Current Knowledge, Attitudes and Behaviors of Fluoride Use: A Survey of Pediatricians at NYC Health + Hospitals

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ABSTRACT

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Purpose: To evaluate the knowledge, attitudes, and behaviors of pediatricians at NYC Health + Hospitals the largest municipal healthcare system in the United States- regarding fluoride use.

Methods: A 21-question survey was distributed via SurveyMonkey to 424 pediatricians within NYC Health + Hospitals. The survey utilized a Likert scale to assess agreement with application practices, familiarity with national guidelines, and comfort with fluoride use. Data collected over 12 weeks.

Results: Response rate was 17% (n=73), with 71% (n=52) expressing confidence in their knowledge of the ADA, AAPD, and AAP fluoride guidelines. However, only 49% (n=36) and 41% (n=30) correctly identified when fluoride varnish and fluoridated toothpaste should first be introduced, respectively. Key barriers to fluoride application included time constraints (52%, n=34), dependence on primary dental providers (53%, n=35), and difficulties applying fluoride varnish to patients with disabilities (39%, n=26). Additionally, 26% (n=16) expressed general concerns about fluoride and its uses. No statistical significance was found between the age of respondents and fluoridation concerns (P=.704). Additionally, most respondents reported having last attended a fluoride-related educational session over six years ago 46% (n=28).

Conclusions: Despite confidence in fluoride recommendations, notable knowledge gaps were identified. Pediatricians' practices were influenced by time constraints, reliance on dental providers, patient cooperation challenges, and fluoridation concerns. These findings underscore the need for targeted educational interventions to improve knowledge and comfort with fluoride use, especially in a healthcare system predominately serving a population with low health literacy and socioeconomic challenges.

INTRODUCTION

Dental caries, the most common chronic disease worldwide, affects nearly 97% of people during their lifetime, including 2.4 billion adults and 621 million children globally¹. If left untreated, it can lead to pain, tooth loss, infections, and in rare cases, death.²

To address this, the U.S. Department of Health and Human Services, on behalf of the CDC, introduced community water fluoridation. Fluoride has long been studied for its anti-caries benefits and has proven effective in reducing decay³. Since its implementation in community water systems in 1945, it has reduced dental decay in 25% of U.S. children and adults^{4,5}. A 2015 systematic review also reported a 35% reduction in decayed, missing, and filled primary teeth and a 26% reduction in permanent teeth when fluoride is at optimal levels in drinking water⁶.

However, concerns about caregiver acceptance of fluoride in children persist, highlighting the critical role of primary healthcare providers in educating and advocating for fluoride's effectiveness and safety. A survey of 582 dentists found that nearly 80% believe fluoride refusal by caregivers is a problem, with 42% seeing it as a growing issue. Additionally, 37% of dentists reported discomfort discussing fluoride refusal with caregivers⁷.

Given extensive research highlighting the significant role healthcare providers play in shaping public health, it is crucial to acknowledge the influence their understanding of public policies and recommendations has on public perception. Their insights and expertise are pivotal in guiding how health information is received and acted upon by the community⁸⁻¹³

This study aims to evaluate the current knowledge, attitudes, and practices of pediatricians in the New York City Health and Hospitals system. The findings may be compared with future studies to assess the impact of public health policies, such as New York State's 2020 Medicaid policy making fluoride varnish reimbursable by primary healthcare physicians, on pediatricians' oral health knowledge, comfort, and practices.

A survey consisting of 21 questions was sent via SurveyMonkey to 424 pediatricians within the NYC Health + Hospitals System. The questionnaire consists of a series of statements that asked participants to state their level of agreement on a Likert scale ranging from "Strongly disagree" to "Strongly agree". These statements address fluoride application practices, knowledge of AAP, AAPD, and ADA recommendations and policies on fluoride use and their comfortability of use. The survey also consisted of questions regarding demographics, age, medical school graduation date, length of medical practice post residency, length since last educational session on fluoride use, and where in NYC do the participants practice. Periodic recurrent email reminders were sent and the data was collected over a 12-week period. All responses were anonymous, and the results were gathered in a cumulative manner solely for research purposes. This study was approved by the Albert Einstein College of Medicine's Institutional Review Board Protocol #2024-16019.

Figure 1. Pediatricians' Recommendation of Fluoride







Adapted from: www.nkfamilvdental.com

MATERIALS AND METHODS

Varnish-Own Child Toothpaste-Patients



Practice Too Busy

Patients Lack of Need

Low Reimbursement Rate

Presence of Dental Home

ns regarding Fluoride varnish with: % (n)						
	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Weighted Average
:y	15% (9)	18% (11)	27% (17)	27% (17)	13% (8)	3.1
	18% (11)	26% (16)	23% (14)	21% (13)	13% (8)	2.8
	13% (8)	16% (10)	34% (21)	23% (14)	14% (9)	3.1
	2% (1)	14% (9)	19% (12)	42% (26)	23% (14)	3.7
	3% (2)	23% (14)	24% (15)	31% (19)	19% (12)	3.4



Out of 424 surveys sent, 17% (n=73) responses were received: 14% (n=60) completed and 3% (n=13) partially completed the survey.

Regarding age, 43% were 20-40 years old (n=26), and 57% were 41+ years old (n=34). In terms of experience, 57% graduated from medical school 15 years ago or less (n=34), while 43% graduated 16 or more years ago (n=26).

Knowledge: Figure 1.

- AAP, 18% were not, and 11% were neutral.
- eruption of the first primary tooth"
- first primary tooth"

Behaviors: Figure 2.

- 53% of the 66 respondents do not apply fluoride varnish to patients with a dental provider.
- 32% personally apply fluoride varnish, while 58% allow others to do so.

Attitudes: Table 1.

- did not, and 23% were neutral.

- 50% did not have fluoridation concerns, 26% did, and 24% were neutral
- 51% did not apply fluoride varnish due to time constraints.

Based on the study's results, the following conclusions can be made:

- half provided incorrect responses when tested on indications of fluoride use.
- uncooperative patients.
- pediatricians.
- area

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RESULTS

• 71% of respondents were aware of the current fluoride recommendations from the ADA, AAPD, or

• When asked when a child should first receive fluoride varnish, 49% answered correctly "after the

• 41% correctly identified when to start recommending fluoridated toothpaste "after the eruption of the

• 39% of the 62 respondents felt comfortable applying fluoride varnish to patients with disabilities, 27%

• 34% were comfortable applying it to uncooperative patients, 44% were not, and 23% were neutral. 65% felt comfortable discussing fluoridation with caregivers, 16% did not, and 19% were neutral.

CONCLUSIONS

1. While most pediatricians expressed confidence in their knowledge of fluoride recommendations, nearly

2. Fluoride varnish use amongst pediatricians are low, with the majority not applying it to their patients. 3. Among those who do apply fluoride varnish, most expressed discomfort in treating special needs or

4. Despite ADA, AAP, and AAPD guidelines, 26% of respondents expressed concerns about fluoride. 5. The primary reason for not applying fluoride varnish was time constraints, according to the majority of

6. The knowledge, behaviors, and attitudes observed underscore the need for ongoing education in this

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