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Basic Science Question:

Where do we get fluoride and what delivery methods are available in dentistry?

Report:

Fluoride is a necessary supplement in dentistry as it has proven to have numerous benefits in preventative dentistry. Some of its benefits include its promotion of remineralization of enamel and inhibition of glycolysis and demineralization due to cariogenic bacteria. While there are several available fluoride delivery methods available in dentistry, fluoride varnish and fluoridated water appear to be of critical importance given their effectiveness and efficiency.

Community water fluoridation and fluoride varnish are necessary not only because they have proven to reduce caries, but also because they are easy to use when working with difficult patients such as children and patients from low socioeconomic backgrounds. For instance, CWF is useful because it provides benefits by simply drinking tap water, which is cost effective and simple for aiding in prevention (preventing at least 25% of tooth decay in children and adults). According to the ADA, “for most cities, every \$1 invested in water fluoridation saves \$38 in dental treatment costs.” Additionally, FV has proven efficient because it requires less chairside time and prevents gagging since it does not require a mouth tray for delivery. FV is also useful for children since it comes in a variety of flavors, and is only required in small amounts as it is highly concentrated.

Despite FV’s efficiency, there still appears to be a lack of application by dentists. According to an article by Debbie Bonetti and Jan E Clarkson, in a study with 599 participating dentists, “only 15.7% of general dentists, 30.8% of pediatric dentists and 20.5% of public health dentists chose to use FV over other topical fluorides.” Hence, it is necessary to make dentists more aware of FV, especially since it can be billed by medicaid, making it not only easier to use, but more affordable for patients. A similar objective is even more imperative with CWF since it could be so easily incorporated into patients’ day to day lives.

It is also important to recognize that while fluoride delivery is beneficial in preventing the progression of carious lesions, it does not completely prevent them from occurring. If children continue to have high sugar intakes, managing early childhood caries will continue to be a problem. For instance, in the study on “Fluoride Varnish and Dental Caries in Preschoolers,” the authors note that “the cause of dental caries, and of the increase of caries with age, is the excessive exposure to sugar, not the lack of fluoride exposure.” Therefore, FV and CWF should be used as supplements alongside daily brushing and flossing, and not as a solution to eliminating caries. In conclusion, FV and CWF are shown to be most effective when coupled with toothbrushing and flossing. Hence, oral hygiene instruction and education amongst dentists and hygienists continues to be necessary.

References:

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