Prevalence of Fluoride Varnish Application in the Medical Setting

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Introduction

Dental Caries

- Most common chronic childhood disease[1]
- Affects a child's quality of life (pain, difficulty eating, and missed school days)[2]
- Assessed prevalence rate of 21.4% in children aged 2-5 years[3]

Fluoride Varnish (FV)

- An effective preventive strategy[4]
- An opportunity for caries prevention in medical settings[5]
  - Few studies assessed the use in medical settings

Purpose

- Secondary analysis to evaluate cross-sectional prevalence of FV application in the medical setting during 20 time periods from children's ages of 12 months to 9.5 years
- Determine the cumulative prevalence of FV application in the medical setting over four 18-month periods

Methods

- The parent prospective study was to develop and validate a dental caries risk assessment tool for use in medical settings
- Recruitment sites: Duke University, Indiana University, and University of Iowa
- Coordinating center: University of Michigan
- IRB approval obtained by the 4 academic institutions
- Enrolled: 1,326 primary caregiver (PCG)/child dyads in 2012-13
- Primary caregivers completed:
  - Questionnaires at 6 child dental clinical examinations
    - Baseline: child aged 12 months
    - Follow-up: child aged 2.5, 4, 6.5, 8, and 9.5 years
  - Follow-up contact questionnaires approximately every 4 months between exams
- Question studied from exam and follow-up questionnaires: "Was any fluoride varnish applied during a medical (i.e., non-dentist) visit since the last intermediate contact or study visit?"

Statistical Analysis

Descriptive Statistics

- Prevalence of FV application in the medical setting during 20 individual time periods
- Cumulative prevalence for four 18-month time periods
  - PCGs could respond to the medical FV question up to 5 times during each 18-month time period, but did not always respond at each opportunity
  - The proportions of "yes" responses to overall responses to the medical FV application question were determined and reported

Results

Table 1. FV Application in the Medical Setting

	Valid Responses				
	Yes		No		Total Number
	Number	%	Number	%	
18-Month Time Period 1					
12-16 months	136	11.6	1035	88.4	1171
16-20 months	147	13.1	977	86.9	1124
20-24 months	138	12.5	969	87.5	1107
24-28 months	103	9.3	1000	90.7	1103
28-30 months	55	5.2	997	94.8	1052
18-Month Time Period 2					
30-34 months	43	4.3	960	95.7	1003
34-38 months	49	5.0	934	95.0	983
38-42 months	51	5.3	910	94.7	961
42-46 months	52	5.2	947	94.8	999
46-48 months	45	4.6	933	95.4	978
18-Month Time Period 3					
78-82 months	4	0.7	607	99.3	611
82-86 months	6	1.0	594	99.0	600
86-90 months	10	1.8	541	98.2	551
90-94 months	6	1.0	593	99.0	599
94-96 months	8	1.4	565	98.6	573
18-Month Time Period 4					
96-100 months	3	0.5	575	99.5	578
100-104 months	4	0.7	588	99.3	592
104-108 months	3	0.5	581	99.5	584
108-112 months	3	0.5	565	99.5	568
112-114 months	1	0.2	508	99.8	509

Table 2. Summary of Cumulative FV Prevalence Rates (Time Period 1 = 12 months to 30 months, 20.4% Cumulative Prevalence)

Percentage	Response Number	Percentage of Responses	Cumulative Percentage
0	1036	79.6	79.6
20	45	3.5	83.1
25	26	2.0	85.1
33.3	11	0.9	85.9
40	48	3.7	89.6
50	22	1.7	91.3
60	37	2.8	94.2
66.7	12	0.9	95.1
75	9	0.7	95.8
80	22	1.7	97.5
100	33	2.5	100.0
Total	**1155**	**100.0**	**100.0**

Table 3. Summary of Cumulative FV Prevalence Rates (Time Period 2 = 30 months to 48 months, 12.9% Cumulative Prevalence)

Percentage	Response Number	Percentage of Responses	Cumulative Percentage
0	1006	87.1	87.1
20	49	4.2	91.3
25	23	2.0	93.3
33.3	8	0.7	94.0
40	28	2.4	96.5
50	13	1.1	97.6
60	8	0.7	98.3
66.7	3	0.3	98.5
75	2	0.2	98.7
80	6	0.5	99.2
100	9	0.8	100.0
Total	**1155**	**100.0**	**100.0**

Table 4. Summary of Cumulative FV Prevalence Rates (Time Period 3 = 78 months to 96 months, 6.4% Cumulative Prevalence)

Percentage	Response Number	Percentage of Responses	Cumulative Percentage
0	619	93.6	93.6
20	22	3.3	97.0
25	7	1.1	98.0
33.3	2	0.3	98.3
40	0	0.0	98.3
50	0	0.0	98.3
60	1	0.2	98.5
66.7	0	0.0	98.5
75	0	0.0	98.5
80	0	0.0	98.5
100	10	1.5	100.0
Total	**661**	**100.0**	**100.0**

Table 5. Summary of Cumulative FV Prevalence Rates (Time Period 4 = 96 months to 114 months, 1.9% Cumulative Prevalence)

Percentage	Response Number	Percentage of Responses	Cumulative Percentage
0	611	98.1	98.1
20	8	1.3	99.4
25	1	0.2	99.5
33.3	2	0.3	99.8
40	0	0.0	99.8
50	0	0.0	99.8
60	1	0.2	100.0
66.7	0	0.0	100.0
75	0	0.0	100.0
80	0	0.0	100.0
100	0	10.0	100.0
Total	**623**	**100.0**	**100.0**

Discussion

- Despite recommendations for FV application by medical providers, these study results demonstrate[6]:
  - A range of period-specific prevalence of FV application in the medical setting:
    - High of 13.1% for children aged 16 months to 20 months
    - Low of 0.2% for children aged 112 months to 114 months
  - A range of cumulative prevalence of FV application in the medical setting:
    - High of 20.4% for children aged 12 months to 30 months
    - Low of 1.9% for children aged 96 months to 114 months
  - These study results demonstrated generally similar results to previous studies, with findings of low prevalence rates of FV application in the medical setting, such as 4.8%[7]

Strengths and Limitations

Strengths

- Collected data from academic sites in three states
- Accumulated data over two three-year time periods

Limitation

- Self-reported FV application in the medical setting

Future Directions

- Assess factors related to FV application in the medical setting
- Assess prevalence of FV application in the dental setting

Conclusions

- Prevalence of FV application in the medical setting is low and decreases as children age
- Application of FV in the medical setting provides an opportunity for increased caries prevention

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