

## Pharmacotherapy for overweight/obesity in ethnic minorities and White Caucasians: a systematic review and meta-analysis

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### CRD summary

The review concluded that there were few studies of weight loss pharmacotherapy for comparisons of ethnic groups. The data appeared to show positive weight management results with orlistat and sibutramine; weight loss with sibutramine was significantly lower in ethnic minorities versus Caucasians. The review was generally well conducted. The authors' conclusions were suitably cautious and appear appropriate.

### Authors' objectives

To compare the effectiveness of anti-obesity medications in ethnic minorities and white Caucasians.

### Searching

MEDLINE, EMBASE, The Cochrane Library, CINAHL, DARE and Current Controlled Trials were searched from January 1990 to June 2010 for articles in English. Search terms were reported. Reference lists of identified trials were searched.

### Study selection

Randomised controlled trials (RCTs) of orlistat or sibutramine versus placebo in white and ethnic minority adult participants (aged 18 years and over) that evaluated changes in weight or body mass index (BMI) and at least one secondary outcome (waist circumference, fasting lipid and glucose levels, blood pressure and HbA1c) were eligible for inclusion. Trials had to last at least six months and had to be conducted in USA or the UK. Trials of only ethnic minority participants were included.

The included trials studied sibutramine (15mg to 20mg daily) and orlistat (120mg three times daily) versus placebo in participants with a mean BMI that ranged from 28.2 to 38.8kg/m<sup>2</sup>. Most trials were conducted in USA. Most trials included cointerventions such as dietary advice, brief counselling, calorie restriction and lifestyle change. Mean age of participants, where reported, ranged from 41 to 58 years. Most studies included a mix of ethnicities; some included only one ethnic group. Reported ethnic minorities were Black American, Mexican, Indian/Pakistani, Asian and non-white Hispanic.

One reviewer performed study selection, which was checked by a second reviewer. Disagreements were resolved by consensus.

### Assessment of study quality

Trial quality was assessed using the Verhagen Delphi list to appraise randomisation, blinding, allocation concealment, intention-to-treat, reporting of eligibility criteria, baseline similarity and point and measures of variability for the primary outcome.

One reviewer performed quality assessment, which was checked by a second reviewer. Disagreements were resolved by consensus.

### Data extraction

Data were extracted on primary and secondary outcomes and used to calculate mean differences and 95% confidence intervals (CIs).

One reviewer performed data extraction. Disagreements were resolved by consensus.

### Methods of synthesis

A random-effects meta-analysis was used to calculate pooled mean differences and 95% CIs. Statistical heterogeneity was assessed using Cochrane's Q and I<sup>2</sup>. Publication bias was assessed using funnel plots and Egger's test.

### Results of the review

Eighteen RCTs (4,405 participants) were included in the review. There were 1,275 ethnic minority participants and 3,130 white participants. Most trials adequately defined the method of randomisation, used allocation concealment, had similar baseline data and used intention-to-treat analysis; four trials failed on more than five criteria.

**Orlistat (12 trials, 3,100 participants):** Compared with placebo, orlistat had a statistically significantly greater weight loss in both ethnic minorities (mean difference -2.3kg, 95% CI -2.6 to -2.0, I<sup>2</sup>=0%; 12 RCTs) and white Caucasians (mean difference -2.8kg, 95% CI -5.1 to -0.5, I<sup>2</sup>=0%; nine RCTs). There was no difference between the two groups in terms of weight loss.

**Sibutramine (six trials, 1,305 participants):** Compared with placebo, sibutramine had a statistically significantly greater weight loss in both ethnic minorities (mean difference -2.7kg, 95% CI -3.1 to -2.3, I<sup>2</sup>=0%; six RCTs) and white Caucasians (mean difference -4.5kg, 95% CI -5.1 to -3.8, I<sup>2</sup>=54%; six RCTs). There was a significant difference between the two groups in terms of weight loss.

Secondary outcomes were presented in the review. There was no evidence of publication bias.

### Authors' conclusions

There were few studies of weight loss pharmacotherapy for comparisons of ethnic groups. The data appeared to show positive weight management results with orlistat and sibutramine; weight loss with sibutramine was significantly lower in ethnic minorities compared with Caucasians.

### CRD commentary

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Inclusion criteria for the review were clearly defined and several relevant data sources were searched. Publication bias was assessed and was not detected. There was the potential for language bias, as only trials in English were included. Some attempts were made to reduce reviewer error and bias throughout the review. Quality assessment indicated the variable quality of the included trials, which the authors acknowledged. Trials were combined using a random-effects meta-analysis and statistical heterogeneity was assessed using appropriate methods.

The review was generally well conducted. The authors' conclusions were suitably cautious and appear appropriate.

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

**Practice:** The authors stated that the review supported use of anti-obesity medication in addition to lifestyle interventions in overweight and obese patients from ethnic minorities.

**Research:** The authors stated that further research in ethnic minority groups was needed to determine how weight loss interventions may be tailored to provide maximum benefits to these patients.

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