Assessment of the knowledge, attitude, and awareness among dental students about prevention of dental caries in pediatric patients

Sanjay Madhavan¹, Mebin George Mathew²*

ABSTRACT

Aim: This study aims to evaluate the knowledge, attitude, and awareness in prevention of early childhood caries (ECC) among dental students treating pediatric patients. Introduction: ECC is a particularly virulent form of dental caries affecting the primary teeth of infants and toddlers. Early assessment of the oral health status of children has the potential to reduce or even eliminate oral diseases. Hence, sufficient knowledge and awareness among practitioners treating pediatric patients about the causes, prevention, and treatment strategies are required to provide the child an opportunity for a lifetime free from preventable oral disease. Materials and Methods: A closed-ended questionnaire comprising 10 questions based on causes, prevention, and treatment of caries in children was given to 100 dental practitioners. Data were analyzed by computing the percentage response for each question. Results: Majority of the dental practitioners recommend the child’s first dental visit should be between 6 and 12 months. According to 54% of the practitioners, maxillary anteriors are the first teeth affected by ECC. About 63% suggested that the child should not be put to bed with fruit juice or milk. Most of them agreed that fluoride dentifrice and dental sealants will help prevent dental caries. Conclusion: A majority of practitioners were aware of the various aspects of oral health in children and, hence, play a more active role in promoting the oral health of children in their practices.

KEY WORDS: Decay, Dental caries, Early childhood caries, Feeding, Fluoride

INTRODUCTION

Dental caries is an important public health problem and it is the most prevalent oral disease among children. This disease not only causes damage to the tooth but is also responsible for several morbid conditions of the oral cavity and other systems of the body.[1] The prevention of oral disease and maintenance of oral health are the major challenges of dentistry.[2]

Dental caries affecting the primary dentition of preschool children is referred to as early childhood caries (ECCs). ECC is defined as “the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child under the age of six.” ECCs are a multifactorial disease with an etiology that involves a complex interaction between biological and socioeconomic factors. It is classified as mild, moderate, and severe. In children younger than 3 years of age, any sign of smooth surface caries is indicative of severe ECCs (S-ECCs). From ages 3 through 5, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score of ≥4 (age 3), ≥5 (age 4), or ≥6 (age 5) surfaces constitute S-ECC.[3] Children with ECC have difficulty chewing and eating. In addition, these children often need dental treatment under general anesthesia, incurring heavy costs to the family, and the health-care system.[4] Dental caries can be prevented if the pediatrician recognizes and encourages good preventive habits and refers appropriately.

Very few studies have been conducted on dental screening and referrals by pediatricians or the effectiveness of their dental caries preventive activities. The absence of exact statistics on the pediatrician

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awareness concerning children’s caries prevention in India led us to conduct this study. Therefore, the purpose of this study was to determine the knowledge, attitude, and awareness in prevention of dental caries among dental students treating pediatric patients.

**MATERIALS AND METHODS**

A questionnaire was designed for 100 dental practitioners treating pediatric patients in Saveetha Dental College, Chennai. The survey consisted of 10 items in multiple choice/answer format [Table 1]. The survey consisted of several questions related to the time of a child’s first dental visit, signs of tooth decay, factors causing ECC, prevention methods, and their awareness of ECC. The survey also asked the clinicians to provide demographic data such as the name, age, sex, and year of study. Data were analyzed by computing the percentage response for each question.

**RESULTS**

The results show that 60% of the dental practitioners treating pediatric patients recommend the child’s first dental visit should be between 6 and 12 months [Figure 1]. For the question regarding the time to start cleaning a child’s teeth, 64% of the respondents suggested immediately after the eruption of the first tooth. About 59% agreed that white lines and spots on the tooth surface of children are the initial signs of tooth decay. Around 54% of the practitioners [Figure 2] felt that maxillary anteriors are the first teeth affected by ECC.

About 63% suggested that the child should not be put to bed with fruit juice or milk. Majority (69%) of the practitioners feel that bottle feeding for too long and too often can lead to caries [Figure 3]. About 58% suggested that gum pads also should be cleaned. About 84% of the respondents chose carbohydrates, bacteria, and tooth to be the factors which are important in caries formation. About 91% said that fluoride dentifrice and dental sealants will help prevent dental caries [Figure 4]. About 77% of them counsel children and parents about the importance of brushing.

**DISCUSSION**

The questionnaire was distributed among dental practitioners who included 79% of females and 21% of males between the age groups of 20–30 years. The present study found that practitioners treating pediatric patients were knowledgeable about some aspects of ECC and infant oral health, but few were uncertain about maintenance of child’s oral cavity and early signs of ECC.

In the present study, 60% of the pediatricians felt that 6 months–1 year would be ideal for the first dental visit. This is in accordance with the American Academy of Pediatric Dentistry (AAPD) guidelines and the American Academy of Pediatrics which say that the first
dental visit should be within 6 months of the eruption of the first tooth per year.\cite{5,6} This is supported by similar studies done.\cite{7,8} Early visits to the dentist allow preventive measures, early diagnosis, and orientations regarding proper diet and oral hygiene as well as the prevention of non-nutritive sucking habit.\cite{10,11}

Majority of the practitioners responded that toothbrushing should begin immediately after the eruption of the first tooth which is in accordance with the AAPD guidelines that say that brushing should begin with the eruption of the first tooth. However, in studies by Prakash \textit{et al}.\cite{12} and Murthy and Mohandas,\cite{13} majority of the pediatricians felt that toothbrushing should begin after few teeth have erupted. About 41% of the practitioners were unaware that white spots or lines on tooth surfaces were the first signs of tooth decay, similar to a previous study by Prakash \textit{et al}.\cite{11} where 46% of pediatricians were not sure that white spots or lines on tooth surfaces were the first signs of tooth decay. ECC is initially recognized as a dull, white hand of demineralized enamel that quickly advances to obvious decay along the gingival margin.\cite{14} The decay is generally first seen on the primary maxillary incisors. About 54% were aware of this.

About 63% of the respondents knew that putting a baby to bed with a bottle of fruit juice or milk is harmful as compared to 91.6% by a Bhat \textit{et al}.\cite{15} and 72.6% by Shivaprakash \textit{et al}.\cite{16} The juice or milk just before bed causes the sugar to linger in the mouth and the bacteria will break down the sugar and turn it into acid. Majority of the practitioners were aware that bottle feeding for too long and too often can cause caries which is similar to results obtained by a study done by Poornima \textit{et al}.\cite{17}

About 58% of respondents agreed that gum pads should be cleaned compared to 32% in a study done by Kumari \textit{et al}.\cite{18} However, still 42% were not aware of it. In a study done by Poornima \textit{et al}.\cite{15} and Shivaprakash \textit{et al}.\cite{16} more than half of the respondents knew all the main risk factors of dental caries. Similarly, in the present study, more than half (84%) of respondents were aware that carbohydrates, tooth, and bacteria play a major role in caries formation.

The decision to use fluoride therapy must consider the risk of caries versus the risk of fluorosis. Patients identified as at greater risk of caries are candidates for more fluoride therapy.\cite{19} About 91% of the respondents felt that fluoride dentifrice and dental sealants will help prevent dental caries. In a study by Murthy and Mohandas,\cite{13} majority of (>90%) pediatricians felt that assessment of dental caries and counseling about prevention of it should be a part of well child care. In the present study, only 77% of the practitioners counsel children and parents about the importance of brushing and oral hygiene.

**CONCLUSION**

Our study indicates that most of the practitioners in had a good attitude toward oral health care, few had

![Figure 4](https://via.placeholder.com/150)

**Table 1: Responses of the practitioners to the questionnaire**

<table>
<thead>
<tr>
<th>Question</th>
<th>Maximum response</th>
<th>Minimum response%</th>
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<tr>
<td>1. When should a child go for the first dental visit?</td>
<td>12 months – 60</td>
<td>Not required unless a toothache – 1</td>
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<td></td>
<td>Immediately after eruption of the first tooth – 64</td>
<td>2–3 years after eruption of the first tooth – 0</td>
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<td>2. What is the correct time to start cleaning the child’s teeth?</td>
<td>Agree – 59</td>
<td>Disagree – 16</td>
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<td>3. First signs of tooth decay are white lines or spots on the tooth surfaces</td>
<td>Maxillary anteriors – 54</td>
<td>Maxillary posteriors – 8</td>
</tr>
<tr>
<td>4. Which teeth are first affected by early childhood caries?</td>
<td></td>
<td></td>
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<tr>
<td>5. Is it ok to put the child to bed with fruit juice/milk?</td>
<td>No – 63</td>
<td>Do not know – 18</td>
</tr>
<tr>
<td>6. Do you think bottle feeding for too long and too often can lead to caries?</td>
<td>Yes – 69</td>
<td>No – 24</td>
</tr>
<tr>
<td>7. Should gum pads be cleaned?</td>
<td>Yes – 58</td>
<td>Do not know – 17</td>
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<tr>
<td>8. Which factor is most important in the formation of caries?</td>
<td>All of the above (carbohydrate, bacteria, and tooth) – 84</td>
<td>Tooth – 2</td>
</tr>
<tr>
<td>9. Do you think fluoride dentifrice and dental sealants will help prevent dental caries?</td>
<td>Yes – 91</td>
<td>Not aware – 2</td>
</tr>
<tr>
<td>10. Do you counsel children and parents about the importance of brushing?</td>
<td>Yes – 77</td>
<td>No – 3</td>
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moderate knowledge and few still lacked proper awareness of dental caries. Lack of familiarity with oral health issues may make it difficult for them to promote the prevention of dental caries. Given the frequency with which pediatricians encounter dental caries, additional oral health-related training in pediatric residency could be considered. ECC is a multifactorial disease which begins soon after dental eruption. Hence, both oral disease prevention and oral health promotion should be included as an integral part of chronic disease prevention and general health promotion programs.

REFERENCES


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