

Silver diamine fluoride for root caries treatment in older adults



BACKGROUND

Root caries are widespread in older adults, with the peak incidence occurring at about age 70 years. This not only represents a significant financial burden on society, but it affects the quality of life of older adults adversely, causing pain, psychological and physical discomfort, social disability, and sometimes even a disability. Although demineralization initiates the process, protein degradation is key in the propagation of root caries. The topical application of substances that contain protease inhibitors might effectively control root caries. Silver diamine fluoride (SDF) is an alkaline topical solution that contains fluoride and silver. It's generally used by clinicians to treat caries in young children and acts by reducing the growth of cariogenic bacteria and promoting remineralization. In addition, SDF prevents collagen degradation in dentin and desensitizes hypersensitive teeth, which is the use for which the US Food and Drug Administration (FDA) approved it in 2016. Caries treatment is an off-label application that is simple, painless, noninvasive, and inexpensive. A qualitative and quantitative synthesis of the available scientific evidence on the effect of SDF in preventing and arresting root caries in older adults was undertaken.

METHODS

The Cochrane Central Registry of Controlled Trials, EMBASE, MEDLINE via PubMed, Scopus, Web of Science, Latin American and Caribbean Health Sciences Literature, Biblioteca Brasileira de Odontologia, and SciELO databases were searched for relevant literature. In addition, ClinicalTrials.gov, Brazilian Clinical Trials Registry, European Union Clinical Trials Register, International Standard Randomised Controlled Trial Number Registry and Current Controlled Trials, and Australian New Zealand Clinical Trials Registry, along with the Brazilian database of theses and dissertations, were searched for ongoing trials. Four articles from 3 trials, covering 895 older adults, with data for 544, 712, and 460 participants at 12, 24, and 30 or more months of follow-up, respectively, were selected for analysis. The 2 main outcomes evaluated were caries prevention and caries arrest.

RESULTS

Patients' mean age ranged from 72.1 to 78.8 years, all had low caries experience, and all consumed fluoridated water. Both the control and test groups received individualized oral hygiene instruction. The trials were conducted in Hong Kong, used 38% SDF, and compared their experimental group with a control group using a placebo.

Caries Prevention

Meta-analysis of 3 studies with 24 months of follow-up showed SDF applications significantly diminished the number of new root caries lesions. The prevented fractions (PFs) for root caries prevention were between 50.30% and 68.35%, depending on the length of follow-up. When SDF was compared with SDF plus potassium iodide (KI), caries increment did not differ significantly between the 2 approaches after 30 months of follow-up. When SDF was combined with sodium fluoride varnish (FV) or chlorhexidine (CHX) varnish, CHX had significantly higher preventive effects than SDF at 12 months of follow-up, but SDF and FV effects did not differ significantly from those of SDF alone at 12, 24, or 36 months. In addition, SDF plus CHX varnish preventive effects did not differ from those of SDF alone when analyzed at 24 months or more.

Caries Arrest

One study indicated significantly higher mean numbers of arrested lesions in the experimental versus the placebo group at 24 months of follow-up. In a second study in which the results were expressed as a percentage of caries arrest, the experimental group had significantly higher percentages of caries lesions arrested than the placebo group after 12, 24, and 30 months of follow-up. However, only 83 subjects were included in the study and just 67 were analyzed.

Patient Acceptance

The interventions with SDF were well accepted by the older adults in 2 studies. In 1 trial 3.5% of the participants complained about the black staining of their teeth. In another trial, 2 older adults in the SDF group complained of this staining.

Clinical Significance

The annual applications of SDF to exposed root surfaces in older adults offer a simple, inexpensive, and effective way to prevent new caries and halt the progression of existing lesions. Further study is needed to address the effect of SDF on older patients' degree of satisfaction with dental health care, quality of life, and cost benefits associated with SDF compared to more complex and usually more costly treatments.

DISCUSSION

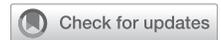
Annual applications of 38% SDF to prevent root caries in older adults decreased the incidence of new lesions by at least 50%, with longer periods of applications achieving greater effects. SDF was found to be significantly more effective in preventing new caries from developing compared to placebo and had effects similar to or better than either FV or CHX varnish.

Oliveira BH, Cunha-Cruz J, Rajendra A, et al: Controlling caries in exposed root surfaces with silver diamine fluoride: A systematic review with meta-analysis. *J Am Dent Assoc* 149:671-679, 2018

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SLEEP BRUXISM

Bruxing, stress, and sleep connections



BACKGROUND

Bruxism can affect patients' quality of life and eat up considerable resources as they try to obtain effective treatment. Between 8% and 31% of the population suffer bruxism, which is characterized by clenching or grinding of the teeth sometimes accompanied by bracing or thrusting of the mandible. These characteristics can manifest during the day (awake bruxism) or night (sleep bruxism) and can cause tooth wear, compromise dental restorations, create tenderness and pain in the masticatory muscles, produce headaches, and disturb sleep. Usually the risk factors for sleep bruxism have been identified using questionnaires, but these only suggest the diagnosis. Few studies verify the diagnosis through a polysomnographic recording (PSG), which is both costly and time-consuming. In addition, the procedure is done in an unusual environment and not in the patient's normal sleeping quarters. A portable device has been developed that combines electromyographic and electrocardiographic data and has the potential to reduce the number of false-positives and false-negatives in diagnosing sleep bruxism. This device was used to investigate possible associations between sleep bruxism, chronic stress, and sleep quality.

METHODS

The 67 participants completed questionnaires, were assessed for clinical signs of bruxism, and underwent recording of their electromyographic and electrocardiographic data. Thirty-eight were identified as bruxers and 29 as non-bruxers. Bruxers were further classified as moderate (17 participants) or intense (21 participants) bruxers. In addition to their definition as bruxers or non-bruxers, all participants completed the Trier Inventory for the Assessment of Chronic Stress (TICS) and the Pittsburgh Sleep Quality Index (PSQI) to obtain self-reported stress and self-reported sleep quality measures, respectively. Participants were also asked about their smoking status; their body mass index (BMI) and work status were gleaned from the PSQI. The results of these investigations were analyzed statistically.

RESULTS

With respect to sleep quality, none of the measures indicated a difference between bruxers and non-bruxers. Similarly, no

significant differences were found between the 2 groups on measures of smoking status, chronic stress, or BMI. Bruxism was affected by profession, with most retired individuals being non-bruxers.

Poor sleep quality was found to be associated with work overload, work discontent, excessive demands, lack of social recognition, social isolation, and chronic worrying. These are aspects identified on the TICS as indicating chronic stress.

DISCUSSION

Although no association was found between sleep bruxism and chronic stress or poor sleep quality, some associations were seen between chronic stress and disturbed sleep. The presence or absence of bruxism did not add to or detract from this chronic stress-poor sleep relationship.

Clinical Significance

Further studies are needed to investigate the effects of chronic stress on bruxism, particularly if the stress leads to the patient developing bruxing behaviors. For example, sleep bruxism may result from disturbed sleep, which could be related to chronic stress. The relationships between sleep, stress, and bruxing require additional investigation in a larger sample of subjects with more objective measures for stress and sleep quality.

Ohlmann B, Bömicke W, Habibi Y, et al: Are there associations between sleep bruxism, chronic stress, and sleep quality? *J Dent* 74:101-106, 2018

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