Effectiveness of web-based programs on the reduction of childhood obesity in school-aged children: a systematic review

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CRD summary
The authors concluded that a web-based programme, as part of a multi-component intervention, could reduce obesity and being overweight, in school-aged children. The authors' conclusions may be overstated given the mixed results in the individual trials, the variation between the interventions, and the limited synthesis.

Authors' objectives
To assess the effectiveness of web-based programmes to reduce childhood obesity in school-aged children.

Searching
A broad range of 15 databases, including CINAHL, PubMed, EMBASE, PsycINFO and ERIC, was searched for articles from 1991 to August 2012; search strategies for each database were reported. Reference lists of included studies were checked. Studies had to be in English.

Study selection
Randomised controlled trials (RCTs) or pseudo-randomised trials of web-based programmes, alone or with other components, aimed at reducing obesity in four- to 18-year-olds, were eligible for inclusion. The outcomes of interest were measures of weight including body mass index (BMI), body weight and waist circumference.

The included trials were all conducted in the USA, except one that was conducted in the Netherlands. The trials included normal-weight, at-risk or overweight children. Most trials were of adolescent boys and girls. The interventions were typically weekly sessions of web-based programmes targeting weight loss, body image improvement, or behaviour modification for weight control. In all trials, the web-based intervention was delivered with other interventions, such as counselling sessions, parental involvement, or phone or email prompts. The interventions lasted between five and 52 weeks.

The authors did not state how many reviewers selected studies.

Assessment of study quality
Two reviewers independently assessed trial quality using the Joanna Briggs Institute (JBI) critical appraisal checklist for randomised controlled or pseudo-randomised trials. Trials had to meet a minimum of six out of the 10 checklist criteria to be included in the review. Disagreements were resolved through discussion or by a third reviewer.

Data extraction
The mean and standard deviation of the body mass index (BMI), BMI z-score, waist-hip ratio, waist circumference, and body fat at the start and after intervention were extracted.

Two reviewers independently extracted the data; disagreements were resolved by discussion or by a third reviewer.

Methods of synthesis
A narrative synthesis was presented, due to significant clinical and methodological variation.

Results of the review
Twelve reports of eight RCTs were included (1,717 school-aged children; range 30 to 883). Follow-up ranged from three to 24 months. All RCTs were judged to be of adequate quality.

Four RCTs showed that web-based programmes reduced either BMI, BMI z-score, waist-hip ratio, or body fat. Reductions were not observed beyond nine months after the intervention. One RCT showed no difference in BMI, one showed no difference in BMI z-score, and two showed an increase in BMI at follow-up.
Parents were involved as part of the intervention in all the trials that showed an improvement or no change from the start. Telephone or email reminders were part of the intervention in four of these six trials.

**Authors' conclusions**
A reduction in obesity and being overweight, for school-aged children, was possible with web-based weight-reduction interventions that had other components.

**CRD commentary**
The review question and inclusion criteria were clear. The restriction to trials in English may have excluded some relevant data. Data extraction and quality assessment were undertaken by two reviewers independently, which reduced the potential for error, but it was unclear whether the same process was used for study selection. While all the included trials were considered to be of adequate quality, some were at risk of bias.

A narrative synthesis was appropriate given the differences in the included interventions and populations, but the synthesis was very limited. The synthesis was also limited by the small size and relatively short follow-up in the included trials. As all the interventions included other components it was difficult to determine whether any benefits were due to the web-based programme or to the other components.

The authors' conclusions may be overstated given the mixed results in the individual trials, the variation between the interventions, and the limited synthesis.

**Implications of the review for practice and research**

**Practice:** The authors stated that using web-based technology as part of a multi-component intervention for weight reduction in school-aged children was promising.

**Research:** The authors stated that future studies should evaluate the effects of web-based technology as a single intervention, on a large sample, over a long period of time.

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