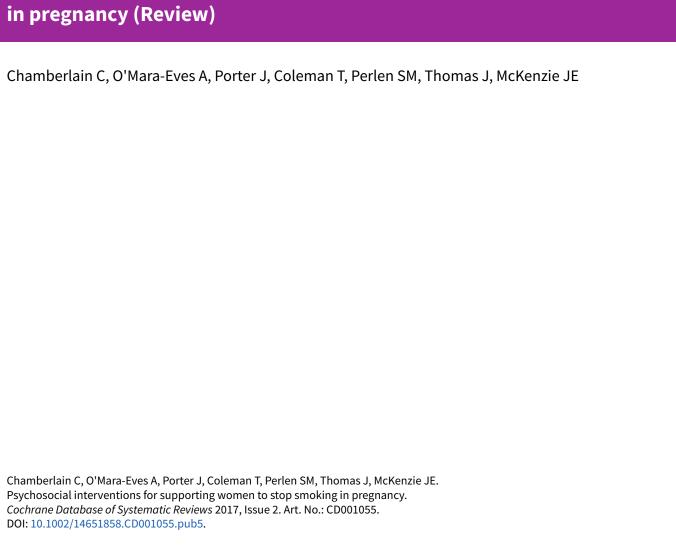


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# Psychosocial interventions for supporting women to stop smoking



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## [Intervention Review]

## Psychosocial interventions for supporting women to stop smoking in pregnancy

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#### **ABSTRACT**

## Background

Tobacco smoking remains one of the few preventable factors associated with complications in pregnancy, and has serious long-term implications for women and babies. Smoking in pregnancy is decreasing in high-income countries, but is strongly associated with poverty and is increasing in low- to middle-income countries.

## **Objectives**

To assess the effects of smoking cessation interventions during pregnancy on smoking behaviour and perinatal health outcomes.

#### Search methods

In this sixth update, we searched the Cochrane Pregnancy and Childbirth Group's Trials Register (13 November 2015), checked reference lists of retrieved studies and contacted trial authors.

#### **Selection criteria**

Randomised controlled trials, cluster-randomised trials, and quasi-randomised controlled trials of psychosocial smoking cessation interventions during pregnancy.

## **Data collection and analysis**

Two review authors independently assessed trials for inclusion and trial quality, and extracted data. Direct comparisons were conducted in RevMan, with meta-regression conducted in STATA 14.

## **Main results**

The overall quality of evidence was moderate to high, with reductions in confidence due to imprecision and heterogeneity for some outcomes. One hundred and two trials with 120 intervention arms (studies) were included, with 88 trials (involving over 28,000 women) providing data on smoking abstinence in late pregnancy. Interventions were categorised as counselling, health education, feedback, incentives, social support, exercise and dissemination.



In separate comparisons, there is high-quality evidence that counselling increased smoking cessation in late pregnancy compared with usual care (30 studies; average risk ratio (RR) 1.44, 95% confidence interval (Cl) 1.19 to 1.73) and less intensive interventions (18 studies; average RR 1.25, 95% CI 1.07 to 1.47). There was uncertainty whether counselling increased the chance of smoking cessation when provided as one component of a broader maternal health intervention or comparing one type of counselling with another. In studies comparing counselling and usual care (largest comparison), it was unclear whether interventions prevented smoking relapse among women who had stopped smoking spontaneously in early pregnancy. However, a clear effect was seen in smoking abstinence at zero to five months postpartum (11 studies; average RR 1.59, 95% Cl 1.26 to 2.01) and 12 to 17 months (two studies, average RR 2.20, 95% Cl 1.23 to 3.96), with a borderline effect at six to 11 months (six studies; average RR 1.33, 95% Cl 1.00 to 1.77). In other comparisons, the effect was unclear for most secondary outcomes, but sample sizes were small.

Evidence suggests a borderline effect of health education compared with usual care (five studies; average RR 1.59, 95% CI 0.99 to 2.55), but the quality was downgraded to moderate as the effect was unclear when compared with less intensive interventions (four studies; average RR 1.20, 95% CI 0.85 to 1.70), alternative interventions (one study; RR 1.88, 95% CI 0.19 to 18.60), or when smoking cessation health education was provided as one component of a broader maternal health intervention.

There was evidence feedback increased smoking cessation when compared with usual care and provided in conjunction with other strategies, such as counselling (average RR 4.39, 95% CI 1.89 to 10.21), but the confidence in the quality of evidence was downgraded to moderate as this was based on only two studies and the effect was uncertain when feedback was compared to less intensive interventions (three studies; average RR 1.29, 95% CI 0.75 to 2.20).

High-quality evidence suggests incentive-based interventions are effective when compared with an alternative (non-contingent incentive) intervention (four studies; RR 2.36, 95% CI 1.36 to 4.09). However pooled effects were not calculable for comparisons with usual care or less intensive interventions (substantial heterogeneity,  $I^2 = 93\%$ ).

High-quality evidence suggests the effect is unclear in social support interventions provided by peers (six studies; average RR 1.42, 95% CI 0.98 to 2.07), in a single trial of support provided by partners, or when social support for smoking cessation was provided as part of a broader intervention to improve maternal health.

The effect was unclear in single interventions of exercise compared to usual care (RR 1.20, 95% CI 0.72 to 2.01) and dissemination of counselling (RR 1.63, 95% CI 0.62 to 4.32).

Importantly, high-quality evidence from pooled results demonstrated that women who received psychosocial interventions had a 17% reduction in infants born with low birthweight, a significantly higher mean birthweight (mean difference (MD) 55.60 g, 95% CI 29.82 to 81.38 g higher) and a 22% reduction in neonatal intensive care admissions. However the difference in preterm births and stillbirths was unclear. There did not appear to be adverse psychological effects from the interventions.

The intensity of support women received in both the intervention and comparison groups has increased over time, with higher-intensity interventions more likely to have higher-intensity comparisons, potentially explaining why no clear differences were seen with increasing intervention intensity in meta-regression analyses. Among meta-regression analyses: studies classified as having 'unclear' implementation and unequal baseline characteristics were less effective than other studies. There was no clear difference between trials implemented by researchers (efficacy studies), and those implemented by routine pregnancy staff (effectiveness studies), however there was uncertainty in the effectiveness of counselling in four dissemination trials where the focus on the intervention was at an organisational level. The pooled effects were similar in interventions provided for women classified as having predominantly low socio-economic status, compared to other women. The effect was significant in interventions among women from ethnic minority groups; however not among indigenous women. There were similar effect sizes in trials with biochemically validated smoking abstinence and those with self-reported abstinence. It was unclear whether incorporating use of self-help manuals or telephone support increased the effectiveness of interventions.

## **Authors' conclusions**

Psychosocial interventions to support women to stop smoking in pregnancy can increase the proportion of women who stop smoking in late pregnancy and the proportion of infants born low birthweight. Counselling, feedback and incentives appear to be effective, however the characteristics and context of the interventions should be carefully considered. The effect of health education and social support is less clear. New trials have been published during the preparation of this review and will be included in the next update.

## PLAIN LANGUAGE SUMMARY

#### Psychosocial interventions for supporting women to stop smoking in pregnancy

## What is the issue?

Tobacco smoking during pregnancy increases the risk of the mother having complications during pregnancy and the baby being born low birthweight. Nicotine and other contents of cigarettes can have harmful effects on the baby's growth and development.

### Why is this important?



The number of women smoking in pregnancy is decreasing in high-income countries, where it is associated with poverty, but is increasing in low- to middle-income countries. Non-pharmacological interventions that address mental, emotional or social factors are known as psychosocial interventions. We set out to identify the evidence on the effectiveness of the various psychosocial interventions to support pregnant women to stop smoking.

## What evidence did we find?

The review includes 102 randomised controlled trials with 120 intervention arms (studies) and data from 88 randomised controlled trials (involving over 28,000 women). The main intervention strategies were categorised as counselling (n = 54), health education (n = 12), feedback (n = 6), incentives (n = 13), social support (n = 7) and exercise (n = 1).

Our review provided moderate- to-high quality evidence that psychosocial interventions increased the proportion of women who had stopped smoking in late pregnancy (by 35%) and mean infant birthweight (by 56 g), and reduced the number of babies born with low birthweight (by 17%) and admitted to neonatal intensive care immediately after birth (by 22%). The psychosocial interventions did not appear to have any adverse effects. For some findings there were unexplained differences between studies and some studies were small, reducing our confidence in their results. Nearly all studies were conducted in high-income countries.

Counselling interventions had a clear effect on stopping smoking compared with providing usual care (from 30 studies), and a smaller effect when compared with less intensive interventions (18 studies). No clear effect was seen with counselling provided as one component of a broader intervention to improve maternal health or comparing one type of counselling with another. Interventions that provided feedback had a clear effect when compared with usual care and when combined with other strategies such as counselling (two studies), but not when compared with less intensive interventions (three studies). Interventions based on financial incentives had a clear effect when compared with an alternative like a non-contingent incentive intervention (four studies).

Health education was not clearly effective when compared with usual care (five studies), or when it was one component of a broader maternal health intervention. Social support interventions were not clearly effective when provided by peers (six studies) or in a single trial of support provided by partners; or when social support for smoking cessation was provided as part of a broader intervention to improve maternal health. In single studies, exercise and dissemination of counselling did not have a clear effect compared to usual care.

The pooled effects were similar for interventions provided to women who were poor. A clear effect was also seen with interventions among women from ethnic minority groups, but not among indigenous women (four studies). Pooled results suggest that interventions in pregnancy can also reduce smoking cessation after birth. The effects on preterm births (19 studies) and stillbirths (eight studies) were unclear.

#### What does this mean?

Counselling, feedback and financial incentives appear to reduce the number of women smoking in late pregnancy, however the interventions and the context of the interventions need to be carefully considered. The effect of health education and social support is less clear. Most of the studies were carried out in high-income countries making it difficult to assess if the findings are applicable to other contexts. The intensity of support women received in both the intervention and comparison groups has increased over time. Many of the studies did not provide information on the number of individual women who were eligible for inclusion or were approached to take part in studies, which would have provided useful information about the general acceptability of the interventions and selection bias in the studies. The timing of the final assessment of smoking status during pregnancy also varied considerably among the studies. New trials have been published during review preparation will be included in the next update.