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[Intervention Review]

Fluoride supplementation (with tablets, drops, lozenges or chewing gum) in pregnant women for preventing dental caries in the primary teeth of their children

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ABSTRACT

Background

Dental caries (tooth decay) is one of the most common chronic childhood diseases. Caries prevalence in most industrialised countries has declined among children over the past few decades. The probable reasons for the decline are the widespread use of fluoride toothpaste, followed by artificial water fluoridation, oral health education and a slight decrease in sugar consumption overall. However, in regions without water fluoridation, fluoride supplementation for pregnant women may be an effective way to increase fluoride intake during pregnancy. If fluoride supplements taken by pregnant women improve neonatal outcomes, pregnant women with no access to a fluoridated drinking water supply can obtain the benefits of systemic fluoridation.

Objectives

To evaluate the effects of women taking fluoride supplements (tablets, drops, lozenges or chewing gum) compared with no fluoride supplementation during pregnancy to prevent caries in the primary teeth of their children.

Search methods

Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health's Trials Register (to 25 January 2017); the Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 11) in the Cochrane Library (searched 25 January 2017); MEDLINE Ovid (1946 to 25 January 2017); Embase Ovid (1980 to 25 January 2017); LILACS BIREME Virtual Health Library (Latin American and Caribbean Health Science Information database; 1982 to 25 January 2017); and CINAHL EBSCO (Cumulative Index to Nursing and Allied Health Literature; 1937 to 25 January 2017). We searched the US National Institutes of Health Ongoing Trials Register (ClinicalTrials.gov) and the [World Health Organization International Clinical Trials Registry Platform](http://www.who.int/trials/registry) for ongoing trials to 25 January 2017. No restrictions were placed on the language or date of publication when searching the electronic databases.

Selection criteria

Randomised controlled trials (RCTs) of fluoride supplements (tablets, drops, lozenges or chewing gum) administered to women during pregnancy with the aim of preventing caries in the primary teeth of their children.

Data collection and analysis

Two review authors independently screened the titles and abstracts (when available) of all reports identified through electronic searches. Two review authors independently extracted data and assessed risk of bias, as well as evaluating overall quality of the evidence utilising the GRADE approach. We could not conduct data synthesis as only one study was included in the analysis.

Main results

Only one RCT met the inclusion criteria for this review. This RCT showed no statistical difference on decayed or filled primary tooth surfaces (dfs) and the percentage of children with caries at 3 years (risk ratio (RR) 1.46, 95% confidence interval (CI) 0.75 to 2.85; participants = 938, very low quality of evidence) and 5 years old (RR 0.84, 95% CI 0.53 to 1.33; participants = 798, very low quality of evidence). The incidence of fluorosis at 5 years was similar between the group taking fluoride supplements (tablets) during the last 6 months of pregnancy and the placebo group.

Authors' conclusions

There is no evidence that fluoride supplements taken by women during pregnancy are effective in preventing dental caries in their offspring.

PLAIN LANGUAGE SUMMARY

Fluoride supplements taken by pregnant women for preventing dental caries in the primary teeth of their children

Review question

How effective and safe is the use of fluoride supplementation (with tablets, drops, lozenges or chewing gum) in pregnant women for preventing tooth decay in the baby teeth of their children compared with placebo (tablets or other forms of supplements without fluoride) or no treatment?

Background

Tooth decay is one of the most common health problems among children. The condition has been decreasing among children in most parts of the world over the past few decades most likely due to the widespread use of fluoride toothpaste, followed by water fluoridation, oral health education and a slight decrease in sugar consumption. If fluoride supplements taken by pregnant women can prevent tooth decay in their children, pregnant women with no access to a fluoridated drinking water supply can obtain the benefits of systemic fluoridation. Fluoride tablets, drops, lozenges or chewing gums are sucked or chewed to provide topical fluoride and ingested to provide systemic fluoride.

Study characteristics

Authors from Cochrane Oral Health carried out this review of existing studies and the evidence is current up to 25 January 2017. It includes only one study in which 1400 pregnant women were randomly allocated to fluoride treatment or placebo. In this study, a daily dose of either 1 mg sodium fluoride tablets or placebo tablets were given to participants from the fourth month of pregnancy to delivery. Both groups were encouraged to use dietary fluoride supplements after delivery in the form of drops. A total of 1175 babies were born to participants in this study, and of this number, 938 children were followed up at 3 years (464 fluoride tablets versus 484 placebo tablets) and 798 children were followed up at 5 years (398 fluoride tablets versus 400 placebo tablets) of age. Published in 1997, this study took place in communities with unfluoridated drinking water in Southern Maine, USA.

Key results

Baby teeth decay measured in children aged 3 and 5 years old was very low in both the fluoride supplement group and the placebo group. At 5 years of age, 92% of children remained decay-free in the fluoride supplement group and 91% remained decay-free in the placebo group, showing no difference between the two groups. The incidence of fluorosis at 5 years was similar between the group taking fluoride supplements (tablets) during the last 6 months of pregnancy and the placebo group.

There is no evidence that fluoride supplements taken by women during pregnancy are effective in preventing dental caries in their offspring.

Quality of the evidence

The included study was assessed as being at high risk of bias and the evidence was of very low quality.