School feeding for improving the physical and psychosocial health of disadvantaged students
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Authors' objectives
Background: Early malnutrition and/or micronutrient deficiencies can adversely affect physical, mental, and social aspects of child health. School feeding programs are designed to improve attendance, achievement, growth, and other health outcomes.

Objectives: The main objective was to determine the effectiveness of school feeding programs in improving physical and psychosocial health for disadvantaged school pupils.


Reference lists of included studies and key journals were handsearched and we also contacted selected experts in the field.

Selection criteria: Data from randomized controlled trials (RCTs), non-randomised controlled clinical trials (CCTs), controlled before and after studies (CBAs), and interrupted time series studies (ITSs) were included. Feeding had to be done in school; the majority of participants had to be socio-economically disadvantaged.

Data collection and analysis: Two reviewers assessed all searches and retrieved studies. Data extraction was done by one of four reviewers and reviewed by a second. Two reviewers independently rated quality. If sufficient data were available, they were synthesized using random effects meta-analysis, adjusting for clustering if needed. Analyses were performed separately for RCTs and CBAs and for higher and lower income countries.

Main results: We included 18 studies. For weight, in the RCTs and CBAs from Lower Income Countries, experimental group children gained an average of 0.39 kg (95% C.I.: 0.11 to 0.67) over an average of 19 months and 0.71 kg (95% C.I.: 0.48 to 0.95) over 11.3 months respectively. Results for height were mixed in higher income countries. For height, results were mixed; height gain was greater for younger children. Attendance in lower income countries was higher in experimental groups than in controls; our results show an average increase of 4 to 6 days a year. Math gains were consistently higher for experimental groups in lower income countries; in CBAs, the Standardized Mean Difference was 0.66 (95% C.I. = 0.13 to 1.18). In short-term studies, small improvements in some cognitive tasks were found.

Authors' conclusions: School meals may have some small benefits for disadvantaged children. We recommend further well-designed studies on the effectiveness of school meals be undertaken, that results should be reported according to socio-economic status, and that researchers gather robust data on both processes and carefully chosen outcomes.


Bibliographic details
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