Effect of postpartum lifestyle interventions on weight loss, smoking cessation, and prevention of smoking relapse: a systematic review

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CRD summary
The review found that existing postpartum lifestyle interventions may be used to achieve weight loss, smoking cessation or to prevent smoking relapse in postpartum women. Due to variability of the included studies and major shortcomings in the review process, the authors' broad and nonspecific conclusions should be viewed with caution.

Authors' objectives
To assess the effectiveness of postpartum lifestyle interventions aimed at weight loss, smoking cessation and smoking relapse prevention in women with pregnancy complications, such as pre-eclampsia, intrauterine growth restriction and/or gestational diabetes.

Searching
PubMed, EMBASE, PsycINFO, CINAHL and Web of Science were searched up to May 2010 for relevant studies in English; search terms were reported. Reference lists of retrieved studies were searched. As no studies were identified in women with pregnancy complications, the search was widened to include unselected postpartum women.

Study selection
Eligible studies were controlled primary research studies that described the effect of a behavioural lifestyle intervention in the postpartum period on weight loss, smoking cessation and smoking relapse prevention.

In the included studies, participants ranged in mean age from 23 to 33 years. Participants were recruited during pregnancy or just after delivery up to 12 months postpartum. Most participants in the studies that assessed weight loss were overweight or obese and a proportion were exclusively breastfeeding. A proportion of participants in the studies that assessed smoking cessation or smoking relapse prevention had stopped smoking during their pregnancy. Weight loss interventions varied: one study compared high and low protein diets, another study compared regular supervised exercise with restricted exercise and the rest used variable combinations of diet and exercise interventions delivered by either health professionals or research assistants. Smoking cessation and relapse prevention interventions varied and used a wide range of techniques that included counselling/home visits, written information, videos, support and/or medication and were delivered by health professionals or trained study staff. Follow-up ranged from one to 12 months postpartum. Studies were undertaken in USA, Finland, Sweden, Canada, Brazil and Germany.

The authors did not state how many reviewers selected studies for inclusion in the review.

Assessment of study quality
The preferred study design was randomised controlled trials (RCTs).

The authors stated that studies were not assessed for quality.

Data extraction
Data were extracted on weight loss (mean weight loss or weight retention at follow-up, mean weight loss per time unit and percentage of women who returned to their pre-pregnancy weight at follow-up), smoking cessation (number of cigarettes smoked, salivary cotinine levels, validated seven-day abstinence, four-week point prevalence abstinence rates, quit rates, daily smoking rates and percentages of women who reported sustained or continuous cessation) and smoking relapse prevention (relapse rates, percentage of non smokers and women who reported sustained or continuous cessation) and the results of comparisons of these outcomes between treatment and control according to how they were reported in each included study.
The authors did not state how many reviewers performed data extraction.

**Methods of synthesis**
Studies were synthesised in narrative format and results were included in tables.

**Results of the review**
Twenty-one publications (n=6,288 participants, range 33 to 1,875) were included in the review; four of these were either duplicate publications or later follow-up of the same trial, which left 17 studies. Eight studies assessed effects on weight loss and nine studies assessed effects on smoking cessation and relapse prevention. Most studies were RCTs; one study had a prospective cohort design and another study had a prospective two group design.

**Weight loss:** Five of six studies reported statistically significant effects of combined diet and exercise on weight loss that ranged from 1.9kg to 7.8kg. One study reported a significant effect of a high protein diet on weight loss (compared to a low protein diet) and one study found no evidence of a significant difference of regular exercise alone on weight loss. Most of the effective weight loss interventions were individually tailored. Duration ranged from 11 days to 9 months.

**Smoking cessation and smoking relapse prevention:** One study assessed the effects of a smoking cessation intervention using a client-centered approach to increase self efficacy and reported contradictory results with more self-reported smoking, but a reduction in salivary cotinine levels in the intervention group compared to control.

**Smoking relapse prevention intervention only:** Two of four studies that assessed smoking relapse prevention interventions found no evidence of a difference between groups. One study reported a significant increase in smoking abstinence at three and six months postpartum in the intervention group (18.2%) compared to control (5.2%). Another study found a reduction in daily smoking at six months (34% versus 48%), but not at 12 months, in the intervention group compared to control.

**Interventions for both smoking cessation and prevention of smoking relapse:** There were four studies. One study (two publications) found increased abstinence (5.9% versus 2.7%) and reduced smoking relapse (45% versus 55%) at six months follow-up in the intervention group compared to control, but the effects were not sustained at 12 months. Compared to control, one study reported significant effects on both smoking cessation and smoking relapse prevention at six months for the intervention and one study found a small benefit from the intervention on smoking cessation at six months, but not on smoking relapse. One study found no evidence of significant differences between groups at three months follow-up.

Effective smoking cessation and smoking relapse prevention interventions appeared to use either office-based visits delivered by a paediatrician or home counselling/telephone sessions with follow-up using principles of motivational interviewing.

**Authors' conclusions**
Existing postpartum lifestyle interventions may be used to achieve weight loss, smoking cessation or to prevent smoking relapse in postpartum women.

**CRD commentary**
The review addressed a clear research question. Inclusion criteria appeared appropriate. Various relevant sources were used to identify relevant studies published in English; the authors acknowledged that publication and language biases could not be ruled out. No studies were identified that included women with pregnancy complications, so the search was widened post hoc to include unselected women postpartum. The authors reported that 21 studies were identified that fulfilled the inclusion criteria; this statement was misleading because some of the publications were either duplicates or longer follow-up of the same trial. The authors did not state how many reviewers undertook selection of studies and data extraction, so reviewer error and bias could not be excluded. Studies were not assessed for quality, which made it difficult to assess the reliability of results.

Studies were synthesised appropriately in narrative format as the participants and interventions varied widely; the
proportion of studies that found significant benefits for the lifestyle interventions was reported. The authors did not report details of the methods used in the individual studies to compare outcomes in the groups. The authors identified components of the lifestyle interventions that appeared to be associated with benefits, but these were not compared statistically in groups.

Variability of the included studies and major shortcomings in the review process mean the authors' broad and nonspecific conclusions should be viewed with caution.

Implications of the review for practice and research

Practice: The authors stated that utilisation of lifestyle interventions should be considered in women who experienced complicated pregnancies.

Research: The authors stated that further research was required to tailor lifestyle interventions for women with pregnancy complications such as pre-eclampsia, intrauterine growth restriction and/or gestational diabetes and determine their effectiveness over the long term.

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the reliability of the review and the conclusions drawn.