (AOR 2.5,  $p=0.03$ ). However, the 95% confidence interval was broad (1.08–6.09), so we should also consider other variables to interpret this study.

The authors used the Krejcie and Morgan (1970) table to determine their sample size, a well-used and validated approach. That said, only a 10% dropout rate was accounted for and there was a 17.7% dropout in this study – possibly leaving it underpowered. Body mass index-for-age was also a criterion, which is not considered to be wholly accurate for children

aged under 24 months. In this study, children were aged 6–59 months.

Comorbidities, including diagnosed depression, were excluded in this study. By expanding the criteria to include mothers with diagnosed depression as cases, the study may have yielded a greater effect size, increasing confidence in the findings. Although malnutrition was determined by growth charts, this study also measured mid-upper arm circumference (MUAC). As expected, there is a significant difference ( $p<0.001$ ) between malnourished cases and well-nourished controls ( $14.0\text{cm} \pm 1.4$  and  $15.3\text{cm} \pm 1.4$ ); however, these average MUAC values are higher than standard wasting cut-offs<sup>1</sup>. This may indicate that both groups were closer together in ‘malnourished’ status, especially wasting, which may well reduce the effect size observed.

The link between maternal mental health and child nutrition status remains underexplored, so this study addresses a valuable question. Unfortunately, the broad confidence interval coupled with methodological shortfalls make it difficult to place too much confidence in these results. The central hypothesis is indeed logical, but this study alone does not provide conclusive evidence of an association and will need to be complemented by other studies, ideally ones that address causality in their design.

<sup>1</sup> World Health Organization MUAC cut-offs for wasting are  $<12.5\text{cm}$ .

### References

Krejcie R & Morgan D (1970) Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607–610.