

Summary of: Efficacy of dental prophylaxis (rubber cup) for the prevention of caries and gingivitis: a systematic review of literature

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FULL PAPER DETAILS

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Background The purpose of this systematic review was to assess the efficacy of routine dental prophylaxis applied before professionally applied topical fluoride (PATF) or at a regular recall visit in the prevention of caries or gingivitis. **Types of studies reviewed** Ovid MEDLINE and its allied versions; CINAHL; Cochrane Library; EMBASE; Health and Psychosocial Instruments; HealthSTAR; International Pharmaceutical Abstracts; and ACP Journal Club were searched for English and Human articles from 1966 to 2007 for original *in vivo* English publications assessing rubber cup dental prophylaxis. *In vitro* studies, case series, case reports or letters to editors (not containing primary data), editorials, review articles and commentaries were excluded but were read to identify any potential studies. **Results** One hundred and eighty-nine articles were searched for relevancy resulting in six original studies that met our inclusion criteria. There was a unanimous agreement in four studies that a dental prophylaxis is not warranted before a PATF for caries prevention in children. A generalisation on dental prophylaxis before PATF cannot be applied to adolescents and adults. Available evidence (two other studies) fails to demonstrate any benefit in the prevention of gingivitis from further dental prophylaxis at interval used for recall examinations. **Clinical implication** To prevent caries in children, dental prophylaxis need not be provided either at a recall visit or before PATF. Dental prophylaxis at intervals of four months or more is not justified for the prevention of gingivitis in the general population.

EDITOR'S SUMMARY

This paper highlights once again the importance of high quality, well conducted research to evidence-based dental practice, and indeed the importance of evidence-based dentistry itself. The area of practice that the review examines, dental prophylaxis, is one that seems logical: plaque and other material adhering to the teeth encourages caries and gingivitis, therefore removing them should help prevent these conditions. Similarly, removing them prior to the application of fluoride should mean that more fluoride reaches the enamel, which should maximise its benefits. The results of this review show that what we would logically expect to happen may not always occur.

The authors mention in their introduction that some studies have already shown that dental prophylaxis prior to application of fluoride does not result in increased fluoride uptake by the teeth.

They set out to investigate whether dental prophylaxis is effective in preventing caries and gingivitis by reviewing the literature on these topics to date. As has so often been the case in previous reviews, only a very few studies met the inclusion criteria required: a total of six out of a possible 189. After assessing these articles, the authors concluded that dental prophylaxis at recall appointments or prior to topical fluoride application does not result in significant prevention of caries in children, and that prophylaxis at recall appointments is not effective for prevention of gingivitis in the general population.

Both the authors and our commentator stress that there is a need for further research in this area, as the number of studies identified was so limited. This is one important finding of the review. However, the article also emphasises why evidence-based dental practice is so important. In this case it looks likely

that what seems to be a sensible, logical practice may not result in the benefits we would expect. If these findings are borne out in further studies, the resulting change in recommended practice could produce both patient benefits and considerable savings in time and resources.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 207 issue 7.

Rowena Milan,
Journal Editor

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IN BRIEF

- For the prevention of caries in children, dental prophylaxis need not be provided either at a recall visit or before the application of topical fluorides.
- For the prevention of gingivitis in the general population, dental prophylaxis at recall appointments is not effective for the prevention or treatment of gingivitis.
- Dental prophylaxis remains of benefit for child management and for stain removal and aesthetic considerations.

COMMENT

The role of the acquired salivary pellicle in the pathogenesis of dental caries, gingival and periodontal health has been debated extensively over the years. Clinicians perform dental prophylaxis in children, with pumice or another abrasive material in a rubber cup at four monthly or six monthly intervals, in the hope that this will have a therapeutic benefit once topical fluoride is applied.

Of course the rationale has been – quite logically – that the removal of the acquired pellicle, plaque and other substances adhering to the enamel by dental prophylaxis results in a greater amount of professionally applied topical fluoride contacting the enamel surface. By expectation rather than by evidence, a reduction in the incidence of caries may be the result. In addition, in the last three decades the dental profession accepted that regular dental prophylaxis has a measurable benefit to the periodontal tissues.

This systematic review of the literature by Azarpazhooh and Main involves the search of 189 articles for relevancy resulting in six studies that met the inclusion criteria. The evidence failed to demonstrate any benefit both in terms of caries prevention and the prevention of gingivitis in children. Dental prophylaxis provided at four monthly or six monthly intervals each year has been shown to have no therapeutic benefit in the prevention of gingivitis in adults.

However, because of the fact that there were only six original studies that

met the inclusion criteria, this important study should provide the stimulus for further original research on the therapeutic benefit of prophylaxis, rather than result in complacency and immediate change of practice.

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AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

The dental profession has, in the past, accepted that periodic dental prophylaxes result in beneficial consequences for the periodontal tissues. Thus, many providers include dental prophylaxis as a gingivitis prevention measure at each recall appointment. However, an earlier evidence-based report on oral hygiene practices states that dental prophylaxis or polishing (no scaling) is not warranted for periodontal disease prevention and is solely an aesthetic procedure. Therefore, we undertook this evidence-based review to assess the efficacy of routine dental prophylaxis applied before professionally applied topical fluoride or at a regular recall visit for the prevention of caries or gingivitis for all patients.

2. What would you like to do next in this area to follow on from this work?

The report has been submitted to the Dental and Pharmacy Programs Division of Primary Health Care and Public Health Directorate, Health Canada, which is responsible for program and policy development, promotion and prevention programs, the National Dental Therapy Program, and advice to the Non-Insured Health Benefits Program as required. This systematic review has been used by the Children's Oral Health Initiative division of this Directorate to update their protocol in order to ensure efficient and effective use of resources. We will continue to provide evidence-based research to help inform policy, especially for disadvantaged populations.