Schizophrenia and weight management: a systematic review of interventions to control weight

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CRD summary

This review assessed interventions to control weight gain in patients with schizophrenia. The authors concluded that dietary and exercise counselling as part of a behavioural modification programme can control weight, but that widespread use of pharmacological interventions cannot be recommended. However, the behavioural intervention studies were of a poor quality, thus the evidence for implementation is weak.

Authors' objectives

To assess the effects of interventions to control weight gain in patients with schizophrenia.

Searching

The following databases were searched for studies published in English: PsycINFO (1872 to October 2002); the Cochrane Schizophrenia Group's Register of Trials (The Cochrane Library, Issue 4, 2002); ProQuest Digital Dissertations (1861 to October 2002), MEDLINE (1951 to October 2002); ISI Web of Science (1981 to October 2002); SPORTDiscus (1830 to October 2002); Zetoc (November 2002); Paperchase, combining MEDLINE (1966 to August 2002), HealthSTAR (1975 to 2000), AIDSLINE (1980 to 2000), Cancerlit (1980 to 2001) and OLDMEDLINE (1966 to 2000); and OCLC FirstSearch (October 2002). The search terms were stated in the paper. Leading authors of primary studies were contacted for unpublished literature. In addition, the October, November and December 2002 issues of the following journals were searched: Journal of Clinical Psychiatry, British Journal of Psychiatry, Schizophrenia Bulletin, Psychological Medicine, Archives of General Psychiatry and the American Journal of Psychiatry. Only studies published in English were included.

Study selection

Study designs of evaluations included in the review

Single-case studies were excluded, but otherwise there were no restrictions on study design. The review classified studies as: pre-experimental including pre-test post-test studies; quasi-experimental including case-control and cohort studies; and experimental including randomised controlled trials (RCTs).

Specific interventions included in the review

Studies of interventions aimed at weight loss were eligible for inclusion. The included studies used pharmacological interventions and behavioural and diet interventions. The pharmacological interventions comprised chlorphentermine, phenmetrazine, metformin, D-fenfluramine, phenylpropanolamine, olanzapine, fluoxetine, nizatidine, amantadine and metformin, either alone or in combination. The behavioural and diet interventions were behaviour modification, cognitive-behavioural therapy, therapy group, tokens reinforcement, nutrition education, Weight Watchers, education and diet restriction alone. The pharmacological interventions lasted from 7 to 21 weeks (mean 13.5), while the behavioural interventions lasted from 8 to 72 weeks (mean 23.5). Most of the studies were conducted in in-patient or long-stay residential settings. The authors pointed out that some of the drugs used in the studies have since been withdrawn, or are being considered for withdrawal.

Participants included in the review

Studies in which most patients had been diagnosed as having schizophrenia using criterion-based classification systems were eligible for inclusion. The mean age of the participants was 42 years in the studies of pharmacological interventions and 38 years in those of behavioural interventions. Only one study explicitly stated that the participants were having a first episode of schizophrenia.

Outcomes assessed in the review

Studies that assessed weight loss were eligible for inclusion if they used measures such as body weight, body mass index (BMI), waist circumference, waist-to-hip circumference ratio, or percentage body fat.

How were decisions on the relevance of primary studies made?
Two reviewers selected the studies and reached consensus through discussion.

Assessment of study quality

Validity was assessed for the presence of selection bias, performance bias, attrition bias and detection bias. The total number of biases present in each study was counted. The authors did not state how many reviewers performed the validity assessment.

Data extraction

The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. The extracted data included study design, sample size, treatments, duration of the intervention and results. Where possible, for each treatment group in each study, the average weight loss and percentage body weight lost were extracted and biased effect sizes were calculated.

Methods of synthesis

How were the studies combined?
The studies were grouped according to the intervention (pharmacological or behavioural) and combined in a narrative.

How were differences between studies investigated?
Differences between the studies were discussed in terms of biases, but differences in the results were not discussed in terms of biases.

Results of the review

Sixteen studies (n=447) were included. Four RCTs (n=254), 3 quasi-experimental studies (n=45) and one pre-experimental study assessed pharmacological interventions. One RCT (n=21), 3 quasi-experimental studies (n=76) and 4 pre-experimental studies assessed behavioural and dietary interventions.

No study reported adequate allocation concealment. Most participants and assessors were aware of the allocated treatment group. Two studies reported intention-to-treat analysis. The sample size ranged from 2 to 175 patients.

Pharmacological interventions (8 studies): 5 studies found that the intervention slightly decreased weight (greater than 5% reduction from baseline body weight). One RCT found that D-fenfluramine was associated with the greatest weight loss (5.4 kg at 12 weeks). Fluoxetine and phenylpropanolamine were associated with increased weight (1 RCT for each drug). Nizatidine limited early weight gain but the effect was reduced by 16 weeks (1 RCT).

Behavioural interventions (8 studies): all 8 studies found that the intervention slightly decreased or maintained weight. The study designs were weaker than those for the pharmacological interventions, and the sample sizes were smaller (2 to 40 patients). The only RCT found an increased weight loss with behaviour modification plus diet compared with diet only and therapy (the statistical significance was not reported).

Authors' conclusions

Sustained weight control requires both dietary and exercise counselling as part of a behavioural modification programme. The results for pharmacological interventions were mixed and these interventions cannot be recommended for widespread use.

CRD commentary

The review question was clear in terms of the intervention and outcomes. The inclusion criteria for the participants were clear, but some participants who did not have schizophrenia were apparently included. Several sources were searched and attempts were made to locate unpublished data. In limiting the included studies to those in English, the authors might have missed some relevant studies. Methods were used to minimise bias in the study selection process, but the methods used to assess validity and extract the data were not reported. Validity was assessed systematically, although it was not used to explore whether the treatment effect for pharmacological interventions differed according to study quality. Drop-out rates were not reported and their influence on the results was not explored.

A narrative synthesis was appropriate given the small number of studies of different interventions and with different designs. The authors listed some of the limitations of their review. For example, the risk of bias in the included behavioural studies and the limited generalisability on account of the majority of studies being set in residential settings. There was no evidence on the long-term effects of the interventions. The results should be interpreted in the context of these limitations.

Implications of the review for practice and research

Practice: The authors stated that dietary and behavioural interventions may reduce or control weight in the short term and that pharmacological interventions should only be used as a last resort. They also stated that exercise and dietary counselling combined with behavioural therapy should be recommended.

Research: The authors stated that future studies should measure the BMI and waist circumference. They also stated that further controlled trials of multi-component behavioural and dietary interventions are required, especially trials in community settings.

Bibliographic details

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Other publications of related interest

Werneke U, Taylor D, Sanders Tab. Options for pharmacological management of obesity in patients treated with atypical antipsychotics. Int Clin Psychopharmacol 2002;17:145-60.

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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.