Systematic review and meta-analysis

Dietary interventions more effective than physical activity or mixed interventions for weight management during pregnancy

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Commentary on: **Thangaratinam S,** Rogozinska E, Jolly K, *et al.* Effects of interventions in pregnancy on maternal weight and obstetric outcomes: meta-analysis of randomised evidence. *BMJ* 2012;**344**: e2088.

Context

Obesity (body mass index (BMI: kg/m^2) ≥30) has become a major challenge for maternal health in the 21st century. In addition to the long-term health effects of obesity, excessive gestational weight gain (GWG) and obesity are associated with an increased risk of morbidity and mortality for mothers and their infants.[1]

Existing evidence on weight gain recommendations during pregnancy is limited.

The American Institute of Medicine (IOM)[2] recommends certain GWG ranges according to women's pre-pregnancy BMI, including a weight gain of 5–9 kg for obese pregnant women. In their review of evidence, none of the controlled trials included have had sufficient statistical power to show benefits of GWG within the IOM guidelines, although some favourable clinical outcomes have been observed in the application of interventions aimed at reducing GWG.

The UK National Institute for Health and Clinical Excellence (NICE),[3] acknowledges the importance of weight management during pregnancy, particularly for obese women but it does not recommend certain weight gain limits for pregnant women and provides general healthy eating and keeping-active recommendations.

The paucity of evidence has led to a lack of clarity for women and their health professionals about effective weight management strategies during pregnancy. The need for unambiguous advice in this area is identified through emerging research.[4] The systematic review by Thangaratinam and colleagues is timely in providing robust evidence for the management of weight gain during pregnancy.

Methods

Using a well-conducted systematic review and meta-analysis approach, this review summarised the results of randomised controlled trials from a comprehensive list of published and unpublished data sources, with an appropriate quality appraisal and study selection criteria to identify the effects of interventions in pregnancy on maternal and neonatal outcomes. They also reviewed the results from observational and case studies about safety outcomes.

Findings

The results from 44 randomised controlled trials including 7278 women were presented in three intervention categories: diet, physical activity and a mixed approach. Dietary interventions generally included a balanced diet of carbohydrates, proteins and fat and use of a food diary. They reported a significant reduction in GWG of 1.42 kg when all interventions were analysed together, compared to the control group. Dietary interventions were, however, more effective in reducing GWG compared to the physical activity or mixed approaches (3.8 vs 0.7 vs 1.0 kg, respectively). Dietary interventions were also associated with more improvements in the obstetric outcomes (eg, reducing the risk of gestational diabetes, gestational hypertension and shoulder dystocia). There was no significant effect on neonatal birth weight with any of the interventions, except for physical activity. Reduction in GWG remained significant with all interventions and the risk of pre-eclampsia was consistently lower with dietary interventions, in the subgroup analyses based on diabetic status, BMI and bias risk status.

Commentary

Methodological advantages of this review include the selection of outcome measures and prioritisation process using a two-round Delphi survey of clinical experts in the field.

This review provides more clarity on effective strategies in minimising GWG mainly due to its categorical presentation of the interventions, selection of outcomes and grading of the evidence. It shows that dietary interventions are superior in reducing GWG compared to physical activity and combined approaches with no adverse outcomes. The adverse effects identified in the observational studies with extreme energy intake restrictions did not apply to the interventions in the meta-analysis.

Practice implications suggested including targeted dietary interventions for obese and overweight women with a service evaluation, as being potentially cost-effective.

These findings are, however, limited in scope to identify an optimum gestational weight gain with interventions that minimise adverse outcomes for mothers and babies. There is a high degree of heterogeneity among the studies included and a low level of quality, particularly for the clinical outcomes as well as a lack of sufficient information for rare events such as thromboembolism and admission to intensive care units. Individual patient

level meta-analyses will be helpful in verifying the existing findings with regard to BMI, age, socioeconomic status, existing complications and types of interventions. A descriptive analysis of effective GWG reduction strategies with a focus on the content, uptake and compliance would also be helpful in interpreting the observed differences in the findings. Large trials for optimum GWG in relation to IOM recommendations and its long-term effects (weight retention and childhood obesity) are needed.

Competing interests None.

References

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