**Effect of weight-reducing agents on glycaemic parameters and progression to type 2 diabetes: a review**

*Lloret-Linares C, Greenfield JR, Czernichow S*

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**CRD summary**

The review concluded that weight-loss agents lead to statistically and clinically significant improvements in glycaemic parameters and glycaemic control in patients with and without diabetes. Limitations with the search and review processes coupled with the absence of a study quality assessment made the reliability of the results uncertain. The authors' conclusions should be interpreted with caution.

**Authors' objectives**

To review data on the effect of drugs that promote weight loss on glycaemic parameters and type 2 diabetes risk in predisposed individuals.

**Searching**

MEDLINE was searched from 1987 to 2007 for studies published in English; search terms were reported. Relevant review articles were searched.

**Study selection**

Randomised double-blind placebo-controlled trials of drugs that promote weight loss and that reported fasting blood glucose and/or glycated haemoglobin (HbA1c) data were eligible for inclusion. Minimum treatment duration was one year. Studies with mixed (diabetic and non-diabetic) populations were excluded.

Mean age ranged from 46 to 69 years in diabetic populations (body mass index range 29 to 38kg/m²) and from 40 to 53 years in non-diabetic populations (body mass index range 32 to 38kg/m²). Most studies were in non-diabetic populations; around three-quarters of this population was female. Treatments used included orlistat (120mg three times a day), sibutramine (10 to 20mg once daily) and rimonabant (20mg daily). All trials used a reduced-calorie diet.

The authors did not state how many reviewers performed the selection.

**Assessment of study quality**

The authors did not formally assess study quality; only double-blind randomised controlled trials were eligible for inclusion.

**Data extraction**

When more than one dose of sibutramine was studied, data for the 20mg dose was used. One reviewer extracted data.

**Methods of synthesis**

A narrative synthesis of the data was undertaken. Results were presented by type of population (diabetic or non-diabetic).

**Results of the review**

Twenty-three RCTs (n=14,569) were included in the review. Sample sizes ranged from 86 to 3,277 participants.

**RCTs in non-diabetic participants (15 studies):** All three weight loss drugs resulted in significant improvements in fasting glucose and fasting insulin in seven of 14 studies. Further results were reported.

**RCTs in diabetic participants (eight studies):** Glycated haemoglobin decreased by between 0.28% and 1.1% with orlistat (five studies) and by 0.3% to 0.6% with sibutramine and rimonabant (three studies). Differences were statistically significant between active drug and diet groups in all studies except one sibutramine study.
Authors' conclusions
Weight-loss agents led to statistically and clinically significant improvements in glycaemic parameters and glycaemic control in patients with and without diabetes.

CRD commentary
The review addressed a clear question and was supported by appropriate inclusion criteria. Only one electronic database was searched and so it was likely that some relevant studies were missed; this was exacerbated by limiting the search to studies published in English and so the review may also have been subject to language bias. Only one reviewer extracted data and the authors did not report on the methods used to select studies, so the review may have been prone to reviewer error and bias. Study quality was not assessed, which made it difficult to assess the strength of the evidence. Sufficient study details were provided. A narrative synthesis of the data was undertaken. The authors reported that heterogeneity in study design precluded meta-analysis of the data, yet studies appeared very similar in design, treatments, populations and outcomes; further details about the reasons for using a narrative synthesis would have been useful.

Limitations with the search and review processes coupled with the absence of a study quality assessment made the reliability of the results uncertain. The authors’ conclusions should be interpreted with caution.

Implications of the review for practice and research
Practice: The authors stated that the additional benefits of weight loss agents should be considered in clinical practice, but balanced against their well-known side effects.

Research: The authors stated that it was yet to be determined whether increases in adiponectin were responsible for the positive changes in insulin resistance with rimonabant treatment.

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