

1. Cochrane Database Syst Rev. 2002;(3):CD002279.

Fluoride varnishes for preventing dental caries in children and adolescents.

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BACKGROUND: Topically applied fluoride varnishes have been used extensively as an operator-applied caries-preventive intervention for over two decades.

OBJECTIVES: To determine the effectiveness and safety of fluoride varnishes in the prevention of dental caries in children and to examine factors potentially modifying their effect.

SEARCH STRATEGY: Multiple electronic database searches, reference lists of articles, journal handsearch, selected authors and manufacturers.

SELECTION CRITERIA: Randomized or quasi-randomized controlled trials with blind outcome assessment, comparing fluoride varnish with placebo or no treatment in children up to 16 years during at least one year. The main outcome was caries increment measured by the change in decayed, missing and filled tooth surfaces (D(M)FS).

DATA COLLECTION AND ANALYSIS: Inclusion decisions, quality assessment and data extraction were duplicated in a random sample of one third of studies, and consensus achieved by discussion or a third party. Study authors were contacted for missing data. The primary measure of effect was the prevented fraction (PF), that is the difference in caries increments between the treatment and control groups expressed as a percentage of the increment in the control group.

Random effects meta-analyses were performed where data could be pooled. Potential sources of heterogeneity were examined in random effects meta-regression analyses.

MAIN RESULTS: Nine studies were included, involving 2709 children. For the seven that contributed data for the main meta-analysis, the D(M)FS pooled prevented fraction estimate was 46% (95% CI, 30% to 63%; $p < 0.0001$). There was substantial heterogeneity, confirmed statistically ($p < 0.0001$). The pooled d(e/m)fs prevented fraction estimate was 33% (95% CI, 19% to 48%; $p < 0.0001$). No significant

heterogeneity was observed in the subgroup of studies that included children aged 5 years or younger.

Conclusion: Fluoride varnishes reduce dental caries in children. The effect is greater when fluoride varnish is applied to children aged 5 years or younger.

Registration: The protocol for this review is registered in the Cochrane Reviewers' Register (CRD42005012001).

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For more information on this review, please contact the corresponding author at vcmarinho@yahoo.com.

Summary of findings for the main review: Fluoride varnishes reduce dental caries in children. The effect is greater when fluoride varnish is applied to children aged 5 years or younger.

Comparison 1. Fluoride varnishes versus placebo or no treatment. Reviewers' choices of comparison and outcomes are described in the text.

Outcome 1. Caries increment (D(M)FS). Reviewers' choices of comparison and outcomes are described in the text.

Outcome 2. Caries increment (d(e/m)fs). Reviewers' choices of comparison and outcomes are described in the text.

Outcome 3. Caries increment (D(M)FS) in children aged 5 years or younger. Reviewers' choices of comparison and outcomes are described in the text.

Outcome 4. Caries increment (d(e/m)fs) in children aged 5 years or younger. Reviewers' choices of comparison and outcomes are described in the text.

association between estimates of D(M)FS prevented fractions and baseline caries severity or background exposure to fluorides was found in meta-regression, and a funnel plot of the seven studies indicated no relationship between prevented fraction and study precision. In both methods, power is limited when only a few trials are included.

REVIEWER'S CONCLUSIONS: The review suggests a substantial caries-inhibiting effect of fluoride varnish in both the permanent and the deciduous dentitions based largely on trials with no treatment controls. There is little information concerning acceptability of treatment or possible side effects in the included trials. Given the relatively poor quality of most of the included studies and the wide confidence intervals around the estimates of effect, there remains a need for further trials. It is important that these trials should be of high quality and include assessment of potential adverse effects.

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