

10% chlorhexidine varnish did not reduce caries in an adult population

Abstracted from

Papas AS, Vollmer WM, Gullion CM, et al

PACS Collaborative Group. Efficacy of chlorhexidine varnish for the prevention of adult caries: a randomized trial. *J Dent Res.* 2012; **91**: 150–155. Epub 2011 Dec 7.

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Question: Does chlorhexidine varnish reduce dental caries in at-risk adults over a period of 13 months?

Design A multi-centre, placebo-controlled, double-blind, randomised clinical trial involving 983 adults (aged 18–80 years old).

Intervention The test group received chlorhexidine diacetate 10% weight per volume (w/v) dental coating and the control group received a placebo coating. Coatings were applied weekly for four weeks and a fifth time six months later.

Outcome measure The Pitts and Fyffe taxonomy¹ was used to measure caries progression or reversal, which identifies three stages of lesion on coronal surfaces. The primary outcome was the total net increment in D₁₋₂FS; secondary outcomes included the cumulative net D₁₋₂FS increment and the total crude D₁₋₂FS increment and the cumulative crude D₁₋₂FS increment.

Results No significant difference was seen between the treatment and placebo groups over a 13 month study period.

Conclusions Ten percent chlorhexidine diacetate coating did not show a reduction in caries in an adult population.

Commentary

Dental caries remains one of the most prevalent chronic diseases despite it being largely preventable. Individuals are susceptible throughout their life course; therefore it is essential to conduct research into secondary prevention and the management of early, potentially reversible carious lesions in the adult population. There is a large body of evidence to support the use of fluoride varnish in the prevention of dental caries, particularly focussed on children and adolescents,² but not so much on the use of chlorhexidine varnishes. A recent systematic review, conducted by James et al. considered the caries-preventive effect of chlorhexidine varnish in children and adolescents³ and concluded that the evidence was inconclusive.

This paper is one of a number of papers produced by the research group testing the efficacy of chlorhexidine diacetate 10% per volume coating in adults aged between 18 and 80 years old.

Whilst the particular paper did not go into the full methodology of the research, fuller details of the approach can be found in Vollmer's paper,⁴ demonstrating the double blinded randomised controlled trial with clear inclusion and exclusion criteria.

The use of the stratified randomisation ensured equal numbers of participants with similar characteristics were recruited into the different

groups, and it was useful to see that the study population was diverse and representative, with a wide age range and residing in areas with different fluoride exposures. The authors mentioned that the weight of the vial was measured pre- and post- application of both the chlorhexidine and control coating. Further information into the analysis of the dosage would have further supported the robustness of the trial.

It is interesting to note that the authors used Pitts and Fyffe taxonomy and considered the transition from uncavitated to cavitated lesions at the D₁ level. There was mention of the ICDAS (International Caries Detection and Assessment System; www.icdas.org) which is a more sensitive tool, but they did acknowledge the difficulties of clinically detecting caries at an early stage.

The results demonstrated stringent analysis, using the intention to treat analysis, with good follow up at 13 months, and were similar to the findings in previous studies using 10% chlorhexidine varnish for coronal caries.⁵ It could be questioned whether the 13 month follow-up period was too short a time frame but this has to be weighed up against the drop out rate and also whether a varnish containing a higher concentration of chlorhexidine be used.

In terms of influencing evidence-based practice, this study does not support the application of chlorhexidine varnish at this concentration to reduce caries in the adult population.

Practice points

- Chlorhexidine varnish is not a prevention approach that should be considered for the not at risk population
- Prevention in adults must not be ignored as the problem could potentially escalate with the ageing population retaining more natural teeth.
- An evidence-based approach is key to breaking the caries cycle.

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