School-based Fluoride Varnish Program Report

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Introduction and Purpose

There is little documentation for how fluoride varnish is being used in elementary schools (K-12) as compared to preschools (pre-K) in the United States (U.S.) Mixed evidence exists around the effectiveness of school-based application of fluoride varnish in countries outside the U.S. where all children receive care at schools, mostly through universal health care systems. The U.S. system of privatized care means that professionally applied fluoride is done mostly outside the school setting, complicating direct comparisons.[1]

In 2015, the Association of State and Territorial Dental Directors (ASTDD) fielded a survey to identify school-based fluoride varnish programs for children 6-17 years old operating in the U.S. The survey responses were used to create a database for state oral health programs and to inform a revised Best Practice Approach Report (BPAR) regarding fluoride use in school-based programs, including fluoride varnish and emerging fluoride modalities. The database includes primary contact information and will only be available to ASTDD members in the Members Only section of the website. The BPAR and associated state practice activities will have wide distribution.

Methods:

This cross-sectional study used an online survey to collect data about school-based fluoride varnish programs for children 6-17 years old in the U.S. Beginning in the Fall of 2015, ASTDD used snowballing sampling, where existing study subjects recruit future subjects, to identify school-based fluoride varnish programs and their contacts in addition to the ASTDD. The ASTDD directoy of State and DC dental directors were contacted through email or phone to identify K-12 school-based fluoride varnish programs serving children 6 to 17 years old. Queries also were sent to the ASTDD associate members' listserv, the Community Oral Health Program listserv managed by the National Maternal and Child Oral Health Resource Center, and the Dental Public Health listserv managed by the University of Pittsburgh.

The ASTDD Fluorides and School and Adolescent Oral Health Committees, with the help of an ASTDD evaluation consultant and an American Board of Dental Public Health diplomate candidate, developed and pretested an online survey instrument. The questionnaire included 23 closed-ended questions asking for a program description, and assessment, process and evaluation outcomes. A link to Survey Monkey along with a letter of introduction from the ASTDD and lead writer describing the purpose and significance of the study was sent via email to 85 identified programs (35 state-operated and 50 privately-operated) in 41 states. The aim of the survey was to develop a catalog of school-based fluoride varnish program contacts for each state in addition to school-based/linked mouthrinse and supplement programs. Because the survey did ask for contact information, the responses were not anonymous and consent forms were not required. Respondents had the option to skip any question and opt out at any time. Three email reminders with the survey link were sent to all non-respondents at two-week intervals. Initial results were presented and feedback solicited during roundtable presentations and discussion at the 2017 National Oral Health Conference. A thank you email was sent to those who responded to the survey.

[1] Mathu-Muju, R, Friedman JW, Nash DA. Oral Health Care for Children in Countries Using Dental Therapists in Public, School-Based Programs, Contrasted with That of the United States, Using Dentists in a Private Practice Model. AJPH 2013 Sep;103(9) e7-e1.

SURVEY RESULTS

A copy of the survey questions and spreadsheet of the results follows this summary report along with the catalog of fluoride varnish programs that was compiled.

RESPONDENTS

A total of 52 programs (N=52) responded for a response rate of 62%. Forty-one states (78.9%) indicated they had a school-based fluoride varnish program in operation in their state; about 40% of these programs had been in existence for 10 years or more.

MANAGEMENT

56.4 % of the fluoride varnish programs responding were overseen, managed or funded by a public entity, 10.3% by a non-profit private entity, 20.5% by a private entity, and 12.8% by "Other." Comments indicated that many programs may use public-private partnerships to implement school-based programs or they work collaboratively with private and private-nonprofit organizations.

Program type

Fluoride varnish programs may be a component of various larger programs: (Multiple answers were allowed)

41.0%	mobile or portable dental clinic that visits the school
23.1%	school-based, school-linked dental clinic
84.62%	school sealant program applied fluoride varnish
58.87%	school screening and/or education program applied fluoride varnish
17.9%	other

Responder Comments: School nurses oversee the varnish program; Nurses in this program screen, apply varnish, and coordinate care; We are working on a technical guide for school nurses and county health departments to assist in direct reimbursement of services; Professional cleanings; Mobile, private, non-profit provides fluorides and sealants; Mobile "preventive" oral health clinic; Clinic provides referrals for unmet needs.

Length of Program Operation

0-3 yrs.	4 programs	11.4%
4-10 yrs.	7 programs	48.5%
>10 yrs	13 programs	37.1%

The length of time fluoride varnish programs (N=37) have been in operation ranged from 2 to >22 years. Responses indicate some uncertainty about how to answer this question. Respondents indicate the length of time the "program" has been in operation, rather than the length of time fluoride varnish has been used in elementary schools or when fluoride varnish was introduced.

Medicaid Compensation and Funding Sources

Source of funding 50% or greater:

Medicaid	21 programs	53.8%
Private Insurance	1 program	2.7%
State funds	3 programs	7.7%
Grant funds	10 programs	25.6 %

Responder Comments: Local county funding; University operations budget; IHS; No one source >50%, though Medicaid highest.

A majority of programs (81.6%) do not ask the parents for payment if they do not have Medicaid or other insurance coverage. Comments: Sliding fee scale was available; Fees are listed, but child is not turned away; Several indicated they were not allowed to bill those not covered by insurance; Service provided by private providers.

SCHOOLS AND TARGETING

Schools served

0-20 schools	7 programs
21-100 schools	25 programs
>100 schools	7 programs

Responses indicate that fluoride varnish is a service commonly added to existing programs, rather than a stand-alone program.

Grades served (N=39)

KG	29 programs
1st	32 programs
2nd	36 programs
3rd	31 programs
4th-6th	30 programs
6th-9th	22 programs
10-12	14 programs

Second grade is the most common grade served (92%), recognizing that most programs are adding fluoride varnish to an existing program such as a sealant program rather than a "stand alone"service. Fluoride varnish was provided more often in any elementary school grade (81%) compared to middle (56.4%) or high school. (35.9%).
Eight respondents included preschools, Head Start, WIC and programs for the disabled (>18 yrs.). One respondent indicated only 2nd grade sealant program participants received fluoride varnish in 3rd grade follow-ups.

Children served

< 1,000 children	10 programs
>1,000 to <9,990 children	20 programs
>10,000 children	9 programs

One program served 40,000 children.

Using **CDC's Whole School, Whole Community and Whole Child (WSWC) Model**

Yes	5 programs	12.8%
No	7 programs	17.9%
I am not familiar with model	27 programs	69.2%

Most programs are not aware of the Whole School, Whole Community, Whole Child Model.

School Risk assessment

Criteria for inclusion in the fluoride varnish program:

School size	3 programs	7.7%
Community water fluoridation	3 programs	7.7%
Free and reduced price meal eligibility	3 programs	82.1%
Low access low income dental clinic/ FQHC	9 programs	23.1%
Non-English speaking children	1 program	2.6%
No dental visit in the last 6-12 months	12 programs	30.8%

Eighty-two percent of the programs use the percent of children eligible for free and reduced price meals as criteria for inclusion into the fluoride varnish program. The majority of programs (87.2%) provide the fluoride varnish to participating children without individualized risk assessment. Seventy-six percent of the respondents use the ASTDD Basic Screening Survey methodology or other assessment tools to measure community oral health status in the schools, while 13.2% of the programs are not aware of what method is used to measure community oral health status in the schools they serve.

Individual Risk assessment

Five programs (12.8%) indicated using individual risk assessment to identify children to receive fluoride varnish. Risk criteria used to select children for their programs:

Primary teeth	10 programs	28.6%
Permanent teeth	9 programs	25.7%
Primary and permanent teeth	16 programs	45.7%
Caries experience	13 programs	37.1%
Untreated caries	10 programs	28.5%

Consent

About 90% of programs use positive consents where fluoride varnish is only applied to students who return the forms. One program uses passive consent and three programs have used both passive and positive consent.

OPERATIONS

Providers

90% percent use dental professionals to apply fluoride varnish while 10% percent use physicians and/or nurses.

Dentists	17.6%
Dental hygienists	61%
Dental assistants	11.7%
Physicians and/or nurses	10%

Screening by a dentist is NOT required before application of fluoride varnish in most of the programs (87.2%).

Medicaid compensation by provider type

Medical and dental professionals are compensated by Medicaid, directly or indirectly. Comments indicate that dental hygienists or dental assistants must bill under the dentist or health department. Others are unsure if or how to submit claims.

Training

Training is required for professionals who apply the fluoride varnish in the majority of programs (71.8%). Comments indicate that training is included as part of licensure to practice, although in some programs formal education is required by state law. Smiles for Life curriculum modules were identified as a resource. Most of the programs (68%) had dental hygienists provide training for the application of fluoride varnish, while 21% of the programs had dentists provide the training.

Program activities in addition to fluoride varnish (More than one answer allowed)

Fluoride mouthrinse	9 programs	23.7%
Fluoride tablets/supplements	6 programs	15.8%
Toothbrushing with fluoride toothpaste programs	11 programs	28.95%
Toothbrushing without fluoride toothpaste	2 programs	`5.26%
Dental sealants:permanent teeth	35 programs	92.11%
Dental sealants:primary teeth	15 programs	39.47%

Other school-based services included: full prevention activities, prophylaxis (five programs); case-management; coordination of care: translation services; screenings/limited oral examination; referrals; oral health education; fluoride rinse; simple extractions; restorations; interim therapeutic restorations (ITR); comprehensive examination and x-rays.

Frequency of applications

About a third of the programs (12 programs, 30.8%) apply varnish once a year. Others apply varnish twice a year (11 programs, 28%); 17.9% plan to apply the varnish more frequently than twice a year. Comments indicate that frequency is dependent upon location, provider and funder. Some programs are limited by the frequency allowed by

the funder, which varied from 1-4 applications. Some programs visit the school only once every two or three years, relying upon local access to dental care for additional applications.

DISCUSSION

The survey specifically collected information about fluoride varnish programs in elementary schools. The definition of a fluoride varnish program was left up to the respondents. The respondents answers did not differ between a stand-alone fluoride varnish program and the use of fluoride varnish in K-12 schools. States differ in requirements for reporting or listing school-based dental practices, hence identification of schools was dependent upon the respondent's willingness to participate and to be a part of a catalog for future contact. This survey underrepresents dental programs operating in schools. One non-responder indicated they believed their program information was considered proprietary. Nearly half of the respondents were private entities. Medicaid reimbursement was not the sole source of financial support sustaining activity.

Greater than 82% of responding programs primarily target schools with high proportions of children eligible for the reduced fee and free lunch program, although other criteria play into selection for some programs. While most programs (35) indicated an understanding of individual risk assessment, just 12.8% of programs used it. Once the school was selected, fluoride varnish was provided to all children at the school with consent to participate. Positive consent requiring parent authorization was used by greater than 90%. The three programs that utilized passive consent could be an example for optimizing child participation in fluoride varnish programs. 68.4% of programs provided fluoride varnish in addition to other fluoride programs such as mouthrinse, fluoride supplement/community water fluoridation and or fluoride toothpaste. The addition of multiple fluoride sources do not contribute to significant improvements in caries reduction.[2] [3] Therefore evaluation of fluoride programs in schools would be helpful to support evidence-based, school-based/linked fluoride program activities and ongoing funding necessary for sustainability.[4]

Respondents provided information about preschool programs and/or indicated that they would like to see the catalog expanded to include preschool programs.

SUMMARY

This survey identified 85 K-12 school-based fluoride varnish programs operating in the U.S schools agreeing to be listed in a directory and underrepresents the actual number of programs in the country and underrepresents the actual number of programs in the country. Fluoride varnish is a service commonly added to existing programs operating in schools, mobile clinics or sealant programs. Guidelines outlining key practices for successful outcomes would be useful.

ATTACHMENTS

Survey Questions and Responses
Catalog of school-based fluoride varnish programs See ASTDD Members Only Page

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[2] APHA Technical Report. Review of the National Preventive Dentistry Demonstration Program. Am J Public Health. 1986 Apr;76(4):434-47.

[3] Disney JA, Bohannan HM, Klein SP, Bell RM. A case study in contesting the conventional wisdom: school-based fluoride mouthrinse programs in the USA. Community Dent Oral Epidemiol. 1990 Feb;18(1):46–54.

[4] Kumar JV, Moss ME. Fluorides in dental public health programs. Dent Clin North Am. 2008 Apr;52(2):387–401,vii.

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