Non-pharmacological management of antipsychotic-induced weight gain: systematic review and meta-analysis of randomised controlled trials

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CRD summary
This well-conducted review concluded that non-pharmacological interventions were effective in preventing or reducing weight gain induced by antipsychotic drugs in patients with schizophrenia and similar disorders. The authors’ conclusions appear reliable, although the evidence covered the period of treatment and short-term follow-up only and the long-term effectiveness of treatment is uncertain.

Authors’ objectives
To determine the effectiveness of non-pharmacological interventions to control antipsychotic-induced weight gain in patients with schizophrenia.

Searching
The authors searched Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, PsycINFO, CINAHL, UMI Proquest Digital Dissertations, citation indexes and registers of ongoing clinical trials from inception to May 2007 and handsearched reference lists of retrieved articles and previous reviews and the contents of six named journals. No language restrictions were imposed.

Study selection
Randomised controlled trials (RCTs) of non-pharmacological adjunctive interventions aimed at preventing or controlling weight gain induced by antipsychotic drugs were eligible for the review. Trials had to include at least 75% of participants diagnosed with schizophrenia spectrum disorders. Eligible comparators were standard care or an alternative intervention. The primary outcome was change in weight and body mass index at the end of treatment.

Included trials evaluated cognitive behavioural interventions, nutritional counselling and a combined nutritional and exercise intervention. Interventions lasted between eight weeks and six months and aimed either to prevent weight gain or to achieve weight loss in patients who had already gained weight. Most trials recruited patients with chronic schizophrenia; one involved patients with recent onset of psychosis. Patients received various different first and second generation antipsychotics. All trials except one were conducted in outpatient settings.

Two reviewers independently selected studies for the review. Disagreements were resolved by discussion.

Assessment of study quality
Validity was assessed based on random sequence generation, allocation concealment, blinded outcome assessment, withdrawals, intention-to-treat analysis and whether the intervention was manual-based.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
Means and standard deviations of changes in weight in each group were used to calculate the weighted mean difference (WMD). Two reviewers independently extracted data and any discrepancies were resolved by consensus. Authors were contacted for missing data if necessary.

Methods of synthesis
Studies were combined by meta-analysis using fixed-effect models. Heterogeneity was assessed using the $I^2$ statistic. Random-effects meta-analysis was performed if there was evidence of inconsistency (not defined). Subgroup analyses were used to compare preventive versus weight loss interventions, individual versus group therapy and cognitive-behavioural versus nutritional counselling interventions. The effect of type of illness (chronic versus recent onset) was
examined. Funnel plots were used to assess risk of publication bias. Several sensitivity analyses were reported.

**Results of the review**

Ten RCTs (n=482 participants) were included. Reporting of quality characteristics was generally poor.

Across all trials, non-pharmacological treatment produced a statistically significant decrease in body weight compared with standard care (WMD -2.56kg, 95% CI -3.20 to -1.92) at the end of treatment. Body mass index was significantly reduced (WMD -0.91kg/m², 95% CI -1.13 to -0.68). Statistically significant effects were found in all subgroup analyses. The effect of treatment was maintained at follow-up after two to three months (WMD -4.14kg, 95% CI -5.80 to -2.49; three RCTs). Heterogeneity was not significant for most comparisons. The funnel plot showed evidence of mild asymmetry, but exclusion of the smaller studies had little effect on the pooled weighted mean difference. Other outcomes and sensitivity analyses were reported.

**Authors’ conclusions**

Adjunctive non-pharmacological interventions were effective in reducing or attenuating antipsychotic-induced weight gain in patients with schizophrenia spectrum disorders.

**CRD commentary**

This review had clear inclusion criteria. The search for studies was thorough and no language restrictions were imposed. Risk of publication bias was assessed using a standard method. Validity was assessed using appropriate criteria. Measures were taken to minimise errors and bias in study selection and data extraction (not explicitly reported for validity assessment). Relevant details of included trials were presented in an online appendix. Trials were combined by meta-analysis. Statistical heterogeneity was assessed and differences between studies were investigated by subgroup and sensitivity analyses. This was a generally well-conducted and well-reported review. The authors’ conclusions reflect the evidence presented and appear reliable, although, as noted by the authors, the long-term effectiveness of treatment is uncertain.

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

**Practice:** The authors stated that non-pharmacological weight management interventions should be a priority during treatment with antipsychotic drugs, particularly during the early stages.

**Research:** The authors stated further trials were required to compare different interventions and assess long-term outcomes and cost-effectiveness.

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