Components of primary care interventions to treat childhood overweight and obesity: a systematic review of effect
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CRD summary
The review concluded that the primary care setting can be effective in treating childhood obesity. The outcomes of this review provided evidence for use of specific intervention components in future studies to treat childhood obesity in primary care. The reliability of the review is limited by the poor quality of the evidence base and potential for biases within the review.

Authors' objectives
To assess the effectiveness of interventions that involved primary care in the treatment of overweight or obese children and identify the most effective components of the interventions.

Searching
MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Database of Systematic Reviews, DARE, PsycINFO and ERIC were searched from 1990 to November 2007 for articles published in English. Search terms were reported. Reference lists of included articles were searched.

Study selection
Randomised controlled trials (RCTs) and non-RCTs in a primary care setting or that involved a primary healthcare professional using interventions aimed at treating infants, children or adolescents who were overweight or obese were eligible for inclusion. Trials in which most participants were over 18 years old were excluded. Any outcome that assessed the effectiveness of the intervention on the child was allowed. Trials of primary prevention only were excluded. Participants who had undergone surgery, were obese due to pharmacological therapy or had a congenital disorder were excluded.

The included studies considered overweight and obese participants, obese participants and overweight/at risk of obesity participants. Types of intervention included intensive dietary and/or physical exercise counselling, parental involvement, after-school intervention, telephone/email/mail interventions, health education and family-based interventions alone or in combination. Participant age ranged from three to 17 years. The median proportion of males was 49.5%. Trials were conducted in USA, Israel, Germany, Italy, Australia, and Finland. Reported outcomes varied widely, but could be categorised into four groups: metabolic, behavioural, psychosocial and anthropometric/body composition.

Study selection was undertaken in stages. Two reviewers performed an initial trial selection followed by selection with refined criteria and a full-text stage; one reviewer reviewed remaining titles and abstracts.

Assessment of study quality
Trial quality was assessed using an adapted version of the Cochrane effective practice and organisation of care review group criteria to assess 10 quality items to give a maximum score of 10. Criteria included randomisation, blinding, allocation concealment and use of intention-to-treat analysis.

The authors did not state how many reviewers performed quality assessment.

Data extraction
One reviewer extracted data on various effectiveness outcomes onto a standardised form and noted the statistical significance of results (p<0.05). An intervention was deemed effective if there was a significant improvement in any outcome. Data were extracted a second time to gauge consistency for a small number of studies.

Methods of synthesis
Trials were synthesised narratively. Effective components of interventions were identified and discussed.
Results of the review
Seventeen trials were included in the review (3,086 participants): 10 RCTs and seven non-RCTs. Trial quality ranged from 2 to 9 out 10 (10 trials scored <6). Study sample size ranged from 18 to 819 participants.

Twelve out of 17 trials reported statistically significant effects of primary care interventions. Eight out of 17 trials showed significant anthropometric effects. Three out of nine trials showed significant metabolic effects. Six out of 10 trials showed significant effects on behaviour outcomes. No significant adverse events or psychosocial changes were reported.

Analysis of components of interventions indicated that the most effective for treating childhood obesity in primary care were: training for health professionals before intervention delivery; behaviour change options (included activity and diet); effecting behaviour change through a combination of counselling, education, written resources, support and motivation; and tailoring intensity according to goals.

Authors' conclusions
The primary care setting can be effective in treating childhood obesity. Outcomes of this review provide evidence for use of specific intervention components in future studies to treat childhood overweight and obesity in primary care.

CRD commentary
Inclusion criteria for the review were broadly defined. Several relevant data sources were searched. There was potential for language bias, as only studies in English were included. Publication bias was not assessed and could not be ruled out (acknowledged by the authors). Some attempts were made to reduce reviewer error and bias during study selection, but no such methods were used for data extraction and the authors did not state how many reviewers undertook quality assessment. Quality assessment was undertaken using a standard checklist, which indicated the poor quality of most of the evidence (acknowledged by the authors).

Studies were narratively synthesised, which seemed appropriate given the quality of evidence and heterogeneity across studies. The authors noted that insufficient data analysis, lack of an effective control group and inadequate sample sizes may have influenced the trial results.

The reliability of the review is limited by the poor quality of the evidence base and potential for biases within the review.

Implications of the review for practice and research
Practice: The authors stated that removing the preconception that primary care interventions were not effective in treating childhood obesity would facilitate the implementation of interventions through primary care. Involvement of medical health professionals may influence intervention effects and may be expanded from assessment and referral to include intervention delivery. Low intensity interventions delivered solely by a medical professional were particularly effective in affecting behaviour change.

Research: The authors stated that the intervention components were immediately practicable to further intervention studies in primary care.

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