A systematic review of school-based intervention studies for the prevention or reduction of excess weight among Chinese children and adolescents

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CRD summary
This systematic review of intervention studies for excess weight among Chinese children and adolescents concluded that the effectiveness of included interventions could not be determined due to the methodological shortcomings of studies. Based on the available data, these cautious conclusions appear reliable.

Authors’ objectives
To conduct a systematic review of intervention studies aimed at the prevention or control of excess weight among children and adolescents in China.

Searching
Two Chinese language (China Journal Full Text Database and Wanfang) and two English language databases (Medline and Meditext) were searched from 1990 to 2006. Search terms were reported. Chinese- and English-language studies were included. Published review papers were cross-referenced and researchers in the field of childhood obesity in China were contacted to identify additional studies.

Study selection
Eligible studies had to be population-based investigations of the effectiveness of a lifestyle behavioural intervention for the prevention or control of overweight and obesity in children and adolescents in China. Study outcomes were the prevalence of overweight and obesity, weight and body mass index, skin-fold thickness, blood glucose and lipid profile, aerobic fitness and blood pressure, and changes in knowledge and behaviour.

Most included studies were conducted with overweight or obese children and adolescents. The remaining studies included children and adolescents not defined as overweight or obese. The age of participants ranged from two to 23 years. Duration of intervention ranged from 10 weeks to three years and the period of follow-up ranged between 12 weeks and three years.

Interventions included: health education; physical activity; dietary modification; a psychological consultant to encourage behavioural change; modification of the school environment; and acupuncture. Interventions could be group- or individual-based. Most studies used a combination of interventions.

The authors stated neither how studies were selected nor how differences were resolved.

Assessment of study quality
Quality assessment of included studies was undertaken by two independent reviewers who used a modified version of the Effective Public Health Practice Project Quality Assessment Tool. The tool covered eight sections: selection bias; allocation bias; control for confounding; blinding; data collection methods; loss to follow-up; statistical analysis; and intervention integrity. Each was rated on a 3-point scale. Study scores were summed to give an overall score ranging from 0 to 16. Scores of 13 to 16 were considered strong quality, 9 to 12 as moderate, 5 to 8 as average and 0 to 4 as poor. Disagreements were to be referred to a third assessor if required.

Data extraction
The authors stated neither how data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
Because of the heterogeneous nature of the interventions and outcomes, data were synthesised narratively. The intervention was defined as effective if there was a significant difference in outcomes between the intervention and
control groups (p<0.05).

Results of the review
Twenty-two studies with more than 15,721 participants were included: 10 studies were cluster randomised (n>12,376); three were cluster controlled (n>268); two were randomised controlled trials (n=1,830); three were controlled trials (n=203); and four were pre-post studies (n=1,044). None of the studies had a strong quality rating: nine were rated as moderate; seven as average; and six studies as poor. Only one study reported a power or sample size calculation. None of the 16 cluster randomised adjusted for cluster sampling. Intention-to-treat analysis was performed in only one study, although 10 studies reported no loss to follow-up. In the remaining 12 studies, two reported an explanation for loss to follow-up.

Eighteen studies showed a significant difference (p<0.05) in body adiposity as measured by the prevalence of overweight and obesity, weight, body mass index or skin-fold thickness. One study reported a significant change in blood lipids and glucose, but no effect on adiposity. One study reported an improvement in knowledge, but no effect on weight. Another study reported a significant improvement in fitness, but no change in body mass index. One study described an improvement in body mass index and skin-fold thickness, but no statistical test was performed.

Authors' conclusions
The methodological shortcomings in most of the included studies prevented conclusions being drawn on the effectiveness of any intervention for the prevention of overweight and obesity in children and adolescents from China.

CRD commentary
The review question and inclusion criteria were clear. However, by including only studies published in English and Chinese some studies may have been missed. The assessment of study validity used appropriate criteria and methods designed to reduce reviewer bias and error; it was unclear whether similar methods were used when selecting studies for inclusion. A narrative synthesis seemed appropriate given the inclusion of a range of different methodologies and the differences between other study characteristics. Based on the available data, the authors' cautious conclusions appear reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: There was a clear and urgent need for well-designed trials of interventions for the prevention and treatment of overweight and obesity among children and adolescents in China. Quantitative and qualitative research was required to identify important lifestyle behaviours and environmental risk factors, and to assess the needs and acceptance of health programmes in schools and among children and their parents.

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