

Effectiveness of primary care interventions for weight management in children and adolescents: an updated, targeted systematic review for the USPSTF

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CRD summary

This review examined benefits and harms of behavioural and pharmacological weight-management interventions for overweight and obese children and concluded that medium to high intensity behavioural interventions appeared to be beneficial. Potential for language bias and clinical variation and methodological weaknesses in the included studies mean that caution is required when judging the reliability of the authors' conclusions.

Authors' objectives

To assess the benefits and harms of weight-management interventions for overweight and obese children and adolescents.

Searching

MEDLINE, DARE, PsycINFO, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials (CENTRAL), NICE and ERIC were searched for studies published in English from 2005 to June 2008. Studies on pharmacological treatments were searched from 2003 to June 2008. Search terms were reported. Reference lists of retrieved papers were reviewed. Experts were contacted for unpublished studies. This was an update of a previous review

Study selection

Controlled studies in primary care or comparable settings that promoted weight loss or weight maintenance in overweight or obese children aged two to 18 years were eligible for inclusion. Overweight was defined as body mass index (BMI) of at least 85th to 94th percentile and obese as BMI at least 95th percentile. Studies of children with weight management issues due to cognitive, behavioural or medical factors were excluded. Poor-quality studies were excluded. Studies were required to have a minimal intervention such as usual care, placebo or no-treatment as control group. Eligible studies needed to be randomised, include at least 10 participants in each arm, report weight outcomes and at least six months of follow-up; studies that reported immediate harms were included whether or not they met the minimum six-month follow-up. Full inclusion criteria are in the main report.

Included studies were conducted in a range of settings in different countries. Available studies were based mostly on obese children and ages four to 18 years. Both behavioural and pharmacological studies were included. Change in BMI between the pre- and post- intervention periods was the main outcome measure. Interventions were considered comprehensive if they included weight loss or healthy diet counseling, physical activity counseling or physical activity program participation and included behavioural management techniques to help make and sustain changes in diet and physical activity.

Two reviewers independently selected studies and resolved discrepancies by consensus.

Assessment of study quality

Study quality was assessed with United States Preventive Services Task Force (USPSTF) criteria and the National Institute for Health and Clinical Excellence (NICE) methodology checklist.

Two reviewers independently assessed quality and resolved discrepancies by consensus or consultation with a third reviewer.

Data extraction

Data on change in BMI and overweight between the pre- and post-intervention periods were extracted to enable calculation of standardised mean differences (SMDs) and 95% confidence intervals (CI). Where possible, BMI and standard deviation score (SDS) or change in percentage overweight was used as the outcome measure. Weight outcome were categorised as short-term (six to 12 months from beginning treatment) or maintenance (between one and four years after beginning treatment and at least 12 months after ending active treatment). For behavioural trials, hours of contact were calculated as proxy for treatment intensity.

One reviewer extracted data that was verified by a second reviewer.

Methods of synthesis

Where possible, standardised mean difference (SMD) and 95% CI were combined in a meta-analysis using random-effects model. Data were mostly summarised in a narrative synthesis grouped by intervention because of significant heterogeneity between studies.

Between-studies heterogeneity was assessed by I^2 . Where possible, sensitivity analysis was conducted to test the robustness of (BMI) results.

Results of the review

Twenty-five randomised controlled trials (n=3,600) published in 30 articles and rated as fair or high quality were included in the analysis.

Behavioural interventions showed short-term benefits in terms of BMI. Comprehensive medium-to-high-intensity behavioural interventions showed the most improvements (SMD -1.01, 95% CI -1.24 to -0.78; three studies, n=425). Comprehensive very low intensity interventions showed moderate but statistically significant benefit (SMD -0.39, 95% CI -0.66 to -0.11; three studies, n=208). Comprehensive low intensity or focused interventions did not show any improvement. Data on maintenance phase of behavioural interventions were limited, but available evidence suggested improvement of these

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interventions could be maintained more than 12 months after the end of the intervention.

Two studies that assessed medication (sibutramine or orlistat) combined with behavioural interventions demonstrated small-to-moderate short-term weight loss. There was a mean BMI reduction of 2.9kg/m² for sibutramine compared with 0.3kg/m² in the control group (one study, n=498) and 0.55kg/m² versus 0.3kg/m² for orlistat versus control (one study, n=539). No study followed weight changes after medication had stopped.

Adverse events were reported only for the pharmacological intervention. No serious events were reported.

Sensitivity analysis did not change the results.

Authors' conclusions

The research suggested that behavioural interventions can be effective in managing weight in obese children and adolescents; combined behavioural-pharmacological interventions may be useful in very obese adolescents.

CRD commentary

The review addressed a well-defined question in terms of participants, interventions and outcomes. The search included a range of electronic databases. The restriction to studies published in English meant that language bias could not be ruled out. Two reviewers independently selected studies, abstracted data and assessed quality of the included studies to minimise errors and bias in the review. Study quality was assessed with standard tools. Characteristics of individual studies were presented. Heterogeneity between studies was explored and reported. Methods used in summarising data that involved both narrative synthesis and a meta-analysis were appropriate given the clinical variation in the included studies.

Although sensitivity analysis did not change these results, but potential for language bias and methodological weaknesses in the included studies mean that caution is required when judging the reliability of the authors' conclusions.

Implications of the review for practice and research

Practice: The authors stated that the implications for practice were unclear. The authors highlighted that culturally relevant interventions to combine diet or healthy eating and exercise, and incorporate lay facilitators and social support should be promoted.

Research: The authors stated that culturally relevant interventions and some internet-based programmes should be explored further. Future studies should: emphasise programme development and evaluation; explore long-term follow-up to determine programme effects over time; attempt to gather relevant long-term data from non-completers; identify and explore population level interventions; and explore applicability and transferability of successful programmes.

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Bibliographic details

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Other publications of related interest

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MeSH

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.