ARTICLE ANALYSIS & EVALUATION // ETIOLOGY/OTHER

SILVER DIAMINE FLUORIDE STAINING IS ACCEPTABLE FOR POSTERIOR PRIMARY TEETH AND IS PREFERRED OVER ADVANCED PHARMACOLOGIC BEHAVIOR MANAGEMENT BY MANY PARENTS

REVIEWER
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The authors assessed parental perceptions of silver diamine fluoride (SDF) staining to determine whether parents' level of acceptability of SDF would change according to the location of the staining, child's behavior, and demographic factors.

ARTICLE TITLE AND BIBLIOGRAPHIC INFORMATION
Parental perceptions and acceptance of silver diamine fluoride staining. ***Crystal YO, Janal MN, Hamilton DS, Niederman R.*** *J Am Dent Assoc 2017; 148(7):510-8.*

SUMMARY

Subjects
Participants of this study consisted of 120 parents waiting for their children's appointments at the New York University Pediatric Dental Clinic located in the New York City and at private pediatric dentistry clinics located in New Jersey, within the New York City metropolitan area.

Key Risk/Study Factor
The key variables analyzed were location of staining in the mouth due to potential silver diamine fluoride (SDF) treatment, barriers to dental treatment (crying, kicking, or screaming), and demographic factors. Investigators were interested in how these factors affected parental acceptability of SDF as a treatment for their children.

Main Outcome Measure
The main outcome measure is the parental acceptability of SDF staining.

Main Results
This cross-sectional study included 120 parents. The majority of participants were women (81.7%). Ages of participants ranged from 20 years or younger to 51 years or older, and 42.5% of participants were white, 36.7% were Hispanic, 11.7% were black, 10.0% were Asian, 0.8% were Native American, and 3.3% preferred not to answer about their ethnicity. With regard to insurance, 48.3% of participants had private insurance, 42.5% had government-funded insurance, 5.0% had no insurance, and 4.2% had other type of insurance.

The staining on posterior teeth was judged to be esthetically acceptable or somewhat acceptable by 67.5%, whereas 29.7% reported staining on anterior

SORT SCORE

A	B	C	N/A

SORT, Strength of Recommendation Taxonomy.

LEVEL OF **EVIDENCE**

1	2	3

See page ■■■ for complete details regarding SORT and LEVEL OF EVIDENCE grading system.

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TYPE OF STUDY/DESIGN
Cross-sectional

KEYWORDS
Silver Diamine Fluoride, Caries, Children, Treatment

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teeth acceptable or somewhat acceptable. Parents' level of acceptance increased according to the level of increased difficulty that their child would experience in order to receive treatment, especially when the child would require oral sedation or general anesthesia. Parental level of acceptance of staining increased to 68.5% on posterior teeth and to 60.3% on anterior teeth when alternative treatment would require general anesthesia. One-third of parents, however, found SDF treatment unacceptable under any circumstance for posterior teeth and anterior teeth (31.5% and 39.6%, respectively).

Investigators also found that factors such as age, income, education, and ethnicity had moderating effects on parental acceptability of SDF. Parental acceptance of anterior staining increased when parents were young, of lower income bracket, less educated, and Hispanic. Additionally, investigators found that the lower the level of parental education, the higher the acceptance of staining from SDF, regardless of difficulty in treating the child.

Conclusions

Parental acceptance of SDF staining increased for teeth in less-visible locations and as barriers to treatment, crying, kicking, or screaming increased. Many parents accepted SDF treatment to avoid alternative treatment under sedation or general anesthesia. Effects of location and treatment difficulty on SDF acceptance can be moderated by socioeconomic factors and ethnicity.

COMMENTARY AND ANALYSIS

Americans have benefitted from fluoride for over 70 years. Researchers attribute the decline in caries prevalence in the United States to community water fluoridation and greater access to toothpastes and other fluoride-containing products on the market.[1] Additionally, access to dental care has significantly increased over the years for many Americans, but despite these successes, dental caries continues to be a common childhood disease that disproportionately affects groups of people in the United States. According to the Centers for Disease Control and Prevention, 20% of children between ages 5 and 11 years and 13% of adolescents between ages 12 and 19 years have at least 1 untreated decayed tooth.[2] Populations in the United States, such as the poor, members from minority backgrounds, those in rural areas, children with special health care needs, the elderly, and the very young, suffer disproportionately from the disease and have limited access to care.[3,4]

Managing and treating dental caries in children and in individuals with special health care needs is challenging, and the treatment often requires advanced pharmacologic behavior guidance such as sedation and general anesthesia, which can be expensive.[5] Similar to what community water fluoridation did for the prevention of dental caries in the United States, SDF is a cost-effective way to improve the treatment of dental caries among high-risk patients, where behavior management may be a challenge. SDF is a colorless liquid that contains silver particles and fluoride. Although SDF has been used for years for the treatment of dental caries, it was not until 2014 that the Food and Drug Administration cleared the first SDF product for the US market.[6] Currently, SDF, in its 38% formulation, is approved for use as a desensitizing agent, but it is widely known for its off-label use to prevent dental caries.

Randomized controlled trials have shown that SDF is highly efficacious in arresting dental caries. In 1 systematic review, researchers looked at 21 studies and found SDF was commonly used at the 38% concentration and was effective in arresting caries among children.[7] The American Academy of Pediatric Dentistry guidelines give SDF a conditional recommendation in favor of its use in arresting cavitated carious lesions in primary teeth.[8] However, because of limited evidence on the subject, it is suggested that well-designed clinical trials are needed to better understand the efficacy of the treatment, frequency of SDF applications, and potential risk factors for successful arrest.[9]

As a treatment of choice in high-caries risk populations and populations with behavioral or medical management challenges who present with active anterior or posterior cavitated lesions, SDF is also indicated for individuals with multiple, difficult-to-treat carious lesions and those who have limited access to dental care. It is recommended for carious lesions with no sign of pulpal involvement.[8] The SDF treatment protocol consists of removing gross debris from cavitation, drying the affected carious area, placing a small amount of SDF on the affected area, gently drying SDF for 1 minute, removing excess SDF with cotton gauze and isolating for up to 3 minutes.[8] It is estimated that the cost of SDF per application is comparable to that of fluoride varnish.[10]

Despite the cost-saving projections of SDF and evidence to support its efficacy, there are drawbacks to its use. Significant among them is the permanent dark staining it leaves on arrested caries. It can also stain anything that comes in contact with the solution and temporarily stains skin. Informed consent is essential when considering this treatment for individuals. When used in children, parents should be informed about risks and benefits. Since parents and caregivers are the main decision makers when it comes to the treatment for children, it is important for providers to understand their thoughts and perceptions regarding this

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