

Introduction

Dental caries is one of the most prevalent chronic diseases in childhood. It affects 60-90% of school-aged children.¹ These children are often diagnosed with early childhood caries (ECC), the presence of 1 or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 5 years or younger.² Dental caries has remained a prevalent disease even with more knowledge and understanding of how to treat and prevent it. The American Academy of Pediatric Dentistry (AAPD) encourages healthcare providers and caregivers to implement preventive practices that can decrease a child's risks of developing this disease.³ Yet, oral health remains as a low priority in pediatric primary health care.⁴

Medical practitioners are considered the primary bond between dentists and children. Dental diseases can be treated at early stages if the physicians examine the oral cavity regularly.⁴ As pediatricians are among the first medical professionals parents and children encounter, physicians can educate parents regarding the prevention of oral diseases and impart knowledge leading to healthy oral environment. Furthermore, infant oral health promotion in physicians' offices can improve children's dental health by reducing risk of development of caries and ensuring dental treatment is started before any progression of dental disease.⁴

In order to recognize and prevent dental disease, physicians need to have proper training of oral health and dental disease. It has been shown that there is little instruction on oral health in medical school and residency programs. One 2011 study surveyed medical school deans to evaluate the extent of the oral health curriculum. Based on the response, the study concluded that most U.S medical schools offer very little oral health education.⁵ Another study surveyed pediatricians to evaluate the oral health training that they receive during residency and their attitudes toward performing oral health screenings.⁶ This study also concluded that there is minimal to no oral health training in residency programs and pediatricians did not feel confident in conducting oral health screenings and most wished for more training.

Knowing that there is minimal to no oral health training in medical school, other studies evaluated the oral health knowledge of family and pediatric medicine residents before and after the use an educational intervention. These studies compared pre-test results with the immediate post-test results, with results demonstrating an immediate increase in knowledge and understanding post intervention. For example, one study found that instruction in infant oral health was effective in improving family medicine residents' knowledge.⁷ A similar study studied the effectiveness of an educational intervention and concluded that there is a need for better collaboration between medical and dental professionals to help train pediatric health care professionals about infant oral health.⁸ Yet assessing immediate post test results provides a limitation to these studies, as there are no long-term follow-ups to further evaluate retention of knowledge and understanding.

Objective

This study aims to look at the oral health knowledge of pediatric medicine residents before an informational presentation, immediately, and then 30 days after the presentation with the use of a questionnaire.

The goals of this study are:

- Assess dental knowledge and application of dental knowledge in patient care
- Evaluate effectiveness of presentation in increasing dental knowledge of pediatric medicine residents

Hypothesis

An oral health education presentation will increase the dental knowledge of pediatric medicine residents.

Study Population

Pediatric Medicine residents at the Children's Hospital at Montefiore (Bronx, NY) will be recruited to participate in this study. Participants will be required to listen to a presentation, as well as complete a questionnaire before and after the presentation. A sample size of about 35 residents will be evaluated.

Study Design and Methods

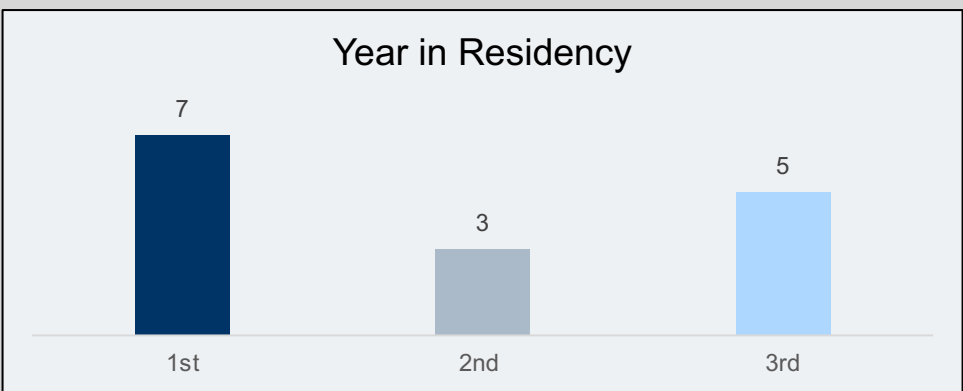
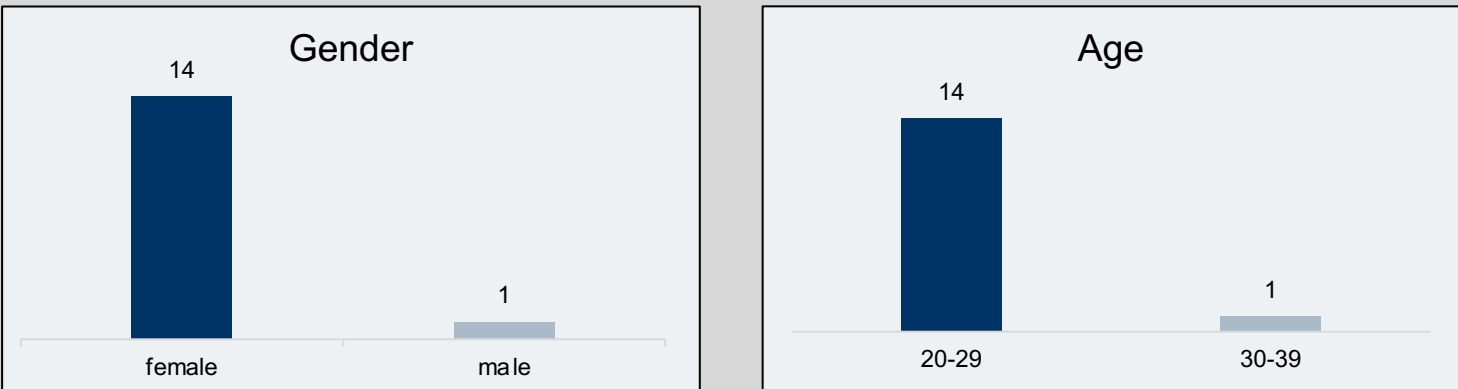
This study is a cross sectional survey using a pre-test and post-test questionnaire to evaluate dental/oral health knowledge of pediatric medicine residents and evaluate their comfort level incorporating their knowledge into their practice before and after an educational intervention.

Pediatric medicine residents completed a 15-item questionnaire. Immediately following, a Montefiore pediatric dental resident presented a lecture about oral health to the participants. Following the presentation, the participants completed a post-test using the same questionnaire. The participants were then emailed the same questionnaire 30 days later.

The study questionnaire was developed based on previously validated surveys with modifications based on current AAPD guidelines.^{9,10,11,12} The questionnaire assessed oral health and dental knowledge, along with their comfort level in applying dental knowledge when treating patients. Evaluation of knowledge from the 30-day post-test was based on the Ebbinghaus' Forgetting Curve.¹³

Survey Responses

Participant Characteristics



Baseline Characteristics and Test Score

Characteristic	N = 15	Characteristic	N = 15
Pre-test Score (%)		Question 1	
N	15	Sometimes/Never	9 (69%)
Median (IQR)	50 (35, 65)	Always	4 (31%)
Mean (SD)	47 (28)	Question 2	
Post-test Score 1(%)		Sometimes/Never	3 (23%)
N	14	Always	10 (77%)
Median (IQR)	80 (70, 80)	Question 3	
Mean (SD)	74 (23)	Sometimes/Never	2 (15%)
		Always	11 (85%)
		Question 4	
		Sometimes/Never	12 (92%)
		Always	1 (7.7%)
		Question 5	
		Sometimes/Never	2 (15%)
		Always	11 (85%)

Survey Responses (cont.)

PRE / POST comparison of test score

	PRE	POST	p-value ¹
N	15	14	
Test Score			
Median (IQR)	50 (35, 65)	80 (70, 80)	0.001
¹ Wilcoxon rank sum test			

Results

35 pediatric medicine residents received the oral health education presentation. A total of 15 participants (90% female, 10% male) completed both the pre-test and post-test. The majority (90%) were in the 20-29 year age group. 50% were in their 1st year of residency, 20% in their 2nd year, and 30% in the 3rd year.

In part one, the pre-test (N=15) had a median score of 50% with an IQR of (35%, 65%) before the educational intervention. The post-test (N=14) had a median score of 80% with an IQR of (70%, 80%) just after the educational intervention. In part two, 85% of the residents always inquire parents about oral hygiene practices and recent dental history, and 77% always inquire parents about their children's nighttime bottle use. However, 69% never screen for dental decay, and 92% never provide anticipatory guidance for oral-dental trauma.

There was a significant difference between the pretest and post-test scores (P=.001). A nonparametric test, i.e., Wilcoxon rank sum test, was employed in comparing the pre/post scores.

Discussion

This study found that an educational intervention was effective in increasing dental knowledge in pediatric medicine residents. Following the oral health education presentation, there was a significant difference in dental knowledge with an increase in median score from 50% correct to 80% correct. In the second part of the questionnaire concerning practices during patient treatment, residents routinely inquired about oral hygiene, dental history and habits, but did not actively screen for decay or provide anticipatory guidance for dental trauma. As the third collection of responses was not collected, an evaluation of responses in part two was not conducted.

Kebriai et. al (2008) found that that instruction in infant oral health was effective in improving family medicine resident's knowledge.⁷ Additionally, Rao et. Al (2018) found that an education intervention was effective in increasing the oral health knowledge ,but there is a need for better collaboration between medial and dental professionals.³ Therefore, the results of this study are similar to previous studies.

There were some limitations to the study. As a formal sample size justification was not performed, we would like to consider our results as exploratory. The study was unsuccessful in collecting responses at 30-days after the educational intervention as intended, due to lack of participation. Lastly, due to practical difficulties preventing the pairing of pre/post responses, our analysis did not take into account the correlated nature of the data. This makes our result somewhat conservative.

Despite these limitations, an oral health education presentation appears to be effective in increasing the dental knowledge of pediatric medicine residents. In the future, more studies with long-term follow-up should be conducted. There should also be an increase in dental education in medical school.

Conclusion

An oral health education presentation was effective in increasing the dental knowledge of pediatric medicine residents.

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