



## Introduction

- Brushing with fluoride toothpaste is important in helping to prevent tooth decay
- Access to toothpaste could be a problem for some low-income populations in the U.S.
- Low-income families are at a greater risk of having dental caries than families from other income classes, and infrequent use of toothpaste may be a contributing factor.
- Children from low-income families have caries prevalence that is about twice that of children in the general population
- The use of toothpaste in low-income families is largely unknown, but could be influenced by a number of factors including limited oral health knowledge and inability to afford the costs of toothpaste.
- The purpose of this study was to assess factors related to access to toothpaste and toothpaste use patterns in children from low-income families and determine whether toothbrushing habits are related to family income, education or other factors.
- The hypothesis of this study is that low-income families have limited access to fluoride toothpaste, which may limit tooth brushing and contribute to caries.

## Materials & Methods

- Approval was received from the Wayne State Institutional Review Board (IRB) in November 2022.
- A questionnaire including 18 questions with a multiple choice format was developed.
  - Questions covered the following topics:
    - Tooth brushing
    - Toothpaste
    - Fluoride
    - Demographics
- The study was conducted at The Children's Dental Specialist Clinic in Hazel Park, Michigan.
- Parents of children 0-5 years of age were recruited in the waiting room and given a brief oral description of the main focus of the study.
- After receiving consent to participate from the subject, the subject was given an anonymous questionnaire to complete.
- A total of 151 questionnaires were completed anonymously.
- Data collected from the questionnaires were entered into an Excel spreadsheet and converted to SPSS format for analyses.
- Outliers and data entry errors were corrected
- Descriptive statistics were generated and chi-square tests were done to assess relationships between regular brushing and independent variables.

## Results

- Children ranged in age from 8 months to 5 years.
- 42% had incomes of \$30,000 or less.
- 33% of the participating parents were married, 54% were single/never married, 4% were divorced and 7% lived with their significant other.
- Parent's education level was as follows: less than high school, 5%; high school graduate, 57%; some college/two-year degree, 16%; 4-year degree, 8%; graduate degree, 14%.

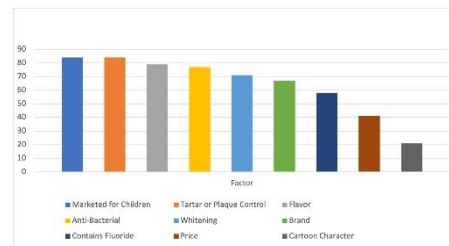
Children's race/ethnicity distribution was as follows: Black/African-American 60%, Caucasian 24%, Asian 5%, Middle Eastern 5%, Hispanic 4%, AI/AN 2%

- Toothpaste Use
  - 98% reported regular toothpaste use for their child, and
  - 61% reported large or very large amount of toothpaste use
  - Most of the respondents (99%) reported that their child had a toothbrush
  - 95% of the respondents reported that their child's teeth were brushed once or more per day.
  - Knowledge of Fluoride is presented in Table 1

**Table 1.** Respondents Knowledge of Fluoride: Level of Agreement with Statements Regarding Fluoride

Statement	Proportion Responding 'Yes' (%)
Fluoride helps prevent cavities	94
Fluoride helps maintain healthy gums	89
Fluoride makes water taste funny	36
Not sure what fluoride is	24
Fluoride is harmful to health/makes people sick	18

- When asked the most important reason to use toothpaste, "fights cavities" was cited by 42%, followed by "fights bad breath" (26%), "prevents tartar build-up" (13%), "strengthens teeth" (12%), "reduces plaque" (7%), and "removes stains" (1%).
- Respondents cited several factors that influenced their choice of toothpaste. These factors are summarized in Figure 1.



**Figure 1.** Factors Important in Buying Toothpaste

**Table 2.** Bivariate Analysis of Factors Related to Knowledge of Fluoride

Independent Variable	Not Sure What Fluoride Is		p-value*
	Yes	No	
Amount Used – Pea sized or less	Yes	21	0.025
	No	63	
Who Brushes?	Adult Only	17	<0.001
	Child Only	1	
	Adult & Child	66	
	No one brushes	0	
	1	0	
Feels Brushing is Important	Yes	6	0.031
	No	75	

\* p-value based upon Chi-square test

## Discussion

- The results of this study showed that the use of toothpaste, and lack of knowledge for fluoride appears to be a significant problem in this low-income population.
- Many of the children had access to toothpaste but were brushing their teeth with large or very large amounts of toothpaste.
- Inadequate brushing was related to lack of knowledge about toothpaste and fluoride.
- Bivariate analyses found that parents who did not know what fluoride was were significantly ( $P < .05$ ) more likely to brush their child's teeth with very large or large amounts of toothpaste, less likely to think brushing was important and less likely to have an adult involved in brushing.

## Conclusion

Over 20% of respondents reported that they were not sure what fluoride was, and 98% reported regular toothpaste use but majority used large or very large amounts of toothpaste. Amount of toothpaste use, and lack of knowledge for fluoride appeared to contribute more to amount of toothpaste use than did parent's education levels. These results suggest that inadequate brushing appears to be related to lack of knowledge about toothpaste and fluoride, which supports our hypothesis.

## Acknowledgments

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