ORIGINAL ARTICLE

Prevalence of class I caries in the second maxillary primary molar in 3–6-year-old children: A retrospective study

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J. Adv. Pharm. Technol. Res.

ABSTRACT

Class I caries is located in the occlusal surface of molars and premolars. Dental care is an international public health challenge, mainly in young group children, as they are easily affected by caries with an increased addiction to sweets and chocolates. Caries begin early in life and progress rapidly and can affect a child in the long-term quality of life. The data were collected from the institutional patient records between June 2015 and February 2021. The details of 6831 pediatric patients were collected, of which 1500 patients fulfilled the inclusion criteria. The data were collected and analyzed using SPSS software (IBM Corp, IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY). $P = 0.005$ was set as level of significance. Highest prevalence of caries was seen in male children with $P = 0.008$ (<0.05), denoting that there is a significant association between gender and number of teeth affected with caries. When age group was considered, the caries prevalence was highest at the age of 4 years and the *P* value was statistically significant. The prevalence of class I caries in the second maxillary primary right molars was more than the second maxillary primary left molars and within the age group of 4 years.

Key words: Class I caries, innovative technology, novel method

INTRODUCTION

Dental caries remains a serious health issue in the population, with a marked increase in the prevalence in socially disadvantaged communities.[1] Early childhood caries (ECC) is a health problem in developing as well as developed countries worldwide.[2] ECC always begins in early life of a child and started progressing very rapidly, and the child always falls under high-risk caries development, which is often unnoticed and goes untreated.[3] ECC consequences affect the long-term quality of life of children. During the ECC period, the most prevalent dental problem is pain, infections, interference with eating, risk of dental caries in permanent dentition, malocclusion, and limiting the function and esthetics.[4]

Previous research studies on dental caries were mostly based on a dental evaluation corresponding with DMFT that showed the number of decayed, missing, filled teeth which was used to analyze the caries involvement and prevention of primary and permanent molar teeth with regard to ICDAS score.[5] These previous research articles have also shown that there was high-risk incidence of restorations

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Submitted: 21-Apr-2022 **Revised:** 12-Jul-2022
Accepted: 20-Jul-2022 **Published:** 30-Nov-2022

Access this article online	
Quick Response Code:	Website: www.japtr.org
	DOI: 10.4103/japtr.japtr_185_22

How to cite this article: Harini B, Gurunathan D, Padmapriya S. Prevalence of class I caries in the second maxillary primary molar in 3–6-year-old children: A retrospective study. J Adv Pharm Technol Res 2022;13:S190-3.

that were mainly due to lack of awareness on various aspects and fields of class I caries in many counties. These previous articles have shown that the prevalence of caries includes low socioeconomic status and lack of availability in dentistry.[6] There is an absolute need for the parents and caretakers to focus more and more in promoting knowledge on ECC detection and prevention of ECC. Class I caries is defined as caries involving the occlusal pits and fissures of molars. Class I caries prevalence is always higher in younger children population as these pit and fissure areas are more prone to food lodgment which stays over a long time and causes caries. Caries develops by interacting with the sugar substrate, acid that forms, and microorganisms on the tooth surface.[7] Second molars are highly susceptible to caries development as food easily gets lodged, and also, it is not easily accessible while brushing because it is the last tooth in the oral cavity. Treatment plan for ECC is as important as promoting awareness among children, and treatment plan plays a major role in children by avoiding further risk of dental caries.[8] Dental health education and dental services should be made available in all areas for meeting the needs of younger children and adults. It is mandatory that every parent should compulsorily make a visit to a dentist for their children below the age of 10 years for every 6 months as it is the most common age group for children to occur ECC due to improper eating, improper diet habits, and improper oral hygiene instructions. Parents should make sure that their children take healthy food with balanced diet at the same time with less sugar consumption, and maintaining a good oral hygiene by asking to gargle after every meals and brushing twice in a day and also visiting a dentist will reduce ECC.[9]

A systematic review concluded that there were no reports on the caries pattern covering the full spectrum of the disease. Considering all the impacts on the overall studies, i.e., the quality of life of children between the age group of 3 and 6 years, ECC is always an easily missed aspect, so preventive restoration[10] and awareness in this field should be provided among the parents and young children for maintaining good oral hygiene. ECC can be prevented by restoring the tooth surface with preventive restoration materials which will reduce the high risk of further caries progression. Preventive restoration materials and fluoride applications are best choices for children in the age group of 3–6 years by reducing the progression of caries and also the occurrence of secondary caries in children.[11,12]

Our research and knowledge have resulted in high-quality publications from our team.[13-27]

Hence, the aim of this study is to assess the prevalence of class I caries in the second maxillary molar in 3–6-year-old children and to promote awareness among children in preventing ECC and treatment plan required for class I caries.

MATERIALS AND METHODS

A retrospective study was conducted in a private dental institution, Chennai. Ethical clearance for the study was obtained from the institutional review board of the college (IHEC/SDC/PEDO/21/259).

Data analysis

Data were collected using the software between June 2015 and February 2021 of the children aged 3–6 years. Healthy children treated for class I caries in the maxillary second molar were included in the study. Children with pain and whose informed consent could not be obtained were excluded from the study. The details of 6831 pediatric patients were collected, out of which 1500 patients fulfilled the inclusion criteria.

Statistical analysis

Data were collected and compiled from the records of the children aged 3–6 years and were analyzed using SPSS software (IBM Corp, IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY). The association was assessed using Chi-square test and Pearson's correlation test. P value was set as < 0.05.

RESULTS

The data collected were tabulated under the following parameters: age, gender, and the maxillary second molars.

31.31% of male children had class I caries in the maxillary right second primary molars, whereas 28.28% had class I caries in the second maxillary left primary molars. 17.17% of the female children had class I caries in the second right maxillary molars, whereas 23.23% had class I caries in the second left maxillary molars. The highest prevalence of caries was seen in male children – Chi-square value: 7.117, df: 1, P = 0.008 (<0.05), showing significant association between gender and number of teeth affected with caries [Figure 1].

The children in the age group of 4 years had more class I caries in the maxillary second molars with 20.20% in the right maxillary primary second molars and 17.17% in the left maxillary primary second molars. Caries prevalence in the right maxillary second molars is higher than the left maxillary second molars. The children in the age group of 5 years have equal prevalence of caries in both right and left maxillary second primary molars (13.13%). In children aged 3 and 6 years, the caries prevalence is more in the right maxillary second molars than in the left maxillary second molars. The association was found to be statistically significant. Pearson's Chi-square value: 52.000, df: 2, P = 0.000 (<0.05) [Figure 2].

DISCUSSION

Dental caries is one of the most prevalent factors in growing children and the most common diseases, which can cause loss

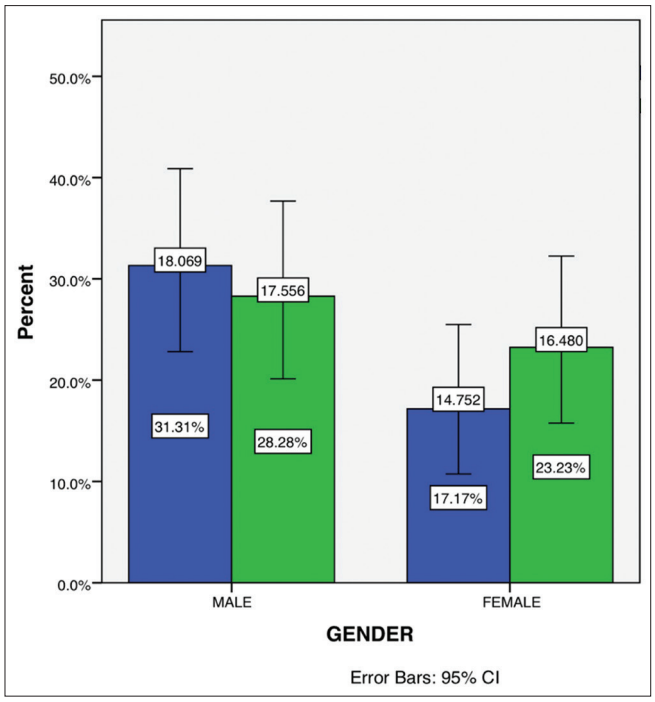

Figure 1: Bar graph showing the correlation between gender and the number of teeth caries affected. X-axis represents gender and Y-axis represents the number of teeth affected with caries. Blue color denotes second right maxillary molar and green color denoting second left maxillary molar

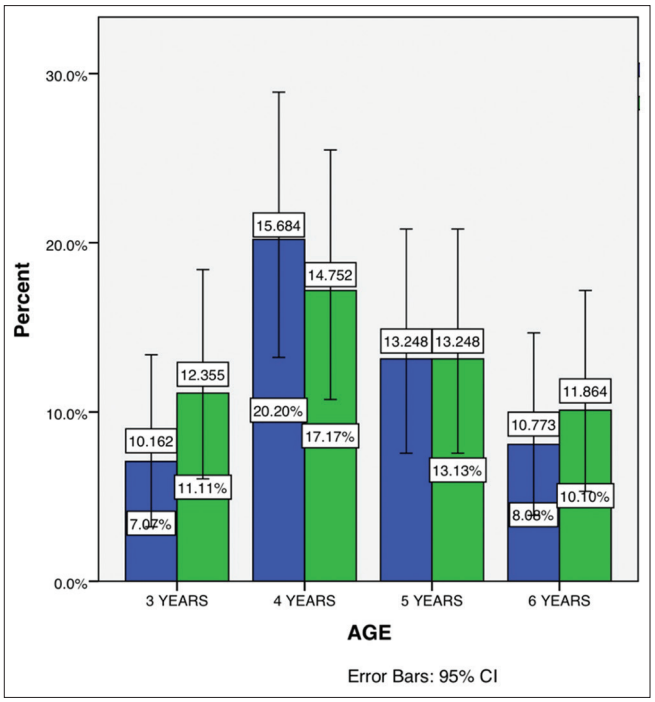

Figure 2: Bar graph showing the correlation between the age group and number of teeth affected with caries. X-axis represents age group and Y-axis represents number of teeth affected with caries. Blue color denotes second right maxillary molar and green color denoting second left maxillary molar

of teeth. Dental caries was always considered a major oral health condition in many developing countries, especially among the school-going children under the age group of 6 years. It is very essential to promote awareness about dental caries development with their prevalence in preschool children to provide themselves with good oral healthcare.

The number of studies has shown a significant relation between socioeconomic status and ECC, as children in low socioeconomic status are at higher risk in occurring dental caries easily.[28,29]

Many systematic reviews have shown that a clear relation between socioeconomic status and ECC is responsible for dental caries development in young children. Many previous research articles have shown that ECC is one of the major causes for caries progression, especially in younger groups.[30]

In our study, the prevalence of caries, especially in the maxillary second molars of age group of 3–6 years, was observed. The present study shows higher incidence of dental caries among boys in all age group than girls, which is statically significant. Previous articles have faced similar challenges in the prevalence of caries and its treatment among 3–6-year-old children due to diet and oral health practices, which was common in both gender groups.[31]

Proper visit to a dentist with restorative treatment and fluoride applications followed by proper oral hygiene instructions is the only way to reduce the prevalence of caries in children.

CONCLUSION

Within the limitations of the study, the following conclusions are made:

1. The prevalence of class I caries in the second maxillary primary molars is highest in the age group of 4 years
2. The prevalence of class I caries is more in the second right maxillary primary molars than in the left maxillary primary second molars
3. The prevalence of class I caries in the second maxillary primary molars is more in males when compared to females.

Acknowledgement

I would like to thank the Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Science, Saveetha University.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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