

Antenatal interventions for overweight or obese pregnant women: a systematic review of randomised trials

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CRD summary

This review proposed to evaluate the benefits and harms of antenatal dietary or lifestyle interventions for pregnant women who were overweight or obese. The authors did not address intervention harms and concluded that intervention benefits were unclear. The authors' conclusion accurately reflected the limited and suboptimal-quality evidence presented and seems likely to be reliable.

Authors' objectives

To evaluate the benefits and harms of antenatal dietary or lifestyle interventions for pregnant women who were overweight or obese.

Searching

PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), Australian Clinical Trials Register and International Clinical Trials Register were searched for published studies to January 2010. There were no language restrictions. Search terms were reported. Reference lists were scanned to locate additional studies.

Study selection

Randomised controlled trials (RCTs) that evaluated antenatal dietary or lifestyle antenatal interventions in pregnant women defined as overweight (body mass index (BMI) $\geq 25\text{kg/m}^2$) or obese (BMI $\geq 30\text{kg/m}^2$) were eligible for inclusion in the review. The primary outcome of the review was large for gestational age infants (birthweight of greater than the 90th centile for gestation and infant sex or birthweight $>4,000\text{g}$ defined by the trial authors). Secondary outcomes of interest were mean gestational weight gain, hypertension, pre-eclampsia or eclampsia, gestational diabetes, preterm birth before 37 weeks of gestation, infection, need for induced labour, caesarean section, postpartum haemorrhage that required blood transfusion, perinatal death, congenital abnormalities, infant birthweight more than 4,500g or less than 2,500g, Apgar score of less than 7 at five minutes of age, hypoglycaemia that required intravenous treatment, hyperbilirubinaemia that required treatment, admission to neonatal intensive care and birth trauma. Relevant childhood outcomes were body size (height, weight and BMI) and body composition.

Most trials evaluated a dietary intervention compared with standard care (no intervention). Others focused on aerobic and/or resistance exercise. Interventions were varied in terms of frequency, intensity and duration. Trials largely included women in all BMI categories; there was variable reporting of outcomes in those considered to be overweight and obese. Studies were conducted in USA, Canada, Europe, Australia and Brazil. There were no UK studies.

Two independent reviewers selected the studies.

Assessment of study quality

Trial quality was assessed in terms of randomisation, allocation concealment, blinding and follow-up.

Two independent reviewers carried out the quality assessment.

Data extraction

Data were extracted to enable calculation of risk ratios (RR) for dichotomous data and mean differences for continuous data, along with 95% confidence intervals (CI). Intention-to-treat data were collected.

The authors did not state how many reviewers carried out data extraction.

Methods of synthesis

Risk ratios, weighted mean differences (WMDs), with 95% confidence intervals, were pooled in a meta-analysis using fixed-effect (inverse-variance weighted) or random-effects (where statistical heterogeneity was identified) models. Heterogeneity was assessed with I^2 (values over 50% were considered heterogeneous).

Results of the review

Nine RCTs (743 women) were included in the review. Overall trial quality was considered to be fair to poor. Randomisation and allocation concealment were adequate in five trials; blinding was present in only one trial and losses to follow-up were greater than 20% in three trials.

No statistically significant benefits were found in women who received antenatal dietary interventions in terms of large for gestational age infants (RR 2.02, 95% CI 0.84 to 4.86; three RCTs, 366 women). There were no statistically significant differences for any of the secondary outcomes.

There were no statistically significant differences for primary or secondary outcomes for women who received antenatal lifestyle (aerobic and/or resistance exercise) interventions (two RCTs, 131 women).

Authors' conclusions

The effect of antenatal dietary intervention for overweight or obese pregnant women on maternal and infant health outcomes remained unclear.

CRD commentary

The review question was clear. Inclusion criteria were stated adequately for study design, participants, and interventions. Although the included primary outcome was clearly defined and the list of remaining outcomes assessed was extensive, there was no apparent consideration of intervention harms (as stated in the authors objective). The search strategy included relevant sources. Steps were taken to minimise potential language bias. Publication bias was a possibility. Appropriate quality assessment criteria were

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applied. Processes for quality assessment and study selection were carried out with attempts to minimise reviewer error and bias.

The authors' conclusion accurately reflected the limited and suboptimal-quality evidence presented and seems likely to be reliable. The authors offered valuable insight to on-going research.

Implications of the review for practice and research

Practice: The authors stated that uncertainty about the effects and optimal intensity of antenatal interventions limited any reliable recommendation in clinical practice.

Research: The authors stated that high-quality randomised controlled trials were needed to evaluate antenatal and/or lifestyle interventions for overweight or obese pregnant women. The authors stated details of nine ongoing RCTs.

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