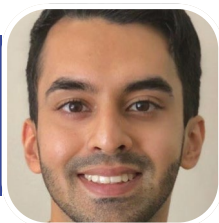


EBD spotlight: The evidence for professionally applied fluoride varnish to prevent and arrest caries in older adults



By **Manas Dave**¹

Clinical evidence for professionally applied fluoride therapy to prevent and arrest dental caries in older adults: A systematic review was published in the *Journal of Dentistry* in 2022.¹ A commentary on the paper was published in *Evidence-Based Dentistry* in December 2022.²

An ageing population has been shown to result in the retention of natural dentition for a longer duration of time. This results in more advanced management of dental caries including failing restorations in a medically compromised population.³ One effective strategy to relieve the burden of caries is a prevention-orientated approach based on fluoride therapy. Therefore, the aim of this systematic review is to study the effectiveness of professionally applied fluoride therapy in arresting dental caries in older adults aged 60 years or higher.^{1,2}

Methods

An electronic database search of PubMed, Scopus, the Cochrane Library, Embase and Web of Science was undertaken on 31 December 2021. Only clinical trials with adults aged 60 years or older who professionally received fluoride therapy for caries prevention or arrest were included. Hand searches of reference lists of previous reviews were undertaken. The exposure variable was dental caries, and the outcome variable was undernutrition (including stunting which is low height for age and wasting which is low weight for height). Quality assessment was undertaken using the Cochrane Risk of Bias tool (2.0). Only studies published in English were included.

Results

- Seven publications were included in this systematic review which were undertaken in Hong Kong, China (n = 4), the UK (n = 2) and the USA (n = 1)
- Five studies were conducted in community-dwelling older adults and two studies undertaken in older adults in long-term care
- Five studies had a low risk of bias and two

studies had some concerns

- The fluoride agents assessed included 5% sodium fluoride varnish (NaF), silver

Author information

¹Dr Manas Dave qualified from the University of Manchester with degrees in pathology and dentistry. He undertook postgraduate training in Newcastle and Middlesbrough before returning to Manchester where he is an NIHR Academic Clinical Fellow in Oral and Maxillofacial Pathology and Honorary Lecturer in Dentistry. Manas has achieved postgraduate qualifications in Medical Education, Dental Public Health and Pathology Informatics. He has published extensively across numerous journals including the *BMJ*, *Lancet* and *BDJ*, has extensive teaching experience of both undergraduate and postgraduate students and is a recipient of numerous personal and research awards.

diamine fluoride (SDF) and acidulated phosphate fluoride (APF) gel

- Caries prevention: one study reported older adults in care facilities receiving 5% NaF semi-annually was 15x more likely to have a reduction in the number of teeth with coronal caries (compared to no intervention). The other study showed 5% NaF applied every three months to older adults in care facilities resulted in a 64% reduction in root caries at 36 months

caries at 41% (95% CI: 33%–49%; I₂: 98%; Z = 10.11; P<0.001) at 24 months

- Caries arrest: one study reported 1.23% APF gel resulted in a caries arrest rate of 78% in community older adults but there was no significant difference when compared with the placebo.

Conclusions

The authors concluded: ‘...5% NaF varnish, 38% SDF solution and 1.23% APF gel are

‘The systematic review’s findings provide clinicians with confidence in recommending any of the fluoride therapies mentioned.’

- Caries prevention: three studies investigated the effectiveness of annual application of 38% SDF, the results showed root caries prevented fractions in community older adults at 24–47% and 52–62% at 30 months respectively. In older adults in care facilities, the root caries prevention fraction was 71% at 36 months. A meta-analysis using the fixed-effects model showed a significant decrease in the mean number of new root caries by 0.55(95% CI: 0.32–0.78; I₂ = 61%; Z = 4.7; p<0.001) when compared with the placebo group at 24 months follow-up
- Caries prevention: there were no significant differences between 38% SDF and 5% NaF application
- Caries prevention: one study investigated 1.23% APF gel and reported the root caries prevented fraction in community older adults at 32% at the 48-month follow-up
- Caries arrest: four studies investigated caries arrest with fluoride. One study reported 5% NaF application every three months in older adults with xerostomia showed a 66% arrest rate in root caries. No significant improvement was observed in root caries arrest rate with the use of 2% casein phosphopeptide-amorphous calcium phosphate in the 5% NaF varnish
- Caries arrest: two studies showed application of 38% SDF resulted in root caries arrest rates of 24–39% and 90–93% at 24 and 30 months follow-up in community older adults. In the meta-analysis using a fixed-effects model, this showed a significant reduction in annual

effective in preventing root caries in older adults and no particular agent is superior. In addition, SDF is effective in arresting root caries in older adults...’

Comments

This well-conducted systematic review provides a comprehensive and detailed search strategy. There are minor limitations in that the Grey literature was not searched and search strategy restricted to those published in English only. The systematic review’s findings provide clinicians with confidence in recommending any of the fluoride therapies mentioned in preventing root caries and 38% SDF solution to arrest root caries in older adults.

References

1. Chan A K Y, Tamrakar M, Jiang C M, Tsang Y C, Leung K C M, Chu C H. Clinical evidence for professionally applied fluoride therapy to prevent and arrest dental caries in older adults: A systematic review. *J Dent* 2022; doi: 10.1016/j.jdent.2022.104273.
2. Al-Ansari A. Is professionally applied fluoride effective in preventing or arresting caries in older adults? *Evid-Based Dent* 2022; **23**: 138–139.
3. Gray E, Hedayat-Kelishadi M, Rowe S, Dave M, Patel N. The medical profile of patients accessing emergency dental care: A comparative study. *Oral Surg* 2022; **15**: 515–522.

<https://doi.org/10.1038/s41407-023-1751-3>

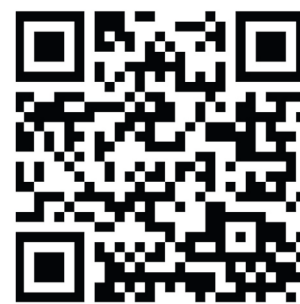
BDJ Team

Quality CPD
for UK DCPs



Stay up-to-date!
10 hours of FREE
verifiable CPD

Check out:
BDJ Team CPD 2023



[go.nature.com/
TeamCPD23](https://go.nature.com/TeamCPD23)

CPD:
TEN HOURS