Meta-analysis: the effect of dietary counseling for weight loss
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CRD summary
This review concluded that dietary counselling results in a modest reduction in body mass index compared with usual care, but this diminishes over time. The authors acknowledged limitations of both the review and the included studies, and some of the review methodology was not reported; the impact of these on the conclusions is uncertain.

Authors' objectives
To evaluate the effect of dietary counselling, compared with usual care, on body mass index (BMI) in adults.

Searching
Studies prior to 1997 were identified from a previous review (see Other Publications of Related Interest). MEDLINE and the Cochrane CENTRAL Register were searched from 1997 to 2006 for more recent studies; the search terms were reported. In addition, reference lists of reviews and included studies were screened. Only English language reports were eligible.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies comparing dietary counselling with usual care or minimal intervention, over at least 12 weeks, were eligible for inclusion. Studies of exercise only interventions were excluded. The included studies used calorie or fat intake targets, or individualised dietary recommendations to promote weight loss, administered at group and/or individual meetings or via the Internet. A large proportion of studies also provided advice on exercise. The active intervention phase ranged from 2.5 to 48 months.

Participants included in the review
Studies of adults (over 18 years of age) with a baseline BMI of at least 25 kg/m2 were eligible for inclusion. The mean age of the participants ranged from 27 to 68 years and the mean BMI from 25 to 40 kg/m2. The distribution of gender was not reported. Some studies primarily included patients with co-morbid conditions such as hypertension or diabetes.

Outcomes assessed in the review
Studies reporting outcomes relating to body weight or BMI, reported at a minimum of 16 weeks, and where a standard error (SE) could be calculated, were eligible for inclusion. Studies where the goal was not weight loss were excluded. The outcome data were recorded at time points, ranging from 3 to 60 months.

How were decisions on the relevance of primary studies made?
The authors did not state how the studies were selected for the review, or how many reviewers performed the study selection.

Assessment of study quality
Study quality was assessed using criteria relating to the description of the population and setting, randomisation, blinding, appropriateness of the statistical analyses, reporting errors and withdrawals. Studies were classified as good, fair or poor quality. It was unclear how many reviewers performed the quality assessment.

Data extraction
One reviewer extracted the data and a second reviewer checked them; any disagreements were resolved by discussion between at least two reviewers. The net changes in BMI and SEs were extracted or calculated from each study (the methods used were reported). Data were extracted as intention-to-treat (ITT) where reported, with last observation carried forward being used where ITT data were not reported. Slopes of net change across different time points were
calculated where possible.

**Methods of synthesis**

**How were the studies combined?**
The net change in BMI at individual time points where at least 2 studies reported appropriate data, and BMI slopes where at least 3 studies reported a change in BMI at multiple time points, were combined in separate meta-analyses using random-effects models weighted by the study variance. Data from the active and maintenance stages of the studies were analysed separately.

**How were differences between studies investigated?**
Subgroup analyses were performed to determine the effect of interventions in those with diabetes, and the effect of adding exercise to dietary interventions. Random-effects meta-regression was used to investigate differences in intervention, frequency of support meetings, calorie intake advised, the inclusion of patients with diabetes and study quality issues.

**Results of the review**
Forty-six RCTs met the inclusion criteria. These provided 63 intervention groups (approximately 6,386 participants received dietary counselling and 5,467 usual care).

Of the 46 studies, 9% were considered good quality, 63% were considered fair quality and 28% poor quality. Flaws in the poor-quality studies included high rates of withdrawal, incomplete reporting and unclear analyses.

**Change in BMI at single time points.**
In the active phase, data for the greatest number of participants were available at 6 and 12 months, when dietary counselling resulted in significant reductions in BMI: mean net changes of –1.39 (5% confidence interval, CI: –1.79, -1.00; 3,888 participants) and –1.88 (95% CI: –2.29, -1.46; 1,363 participants), respectively. A significant reduction in weight associated with dietary counselling was also found at 3, 4, 5, 7, 8, 13, 36 and 42 months, but not at 18, 24 or 30 months (most of these analyses were based on a small number of studies).

In the maintenance phase, significant reductions in BMI were associated with counselling between 6 and 42 months; the response became steadily smaller over that period of time despite most of the intermediate time points having substantially greater numbers of participants (up to 2,274): mean net changes were –2.87 at 6 months (95% CI: –4.50, -1.25; 228 participants) and –0.83 (95% CI –1.29, -0.37; 250 participants) at 42 months. After 42 months, the response was mixed with low numbers of participants.

**Change in BMI across multiple time points.**
During the first year of the active phase, 60% of slopes were positive (weight loss) and 40% were flat or negative (weight gain). After 12 months, 8 out of 9 slopes were positive.

During the maintenance phase, 85% of slopes were positive. However, most studies showed a steady regain in weight over time.

**Authors' conclusions**
Compared with usual care, dietary counselling results in modest weight loss that diminishes over time.

**CRD commentary**
The review addressed a clear research question with well-defined inclusion criteria. Two relevant sources were searched, but no specific attempts were made to minimise language or publication bias and relevant studies might have been missed. Although the data extraction was conducted in duplicate to reduce error and bias, it is unclear whether similar methods were adopted during the study selection and quality assessment stages. Relevant criteria were used to assess study quality and the impact of study quality was investigated. The data were pooled using meta-analysis but statistical heterogeneity was not assessed, so it was not clear if changes in BMI were consistent for all studies. However,
several potential sources of heterogeneity were examined. Both the review and the included studies had limitations, which the authors acknowledged, and some of the review methodology was not reported; the impact of these on the conclusions is uncertain.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that large, long-term randomised trials measuring cardiac events and mortality rates are required, and that future studies should minimise loss to follow-up and determine which factors result in more effective weight loss.

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**Other publications of related interest**


This additional published commentary may also be of interest.

van de Laar FA. Review: dietary counselling promotes modest weight loss, but the effect diminishes over time. Evid Based Med 2008;13:11.

**Indexing Status**

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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.