

Prevalence of class I caries in the second mandibular primary molar in 3-6-year-old children

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ABSTRACT

Dental caries is the disease of the oral cavity with serious oral health concern. It affects 50% of the schoolchildren worldwide. The consequences affect quality of life and may lead to socioeconomic crisis. The study was undertaken with the aim to understand the prevalence of class I caries in the second mandibular primary molar in 3–6-year-old children. The data were collected from the institutional patient records between September 2020 and February 2021. Of 6828 children, 100 children with class I caries in the mandibular second molar were included in the study. Data analysis was performed to find the association. On analyzing the correlation between age and prevalence of class I caries, all the age groups (i.e., 3–6 years) have almost equal prevalence of class I caries in both left and right second mandibular primary molars. On analyzing the correlation between gender and prevalence of class I caries, male children constitute about 56% of overall prevalence. About 43% of female children constitute class I caries. From the present study, it shows that there is high prevalence of class I caries in the second mandibular primary molar in children of 3–6 years of age. Knowledge on caries pattern on individual teeth and risk factors will help control and reduce dental caries.

Key words: 3–6 years, class I caries, primary molar

INTRODUCTION

Dental caries in children are known to have intense and unique patterns from time unknown and were known to exist in different forms and terms.^[1] Dental caries in children possess a challenge in health sector both in developed and developing countries. Even though there is a decline in caries prevalence in western countries, caries is still a major health

issue among preschool age. Early childhood caries (ECC) is known to begin at early stages of life and involves multiple teeth with severe social and economic consequences if unattended. It can affect the quality of life and family.

The pathogenesis of dental caries is known to be as a result of interaction between the bacteria, *Streptococcus mutans*, substrate, and enamel. The Bacteria produces acid by breaking down substrates and sugars and causes demineralization of the enamel.^[2] Improper diet and poor oral hygiene are associated with the pathogenesis of ECC.^[3] These acid-producing pathogens inhabiting oral cavity in the presence of fermentable carbohydrates, mainly sucrose, resulting a shift to demineralization.^[4,5] According to the recent statistics from the World Health Organization, there is a fall in caries prevalence in developed countries from 1970 to 2006. This can be attributed to the importance of

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the awareness for oral hygiene and the use of fluoridated toothpaste. However, the caries prevalence is still in the upper front due to high cost and poor infrastructure in the health sector in developing countries.^[6] Studies have clearly reported that the prevalence of ECC is highest in children who belong to poor socioeconomic status and ethnic and racial minorities.^[7] A study from Lahore, Pakistan, concluded a caries prevalence of 40.5% in preschool children aged 3–5 years.^[8] A recent systematic review concluded that chances of developing caries were more likely when they acquire *S. mutans* at an early age. Factors such as noncariogenic diet and good oral hygiene can compensate the risk of development of dental caries.^[9] A study from northern Palestine reported a caries prevalence of 76% among 4–5-year-old children, that is by the age of 5 years, 3 out of 4 children experienced dental caries. Another study in the United Arab Emirates concluded with similar results that the caries prevalence was about 70%–80% in preschool children. Hence, it is highly important to determine the cause of dental caries and to provide awareness and instructions to maintain oral hygiene, thereby controlling the demineralization.^[10] Early interventions aimed at shifting the oral environment to nonacidogenic can minimize the risk of dental caries and arrest its progression. There is a scarcity of evidence on the prevalence of class I dental caries and risk factors associated with it. Knowledge on prevalence and associated risk factors of dental caries helps to develop targeted approaches for the prevention of dental caries and reduce the number of children requiring emergency treatment. Our research and knowledge have resulted in high-quality publications from our team.^[11-25]

Therefore, the aim of the study is to assess the prevalence of class I caries in the second mandibular primary molars in 3–6-year-old children.

MATERIALS AND METHODS

A single-centered retrospective study was adopted and was conducted in Chennai. The data were retrieved from the institutional software used for recording patient’s details (Dias). Ethical clearance for the study was obtained from the institutional review board of college (IHEC/SDC/PEDO/21/272).

Data were collected using the software between September 2020 and February 2021 of the children aged 3–6 years. Healthy children treated for class I caries in the mandibular second molar were included in the study. Children with pain and whose informed consent could not be obtained were excluded from the study. Out of 6828 children, 100 children with class I caries in the mandibular second molar met the inclusion criteria.

Statistical analysis

Data were collected and compiled from the records of the children of age 3–6 years and were analyzed using SPSS software (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.). The association was assessed using Chi-square test and Pearson’s correlation test. *P* value was set as < 0.05

RESULTS

In this study, 100 children with class I caries in second mandibular primary molar were involved out of which 56% were male children and 44% were female children. On

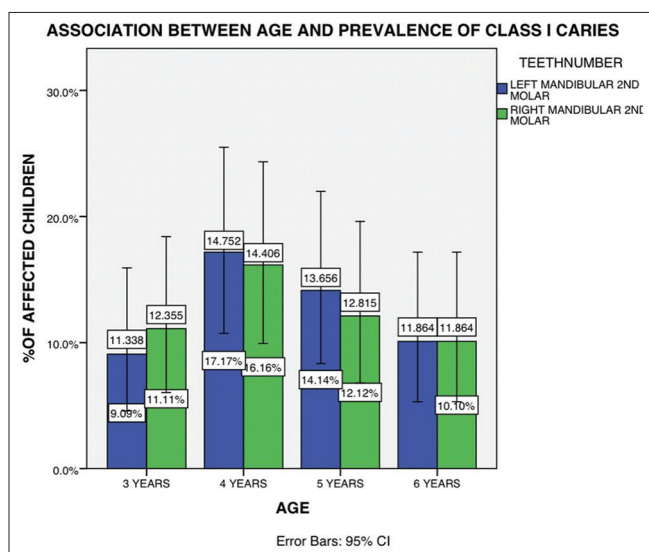


Figure 1: Association between age and prevalence of class I caries. Age of the children was represented in X axis and percentage of affected children was represented in Y axis. The graph shows that the prevalence of class I caries is highest in 4-year-old children and lowest in 3-year and 6-year-old children. Both second mandibular primary molar (75 and 85) are equally affected. *P* = 0.000 (*P* < 0.05), hence statistically significant

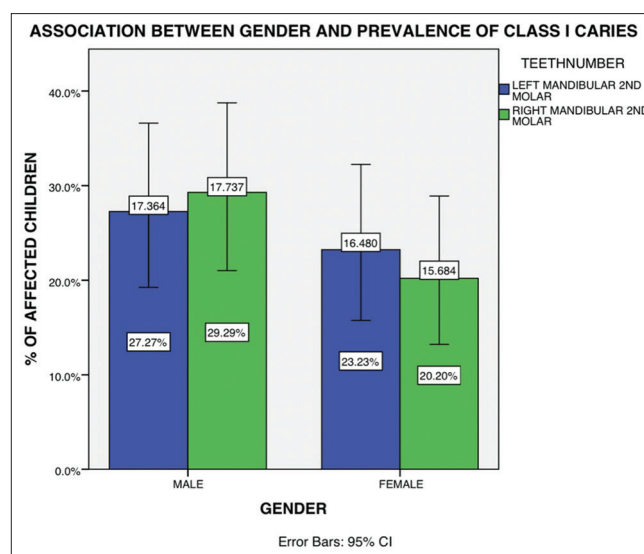


Figure 2: Association between gender and prevalence of class I caries. Gender was represented in X axis and percentage of affected children was represented in Y axis

analyzing the age groups involved in the study, 20% of the children were 3 years old, 33% of the children were 4 years old, 26% of the children were 5 years old, and 20% were 6 years old. The teeth involved in class I caries included in the study were left (75) and right (85) second mandibular primary molars [Figure 1].

On analyzing the correlation between age and prevalence of class I caries, all the age groups (i.e., 3–6 years) have almost equal prevalence of class I caries in both left and right second mandibular primary molars and 4-year-old children had the highest prevalence of class I caries constituting about 16%.

On analyzing the correlation between gender and prevalence of class I caries, male children constitute about 56% of overall prevalence out of which 27% constitutes for class I caries in the left second mandibular primary molar (75) and 29% constitutes for class I caries in the right second mandibular primary molar (85). About 43% of female children constitutes for class I caries out of which 23% constitutes for class I caries in the left second mandibular primary molar and 20% constitutes for class I caries in the right second mandibular primary molar. *P* value is 0.000 (*p* value <0.05). Hence the result is statistically significant. Male children (overall 56%) have significantly higher prevalence of class I caries than female children (overall 43%) [Figure 2].

DISCUSSION

Dental caries has been widely studied from the time unknown. It is crucial to understand about the risk factors and population at risk in preschool children, which in turn aid the local authorities to come up with targeted approaches to reduce dental caries.

From the present study results, it is evident that the prevalence of class I caries is considerably higher in children aged between 3 and 6 years. Significant difference was observed between both genders in caries prevalence since male children showed a little higher prevalence. The present study is in conformity with the previous studies that the caries prevalence is slightly higher in boys than the girls and the percentage is 51.36% and 46.61%, respectively.^[26] Predilection of caries was found to be more in boys and was statistically significant, suggestive of predilection of dental caries to sex. Increase in prevalence can be attributed to poor oral health, eating habits, and socioeconomic status. The present study is in accordance with previous studies from India and Pakistan that the caries prevalence in preschool children was about 50%–60%.^[27] On the other hand, the caries prevalence in Arab countries such as Saudi Arabia was found to be comparatively at the higher end in preschool children.

Children from low socioeconomic status are vulnerable for dental caries and the caries prevalence is higher in those communities. A systematic review confirmed this fact with

fairly strong evidence.^[28] Poor oral hygiene, diet and feeding practices, visits of a dental service, and parents educational level increase the risk of caries in children.^[29]

Prevention of dental caries can be accomplished by the judicious use of the fluoridated toothpaste which removes the plaque and aids in remineralization process. It is widely recognized and promoted by the researchers, and the brushing should be practiced twice a day under the supervision of parents or caregivers until the child performs brushing alone. Educational and behavioral interventions should be given importance to minimize the intake of refined sugars and encourage proper diet and feeding practices. Children with risk of caries can be referred for specialized dental care. Preventive strategies such as fissure sealants, topical fluoride application, and healthy diet promotion when adopted in nurseries and kindergartens can improve the oral health situation in young children.

Limitations

This study is limited to the 3–6-year-old population and mainly focuses on the second mandibular primary molars. More extensive research is warranted to understand the risk factors of dental caries.

CONCLUSION

From the present study, it shows that there is high prevalence of class I caries in the second mandibular primary molars in children of 3–6 years of age, and there is significant difference between both genders in caries prevalence as male children showed a little higher prevalence. Strengthening parental oral health education is the most effective and efficient preventive strategy to improve oral health in children aged 3–6 years.

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Conflicts of interest

There are no conflicts of interest.

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