



Fluoride Refusal by Parents of Pediatric Dental Patients

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Introduction

- Dental professionals should educate parents and caregivers about the benefits of fluoride and to anticipate and welcome discussion about fluoride hesitance in a professional chairside manner¹.
- Topical fluoride gets incorporated into plaque and saliva in order to inhibit the demineralization of enamel and help to remineralize any demineralized enamel present¹.
- Refusal of topical fluoride might be of growing concern and might eventually mimic trends similar to the refusal of childhood vaccinations in medicine¹.
- The use of fluoride has helped to decrease the prevalence of dental caries².
- The normal application for professionally applied fluoride varnish is two times a year in primary and permanent dentition. Children at risk for caries should receive a professional fluoride treatment at least every 6 months³.
- A study performed by Richard Carpiano and Donald Chi found that parents who refused fluoride treatment also refused vaccinations for their children⁴.

Purpose

Evaluate characteristics of pediatric dental patients whose parents refused fluoride varnish compared to those who received fluoride varnish.

Materials & Methods

- Last year, a retrospective chart review of the EHR (axiUm) was done of all University of Iowa Department of Pediatric Dentistry patients who did not receive a fluoride code during at least one exam visit from June 30th, 2018 to January 1st, 2020
- We then identified 110 pediatric dental patients who were true fluoride refuser subjects, meaning the parents of these patients refused fluoride for reasons other than: insurance did not cover the application, the patient’s behavior did not allow, taste aversion, low caries risk, CHX was used instead, or no reason was listed.
- This year, true fluoride refuser subjects (N=110) were matched by age (\pm 1 year) and sex with those who received fluoride (N=3,652)
- The following demographic information about the patients was obtained:
 - Type of insurance, age and sex, clinic patient originated from, level of provider, history of caries experience, Spanish interpreter needed

Statistical Analysis

- Descriptive statistics were conducted to provide an overview of characteristic of participants in the study
- An exploratory cross-sectional design involving convenience samples was used for the study.
- Categorical and continuous variables were presented with frequencies and percentages or means, standard deviation, median, and range, respectively.
- The factors related to fluoride refusal by parents of pediatric dental patients were evaluated using chi-square test and Fisher’s exact test.
- Statistical analysis was preformed using the statistical package SAS® System version 9.4 (SAS Institute Inc., Cary, NC, USA), and a significance level of 0.05 was utilized.

Results

Table 1. A Summary of Participant Characteristics (N=220)

Variables	Frequency (%)
Gender	
Female	112 (50.9)
Male	108 (49.1)
Age (years)	
Mean \pm SD	8.8 \pm 4.4
Median (range)	8.0 (1-17)
Age Group	
1-5 years	70 (31.8)
6-11 years	74 (33.6)
12+ years	76 (34.6)
Spanish Interpreter Needed	
Yes	2 (0.9)
No	218 (99.1)
The types of insurance (n, %)	
Private insurance	98 (44.6)
Self-pay	17 (7.7)
Medicaid	105 (47.7)
The clinic where the subject visited (n, %)	
Iowa Center for Disabilities and Development (CDD)	104 (47.3)
Iowa Pediatric Clinic at Muscatine, IA (MPEDO)	17 (7.7)
Iowa College of Dentistry Pediatric Clinic (PEDO)	99 (45.0)
The types of provider (n, %)	
Faculty	81 (36.8)
Residents	87 (39.6)
Students	52 (23.6)
Presence of caries (n, %)	
Yes	152 (69.1)
No	68 (30.9)

Table 2. Association of Fluoride Refusal with Patient Characteristics (N=220)

Variables	Subjects who refused fluoride varnish (n=110)	Subjects who received fluoride varnish (n=110)	P-value
Spanish Interpreter Needed (n, %)			1.000
Yes	1 (50.0)	1 (50.0)	
No	109 (50.0)	109 (50.0)	
Types of Insurance (n, %)			0.021*
Private insurance	46 (46.9)	52 (53.1)	
Self-pay	14 (82.4)	3 (17.6)	
Medicaid	50 (47.6)	55 (52.4)	
Clinic Visited (n, %)			0.038*
CDD	50 (48.1)	54 (51.9)	
MPEDO	4 (23.5)	13 (76.5)	
COD	56 (56.6)	43 (43.4)	
Types of provider (n, %)			0.603
Faculty	44 (54.3)	37 (45.7)	
Residents	42 (48.3)	45 (51.7)	
Students	24 (46.2)	28 (53.8)	
Presence of caries (n, %)			0.243
Yes	72 (47.4)	80 (52.6)	
No	38 (55.9)	30 (44.1)	

* Statistically significant using Fisher’s exact test (p<0.05)

A total of 220 subjects who fulfilled the inclusion criteria (i.e. the oldest child/per household and the first visit/per child), comprising 110 subjects who refused a fluoride varnish and 110 subjects who received a fluoride varnish matched by age (\pm 1 year) and gender, were included in the study.

- Our results show statistically significant associations of fluoride refusal with insurance type and clinic where the subjects visited (Table 2).
 - Subjects who had self-pay arrangement were more likely to refuse topical fluoride varnish than those who had private insurance or Medicaid coverage (82.4% vs. 46.9% or 47.6%; p=0.021).
 - Subjects who visited the MPEDO clinic were less likely to refuse topical fluoride varnish than those who visited either at CDD or COD (23.5% vs. 48.1% or 56.6%; p=0.038).
- However, type of provider, presence of caries and if a Spanish interpreter was needed were NOT associated with fluoride refusal (Table 2).

Limitations

- Findings may not be generalizable to other populations
- Errors in documentation and missing data due to retrospective data collection.
- Other confounding variables such as age, education level, or other healthcare related beliefs of the parents were not available in this study, but could have an impact on fluoride acceptance or refusal

Conclusions

- Subjects who were self–pay (no dental insurance coverage) were associated with refusal of fluoride varnish compared to those with private insurance or Medicaid
- The pediatric clinic in Muscatine was associated with less topical fluoride refusal than those at the Center for Disabilities and Development or the University of Iowa College of Dentistry
- This research suggests that addressing barriers such as insurance coverage may improve acceptance of fluoride varnish for pediatric dental patients.

Future Direction

Further research on this topic could consist of identifying specific reasons why parents refuse fluoride varnish for their children

References

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