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Treating periodontal disease for preventing adverse birth outcomes in pregnant women (Review)

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Treating periodontal disease for preventing adverse birth outcomes in pregnant women

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A B S T R A C T

Background

Periodontal disease has been linked with a number of conditions, such as cardiovascular disease, stroke, diabetes and adverse pregnancy outcomes, all likely through systemic inflammatory pathways. It is common in women of reproductive age and gum conditions tend to worsen during pregnancy. Some evidence from observational studies suggests that periodontal intervention may reduce adverse pregnancy outcomes. There is need for a comprehensive Cochrane review of randomised trials to assess the effect of periodontal treatment on perinatal and maternal health.

Objectives

To assess the effects of treating periodontal disease in pregnant women in order to prevent or reduce perinatal and maternal morbidity and mortality.

Search methods

Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health's Trials Register (to 6 October 2016), Cochrane Pregnancy and Childbirth's Trials Register (to 7 October 2016), the Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 9) in the Cochrane Library, MEDLINE Ovid (1946 to 6 October 2016), Embase Ovid (1980 to 6 October 2016), and LILACS BIREME Virtual Health Library (Latin American and Caribbean Health Science Information database; 1982 to 6 October 2016). ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials on 6 October 2016. We placed no restrictions on the language or date of publication when searching the electronic databases.

Selection criteria

We included all randomised controlled trials (RCTs) investigating the effects of periodontal treatment in preventing or reducing perinatal and maternal morbidity and mortality. We excluded studies where obstetric outcomes were not reported.

Data collection and analysis

Two review authors independently screened titles and abstracts and extracted data using a prepiloted data extraction form. Missing data were obtained by contacting authors and risk of bias was assessed using Cochrane's 'Risk of bias' tool. Where appropriate, results of comparable trials were pooled and expressed as risk ratios (RR) or mean differences (MD) with 95% confidence intervals (CI) . The random-effects model was used for pooling except where there was an insufficient number of studies. We assessed the quality of the evidence using GRADE.

Main results

There were 15 RCTs (n = 7161 participants) meeting our inclusion criteria. All the included studies were at high risk of bias mostly due to lack of blinding and imbalance in baseline characteristics of participants. The studies recruited pregnant women from prenatal care facilities who had periodontitis (14 studies) or gingivitis (1 study).The two main comparisons were: periodontal treatment versus no treatment during pregnancy and periodontal treatment versus alternative periodontal treatment. The head-to-head comparison between periodontal treatments assessed a more intensive treatment versus a less intensive one.

Eleven studies compared periodontal treatment with no treatment during pregnancy. The meta-analysis shows no clear difference in preterm birth < 37 weeks (RR 0.87, 95% CI 0.70 to 1.10; 5671 participants; 11 studies; low-quality evidence) between periodontal treatment and no treatment. There is low-quality evidence that periodontal treatment may reduce low birth weight < 2500 g (9.70% with periodontal treatment versus 12.60% without treatment; RR 0.67, 95% CI 0.48 to 0.95; 3470 participants; 7 studies).

It is unclear whether periodontal treatment leads to a difference in preterm birth < 35 weeks (RR 1.19, 95% CI 0.81 to 1.76; 2557 participants; 2 studies;) and < 32 weeks (RR 1.35, 95% CI 0.78 to 2.32; 2755 participants; 3 studies), low birth weight < 1500 g (RR 0.80, 95% CI 0.38 to 1.70; 2550 participants; 2 studies), perinatal mortality (including fetal and neonatal deaths up to the first 28 days after birth) (RR 0.85, 95% CI 0.51 to 1.43; 5320 participants; 7 studies; very low-quality evidence), and pre-eclampsia (RR 1.10, 95% CI 0.74 to 1.62; 2946 participants; 3 studies; very low-quality evidence). There is no evidence of a difference in small for gestational age (RR 0.97, 95% CI 0.81 to 1.16; 3610 participants; 3 studies; low-quality evidence) when periodontal treatment is compared with no treatment.

Four studies compared periodontal treatment with alternative periodontal treatment. Data pooling was not possible due to clinical heterogeneity. The outcomes reported were preterm birth < 37 weeks, preterm birth < 35 weeks, birth weight < 2500 g, birth weight < 1500 g and perinatal mortality (very low-quality evidence). It is unclear whether there is a difference in < 37 weeks, preterm birth < 35 weeks, birth weight < 2500 g, birth weight < 1500 g and perinatal mortality when different periodontal treatments are compared because the quality of evidence is very low.

Maternal mortality and adverse effects of the intervention did not occur in any of the studies that reported on either of the outcomes.

Authors' conclusions

It is not clear if periodontal treatment during pregnancy has an impact on preterm birth (low-quality evidence). There is low-quality evidence that periodontal treatment may reduce low birth weight (< 2500 g), however, our confidence in the effect estimate is limited. There is insufficient evidence to determine which periodontal treatment is better in preventing adverse obstetric outcomes. Future research should aim to report periodontal outcomes alongside obstetric outcomes.

PLAIN LANGUAGE SUMMARY

Treating gum disease to prevent adverse birth outcomes in pregnant women

What is the aim of this review?

The aim of this Cochrane Review was to find out if treating gum disease can prevent adverse birth outcomes in pregnant women. Cochrane researchers collected and analysed all relevant studies to answer this question and found 15 relevant studies.

Key messages

There is no evidence that the treatment of gum disease reduces the number of babies born before 37 weeks of pregnancy, however, it may reduce the number of babies born weighing less than 2500 g. It is uncertain whether there is a difference in adverse birth outcomes when different methods of treating gum disease are compared.

What was studied in the review?

Gum health tends to worsen during pregnancy. There has been some research associating gum disease with adverse birth outcomes. The review assessed studies where pregnant women with gum disease were treated using a combination of different mechanical techniques with or without antibiotics.

What are the main results of the review?

The review authors found 15 relevant studies. Five were from North America, four from South America, three from Europe, two from Asia and one from Austalia. Eleven studies compared either scaling and root planing or scale and polish with no treatment while the other four studies compared scaling and root planing with alternative mechanical treatments.

When pregnant women with gum disease who receive periodontal treatment are compared with those who receive no treatment:

- there is no clear difference in the number of babies born before 37 weeks (low-quality evidence);

- there may be fewer babies born weighing less than 2500 g (low-quality evidence).

It is unclear if one periodontal treatment is better than alternative periodontal treatments in preventing adverse birth outcomes.

How up-to-date is this review?

The review authors searched for studies that had been published up to October 2016.