Authors' objectives
Background: Topical fluoride therapy (TFT) in the form of toothpastes, mouthrinses, varnishes and gels are effective caries preventive measures. However, there is uncertainty about the relative value of these interventions when used together.
Objectives: To compare the effectiveness of two TFT modalities combined with one of them alone (mainly toothpaste) when used for the prevention of dental caries in children.

Search methods: We searched the Cochrane Oral Health Group's Trials Register (May 2000), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2000, Issue 2), MEDLINE (1966 to January 2000), plus several other databases. We handsearched journals, reference lists of articles and contacted selected authors and manufacturers.

Selection criteria: Randomized or quasi-randomized controlled trials with blind outcome assessment, comparing fluoride varnish, gel, mouthrinse, or toothpaste in combination with each other in children up to 16 years during at least 1 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. Authors were contacted for missing data. The primary measure of effect was the prevented fraction (PF) that is the difference in mean caries increments between the 'treatment' and 'control' groups expressed as a percentage of the mean increment in the control group. Random-effects meta-analyses were performed where data could be pooled.

Main results: Eleven of the 12 included studies contributed data for the meta-analyses. For the nine trials that provided data for the main meta-analysis on the effect of fluoride mouthrinses, gels or varnishes used in combination with toothpaste (involving 4026 children) the D(M)FS pooled PF was 10% (95% CI, 2% to 17%; P = 0.01) in favour of the combined regimens. Heterogeneity was not substantial in these results (I² = 32%). The separate meta-analyses of fluoride gel or mouthrinse combined with toothpaste versus toothpaste alone favour the combined regimens, but differences were not statistically significant; the significant difference in favour of the combined use of fluoride varnish and toothpaste accrues from a very small trial and appears likely to be a spurious result. Not all other combinations of possible practical value were tested in the included studies. The only other statistically significant result was in favour of the combined use of fluoride gel and mouthrinse in comparison to gel alone (pooled DMFS PF 23%; 95% CI, 4% to 43%; P = 0.02), based on two trials. No other combinations of TFT were consistently superior to a single TFT.

Authors' conclusions: Topical fluorides (mouthrinses, gels, or varnishes) used in addition to fluoride toothpaste achieve a modest reduction in caries compared to toothpaste used alone. No conclusions about any adverse effects could be reached, because data were scarcely reported in the trials.

Bibliographic details