Web-based weight management programs for children and adolescents: a systematic review of randomized controlled trial studies
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CRD summary
The authors concluded that results suggested potential for web-based behavioural change programmes for weight management in overweight children and adolescents. Lack of reporting of review methods, differences between studies with respect to interventions, co-interventions, controls and outcome measures and a lack of formal validity assessment mean that the authors' conclusions should be interpreted with caution.

Authors' objectives
To examine the evidence about web-based weight management interventions for overweight children and adolescents and to suggest areas for future research.

Searching
MEDLINE, EMBASE, CINAHL, PsycINFO, The Cochrane Library, HealthSTAR, EBM Reviews, Dissertation Abstracts, ERIC, ProQuest, Social Sciences and Sociological Abstracts were searched for studies published in peer-reviewed journals between 1995 and April 2009. Search terms were reported. Reference lists were searched.

Study selection
Randomised controlled trials (RCTs) were included if they evaluated interventions delivered via the Internet to patients or study participants and/or their families and reported weight loss, body mass index (BMI), BMI percentile changes, physical activity or dietary intake. Although not explicitly stated as part of the predefined selection criteria, the review focus was overweight children and adolescents.

The included studies evaluated a range of interventions including home internet interventions, interventions with parents and interactive websites. Some studies included co-interventions (such as behavioural interventions). Controls varied and included usual care, handouts, workbooks, interventions without parents and non-interactive internet interventions. Intervention duration ranged from two weeks to two years. All of the studies were set in USA. Participants were boys and girls aged eight to 18 years with and without one or more parents. Some studies involved specific groups such as African American girls. Studies reported a wide range of outcomes. Parental outcomes as well as children/adolescent outcomes were reported for studies that involved parents.

The authors did not state how papers were selected for the review.

Assessment of study quality
The authors did not state that they formally assessed validity. They stated that they evaluated the levels of evidence according to American College of Cardiology American Heart Association Clinical Practice Guidelines and reported on some validity items in tables, such as sample size, intention-to-treat analysis, baseline comparability of treatment groups and drop-out rate.

Data extraction
Results data were presented in tables as means with levels of significance for intervention compared to control or baseline.

The authors did not state how data were extracted for the review.

Methods of synthesis
The studies were combined in a narrative synthesis.
Results of the review
The authors stated that eight studies were included and reported the overall sample size as 3,697 children and adolescents. Three studies involved the same group of 57 participants, which left an overall 3,583 unique participants. Sample size ranged from 35 to 2,991. Drop-out rates ranged from 4.9% to 30%.

The authors stated that six of eight studies reported that internet interventions either alone or in combination with other behavioural elements demonstrated significant beneficial effects on a number of reported outcomes.

Two of three studies that directly compared internet interventions with a control group found a significant reduction in BMI in internet intervention groups; one study found a significant increase in healthy-eating and physical activity-related cognitive behavioural skills compared to the control group; and one study reported significantly greater loss of body weight and greater online activity compared to a non-interactive internet intervention.

Four studies demonstrated significant improvement from baseline in BMI, physical activity intention and/or self-efficacy; one study reported improvements from baseline only in the control group only and one study reported significant improvements in BMI and BMI Z scores in girls (not boys) compared to baseline.

Authors' conclusions
Results suggested potential for web-based behavioural change programmes for weight management in overweight children and adolescents.

CRD commentary
The review question was clearly stated and inclusion criteria were appropriately defined or implied. Several relevant sources were searched. No attempts were reported to minimise publication and language bias. Methods used to select studies and extract data were not described and so it any efforts to reduce reviewer errors and bias were unknown. Although some aspects of study quality were mentioned in tables, study validity was not assessed formally and this made it difficult to judge the strength of the evidence. Differences between studies made a narrative synthesis appropriate. Some results were reported as changes from baseline without reporting between-group differences, which combined with the diversity of outcome measures and differences between intervention and controls made it difficult to gain an overview of the evidence.

Lack of reporting of review methods, differences between studies with respect to interventions, co-interventions, controls and outcome measures and lack of formal validity assessment mean that the authors' conclusions should be interpreted with caution.

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

Research: The authors stated that future studies should be methodologically sound, evaluate interventions that were appropriate to the target group and assess long-term effectiveness and costs. Theory-based standardised frameworks should be developed. Future web-based weight management programmes for overweight children should address diet, physical activity, behaviour change and participation of family or parents, should involve populations with different gender, ethnicity and socioeconomic status and be conducted in various locations and countries.

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