

School-based interventions promoting both physical activity and healthy eating in Europe: a systematic review within the HOPE project

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CRD summary

This review concluded that combining an educational and environmental component might be preferable in school-based nutrition and physical activity interventions to reduce obesity in European children and adolescents. These conclusions appear too strong based on the small number of included studies that had differing results.

Authors' objectives

To evaluate the evidence of school-based interventions targeting dietary and physical activity in primary and secondary school children in Europe.

Searching

PubMed, Web of Science, CINAHL, The Cochrane Library, SIGLE, Social Care Online, British National Bibliography for Report Literature and MD Consult were searched (1990 to December 2007) for European peer-reviewed studies. Supplements of two relevant journals, relevant web sites and reference lists of retrieved articles and reviews were handsearched. Full details of the search strategy were available as a web appendix (no longer available online).

Study selection

Studies that evaluated interventions in European school settings aimed at primary prevention of obesity and related diseases in which at least one component was the promotion of a healthy diet combined with physical activity in young people (six to 18 years) were eligible for inclusion. Studies had to report data on behaviour or obesity outcomes. Studies in which the intervention was conducted mainly outside the school setting were excluded.

Included studies targeted young children and adolescents and were conducted in UK, The Netherlands, Belgium, Germany, Italy, Greece and Norway. Interventions were grouped into categories: educational only, environmental or policy based only and a combination of the two. Follow-up ranged from less than three months to more than 12 months. Most studies used self report to measure diet and physical activity and objective measures of anthropometrics, such as body mass index (BMI), were used.

One reviewer screened the results of the searches. Full-text articles were assessed by a team of four reviewers. Disagreements were resolved through discussion.

Assessment of study quality

Studies were assessed for methodological quality according to criteria of representativeness of study population, study design, control for confounding, blinded outcome assessment, reliability and validity of data collection instruments and withdrawals and drop-outs. Each component was rated as strong, moderate or weak. Studies with fewer than four strong and only one weak grading were considered to be of moderate quality, studies with two or more weak gradings were considered to be of weak quality and other studies were considered to be strong.

Two reviewers independently assessed the quality of four of the studies and the other studies were assessed by one reviewer and checked by a second.

Data extraction

One reviewer extracted data from the included studies.

Methods of synthesis

A narrative synthesis was presented and grouped according to outcome measure, type of intervention, target population and age group (younger children or adolescents).

Results of the review

Eleven studies (number of participants unclear, but at least 13,770) reported in 27 papers were included in the review. Seven studies were cluster randomised controlled trials, three were non-randomised controlled studies and one was a controlled before-and-after study. Ten studies were rated as moderate quality and one as weak quality.

Primary school children (six studies): Two studies that focused on educational factors alone found improvements in nutrition knowledge, but only partial effects on dietary and physical activity behaviour; one found an increase in playground activity and the other found an increase in vegetable intake. No effects were found on BMI or the proportion of overweight children. Four studies evaluated a multi-component programme and found more favourable results. Two studies reported an increase in nutrition and/or physical activity knowledge. One study found a decrease in the proportion of girls who were overweight. One study found improvements in physical activity and fat intake and a decrease in BMI. Other studies found no impact on BMI.

Secondary school children (six studies): Three studies focused on educational factors alone: one found significant effects on physical activity and nutrition knowledge but no effects on behaviour, one found no effect on dietary and physical activity determinants or on behaviour and one found no effect on eating habits but improved physical activity. Only one study assessed BMI and this study found a smaller increase in BMI in the intervention compared to control group. Two more recent studies evaluated a multi-component intervention: one found a significantly larger decrease in fat intake and lower increase in BMI in girls in the intervention group compared to the control group and reported a smaller decrease in

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physical activity in girls and boys. The second study found no behavioural effects of the intervention and no effect on BMI but reported favourable changes in skin-fold thickness measurements in girls and boys.

Authors' conclusions

Combining an educational and environmental component might be preferable in school-based nutrition and physical activity interventions to reduce obesity in European children and adolescents.

CRD commentary

The review addressed a clear question. Inclusion criteria were defined. The literature search was extensive for published studies, but the restriction of the review to published peer-reviewed studies raised the possibility of publication bias. It was unclear why the end date of the searches was 2007 when the article was published in 2007; any relevant studies published more recently will have been excluded. Some steps were taken to minimise reviewer error and bias, but only one reviewer was involved in screening titles and abstracts and extracting data so there was a possibility of errors at these stages of the review.

Study quality was formally assessed using relevant criteria and the results were reported, but these were not considered in the synthesis of results. Only limited study details were reported in the paper and more detailed summaries were available as web appendices. A narrative synthesis was appropriate given the small number of heterogeneous studies, but the synthesis lacked numerical and statistical data and this made it impossible to judge the strength of the evidence and magnitude of the findings. Results from the randomised studies, which provide more reliable evidence, were not considered separately in the synthesis.

The authors' conclusions appear somewhat strong given the evidence and so should be interpreted with some caution.

Implications of the review for practice and research

Practice: The authors stated that European schools should be informed that combining educational and environmental strategies focusing on both nutrition and physical activity were necessary to prevent obesity in their pupils.

Research: The authors stated that future studies of sufficient duration were needed to document effects on BMI or other obesity indicators.

Funding

European Commission's Sixth Framework Programme.

Bibliographic details

De Bourdeaudhuij I, Van Cauwenberghe E, Spittaels H, Oppert JM, Rostami C, Brug J, Van Lenthe F, Lobstein T, Maes L. School-based interventions promoting both physical activity and healthy eating in Europe: a systematic review within the HOPE project. *Obesity Reviews* 2011; 12(3): 205-216

PubMedID

[20122137](https://pubmed.ncbi.nlm.nih.gov/20122137/)

Original Paper URL

<http://onlinelibrary.wiley.com/doi/10.1111/j.1467-789X.2009.00711.x/abstract>

Indexing Status

Subject indexing assigned by NLM

MeSH

Adolescent; Child; Child Nutrition Sciences /education; Child Nutritional Physiological Phenomena /physiology; Europe /epidemiology; Exercise /physiology; Female; Food Services /standards; Health Education; Health Promotion /methods /organization & administration; Humans; Male; Obesity /epidemiology /prevention & control; Schools

AccessionNumber

12011001933

Database entry date

16/04/2012

Record Status

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