

Prevalence of Class V caries in maxillary and mandibular canines of 3-5-year-old children: A retrospective study

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ABSTRACT

Caries in primary teeth are a major health concern in socially disadvantaged populations and may alter the eruption pattern and function of their successor. The aim of the study is to find the prevalence of Class V caries in maxillary and mandibular canines in 3–5-year-old children. A single-centered retrospective study was conducted in a private dental institution, Chennai. The data were collected from the Dental Hospital Management System of Saveetha Dental College (DIAS). A test for significance was done with the help of the Chi-square test. The most prevalent caries in canines of children between the age group of 3 and 5 years were cervical caries or Class V caries. 5,35,951 patient details that were available in DIAS, and 2,35,841 were details of pedodontic patients, 200 patients who fulfilled the inclusion criteria were analyzed. It was observed that the prevalence of caries on the right maxillary and mandibular canines (80.00%) was higher than the left counterpart (20.00%) of the same arch. Maxillary canines (70.00%) had more prevalence of caries as compared to mandibular canines (30.00%). Caries prevalence on the right maxillary and right mandibular primary canine was higher than their left counterparts. Maxillary primary canines had more prevalence of caries as compared to mandibular primary canines.

Key words: Canine, children, mandibular arch, maxillary arch

INTRODUCTION

Owing to increased sugar intake and decreased fluoride penetration, children's anterior teeth are more vulnerable to dental caries. Specific caries patterns have been

noted on each surface of primary dentition.^[1] Caries susceptibility for each surface of the primary tooth is different and it is essential to understand the relative tooth susceptibility of anterior teeth for caries preventive regimen.^[2] Caries sensitivity can be increased as a result of dental tissue deficiency, poor grooming, or cariogenic eating habits. Plaque accumulation is influenced by tooth anatomy/positions in the arch, such as tooth surfaces inaccessible to hygiene or defects of the tooth in mineralization/matrix formation, which make teeth more prone for demineralization.^[3] Children are usually unaware of the effects of poor oral hygiene and are more likely to consume cariogenic diets. The oral health

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of children is worsened by parental indifference and ignorance of the value of oral hygiene.^[4] Dental caries are considered a major community health issue as the risk of caries in succedaneous teeth rises. Primary anterior tooth surfaces have a particular pinpoint region on their surface where the carious process can be initiated and are higher susceptibility to caries.^[5] On each tooth surface, these caries form a distinct pattern, with distinct caries prevalence and trends. The majority of caries prevalence studies are focused on total caries prevalence at a given age.^[6] None of the findings on the incidence of caries in primary teeth is focused on individual tooth assessments.^[7] The purpose of this study is to determine the prevalence and trends of dental caries in children, especially Class V caries in the maxillary and mandibular canines.^[8] Our research and knowledge have resulted in high-quality publications from our team.^[9-23]

MATERIALS AND METHODS

In a private dental institution in Chennai, a single-centered retrospective study was conducted by collecting data from 535,951 patient records retrieved from the Dental Hospital Management system of Saveetha Dental College (DIAS). The data were analyzed between June 2015 and February 2021. Two hundred patients with Class V caries in canines were included in the study.

Data analysis

Data were collected using the software between June 2015 and February 2021 of children aged 3–5 years. Healthy children treated for Class V caries in maxillary

and mandibular canines were included in the study. The data were transferred to Excel, tabulated, and analyzed. Incomplete data were excluded from the study.

Statistical analysis

SPSS package version 19 was used for statistical analysis (IBM Corp, Released 2010, IBM SPSS Statistics of Windows, Version 19.0, Armonk, NY: IBM Corp). Data were tabulated and analyzed using statistical software. $P < 0.05$ was set as statistically significant. Descriptive statistics and the Chi-square test were used to compare the susceptibility of maxillary and mandibular primary canines. The level of significance was set at 0.05.

RESULTS

In this study, 90.12% of the children with Class V caries in their canines were 3 years old, 8.52% of the children with Class V caries in their canines were 4 years old, and 1.48% of the children with Class V caries in their canines were 5 years old. Three-year-old children had the highest frequency of Class V caries in canines (90.12%), whereas 5-year-old children had the lowest frequency of Class V caries in canines (1.38%) [Figure 1].

As the graph suggests, 60.32% of the children with Class V caries in the canines were male and 39.68% of the children with Class V caries in the canines were female. Male children had the highest frequency of Class V caries in canines, whereas female children had the lowest frequency of Class V caries in canines [Figure 2].

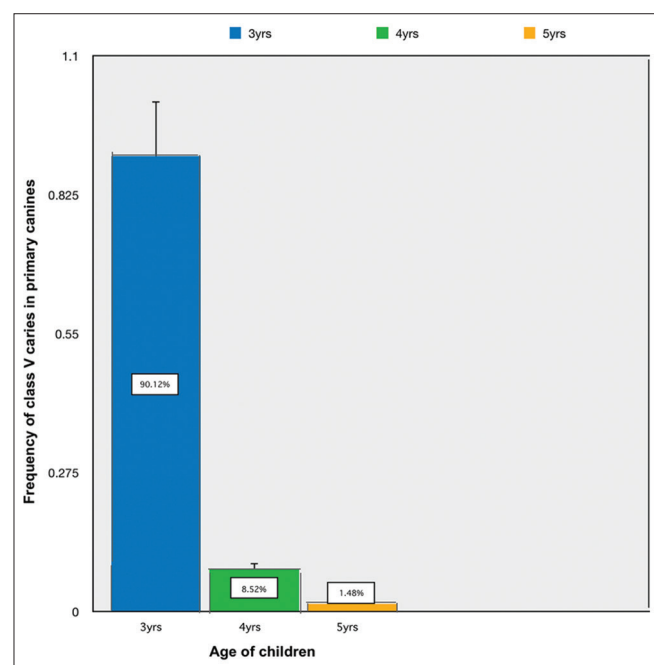


Figure 1: Frequency of Class V caries in primary canines among different age groups

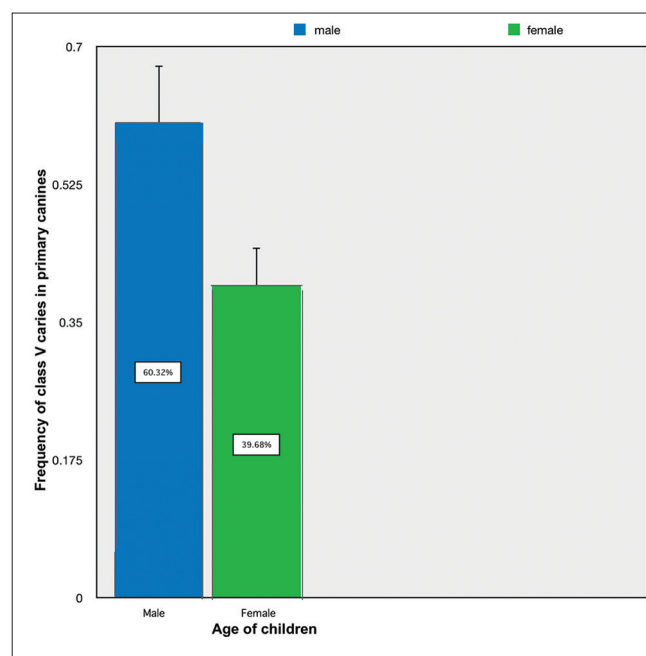


Figure 2: Frequency of Class V caries in primary canines in each gender

As the graph suggests, in 60.00% of the children, the Class V caries in their canines were observed in the right maxillary primary canine. In 10.00% of the children, the Class V caries in their canines were observed in the left maxillary primary canine. In 10.00% of the children, the Class V caries in the canines were observed in the left mandibular canine. In 20.00% of the children, the Class V caries in the canines were observed in the right mandibular canine. The right maxillary canine had the highest frequency of Class V caries (60.00%), whereas the left maxillary and mandibular canines had the lowest frequency of Class V caries (10.00%) [Figure 3].

In 80.00% of the children, the Class V caries in the canines were observed in the right side of the arch. In 20.00% of the children, the Class V caries in the canines were observed in the left side of the arch. The highest frequency of Class V caries in canines was noted in the right side of the arch, whereas the left side of the arch had the lowest frequency of Class V caries in canines [Figure 4].

As the graph suggests, 3-year-old children had the highest frequency of Class V caries in right maxillary primary canines (100.00%), whereas 4- and 5-year-old children had the lowest frequency of Class V caries in right maxillary primary canines (0.00%) [Figure 5].

As the graph suggests, 3-year-old children had the highest frequency of Class V caries in left maxillary primary canines (59.84%), whereas 5-year-old children had the

lowest frequency of Class V caries in left maxillary primary canines (19.93%) [Figure 6].

As the graph suggests, 3-year-old children had the highest frequency of Class V caries in left mandibular primary canines (100.00%), whereas 4- and 5-year-old children had the lowest frequency of Class V caries in left mandibular primary canines (0.00%) [Figure 7].

As the graph suggests, 4-year-old children had the highest frequency of Class V caries in right mandibular primary canines (100.00%), whereas 3- and 5-year-old children had the lowest frequency of Class V caries in right mandibular primary canines (0.00%) [Figure 8]. The distribution of caries in primary canines is more in 3 year aged children when compared to other age groups [Figure 9].

DISCUSSION

Dental caries are common in primary teeth. Caries in primary teeth can impede the eruption and development of succedaneous permanent teeth, as well as a child's oral health.^[24] This research was conducted to determine the incidence and trends of caries in primary anterior teeth, specifically canines, to develop a preventive and intervention program at the societal level by urging the government to develop a strategy for children's oral health.^[24,25]

From our study, it was found that caries prevalence in primary canines is slightly higher in males as compared to

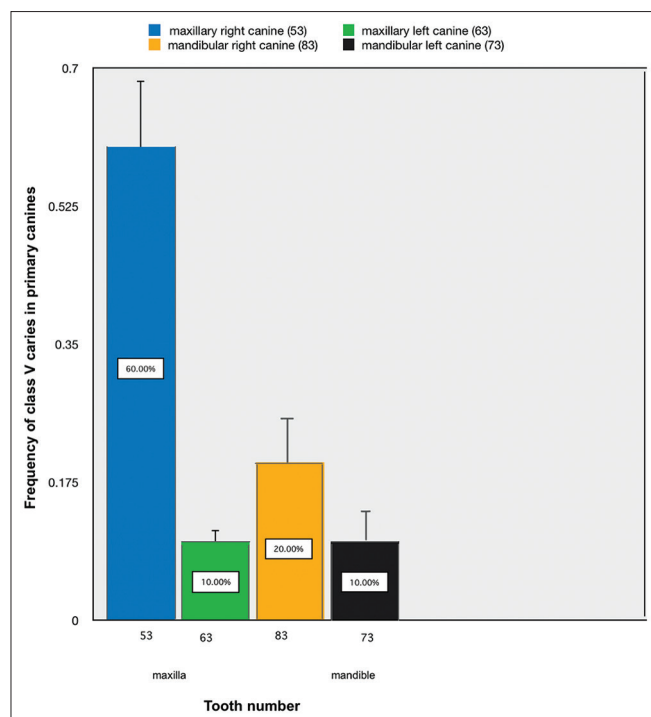


Figure 3: Frequency of Class V caries in each primary canine individually

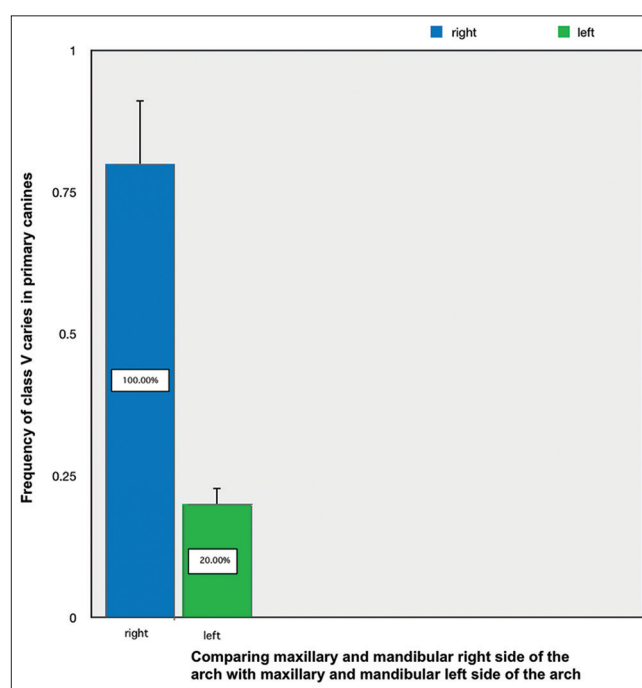


Figure 4: Frequency of Class V caries in primary canines on either sides of the maxillary or mandibular arches

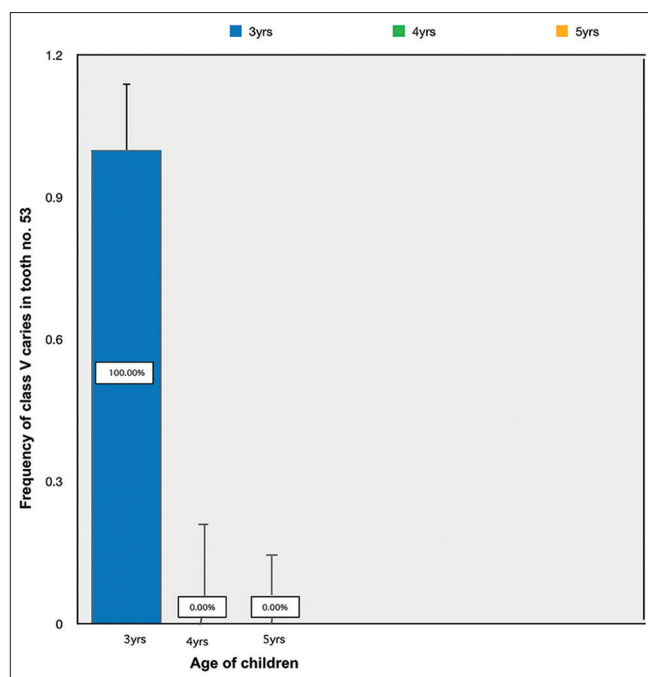


Figure 5: Frequencies of Class V caries only in right maxillary primary canine (tooth No 53) among different age groups

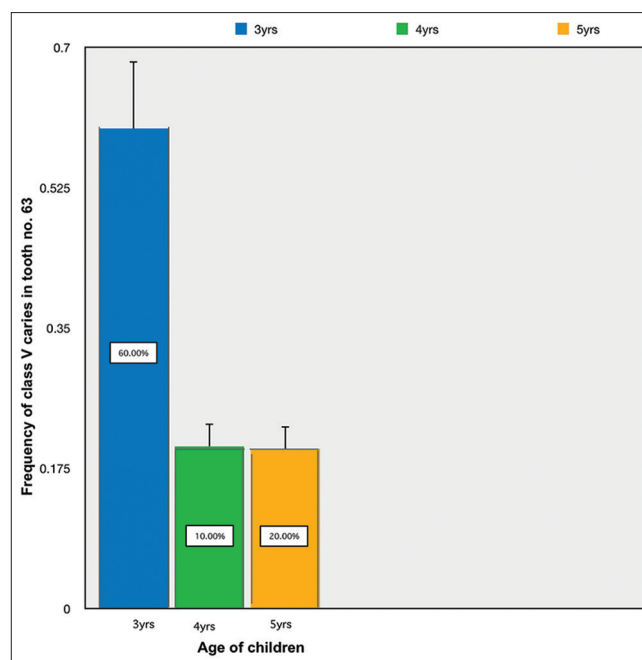


Figure 6: Frequencies of Class V caries only in left maxillary primary canine (tooth No. 63) among different age groups

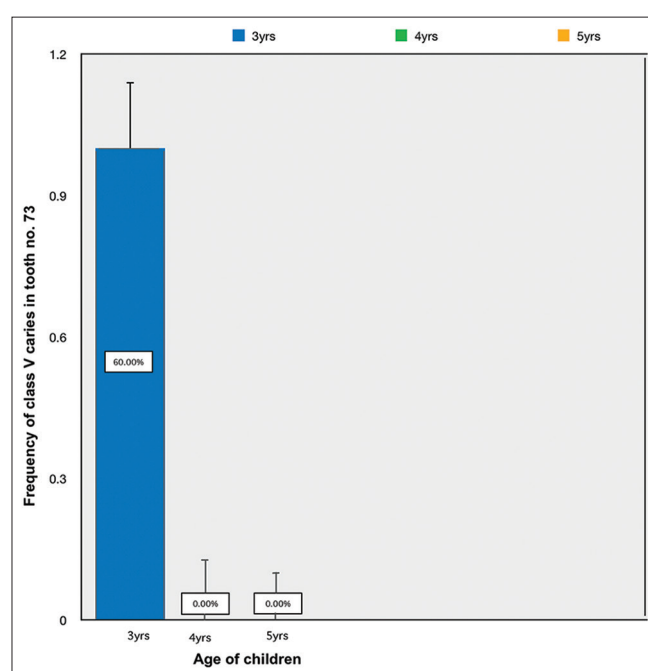


Figure 7: Frequencies of Class V caries only in left mandibular primary canine (tooth No. 73) among different age groups

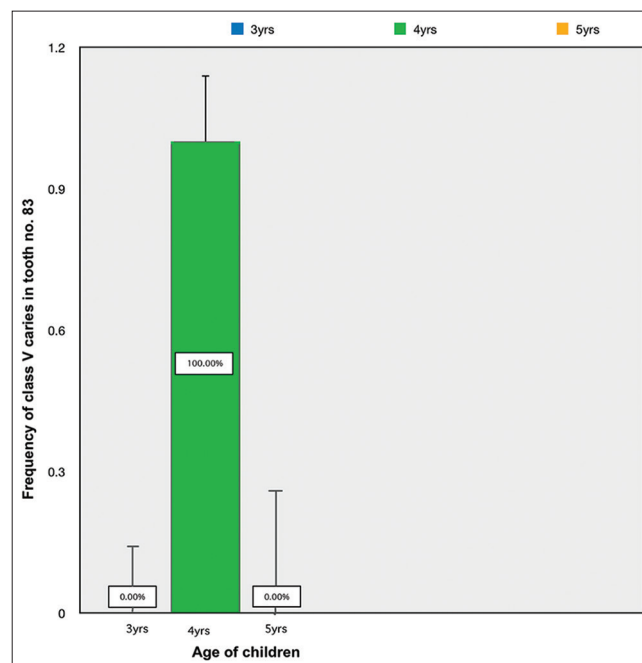


Figure 8: Frequencies of Class V caries only in right mandibular primary canine (tooth No. 83) among different age groups

females meaning caries have a predilection for sex.^[26] The results were in agreement with other similar studies.^[27,28] The recent WHO/FDI Guidelines stated that 50% of children aged 5–6 years should be free of caries. Most of the caries prevalence studies have not taken individual caries prevalence and caries patterns into consideration. The results of the present study were in accordance to the WHO goals and considered individual teeth.^[29]

Primary canines of the right quadrant showed more susceptibility to caries when compared with their left counterparts. This stresses the fact that the individuals find it relatively easier to cleanse the left side than the right side, as the majority of the individuals are right-handed.^[30] The study also found that the mandibular primary canines are less prone to caries when compared to maxillary primary canines. This can be due to the

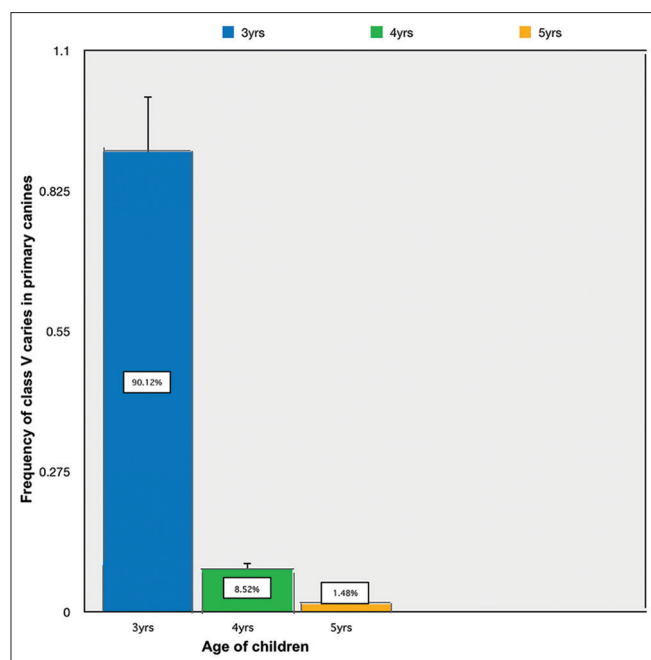


Figure 9: Frequency of class V caries in primary canines among different age groups

pooling of saliva in the mandibular anterior region as the submandibular duct opens behind the mandibular anterior teeth, that results in less plaque deposition and increased remineralization.^[26]

The caries prevalence in primary canines was found to be 0.54% in this study. The main positive outcome of our study is that we found caries at individual tooth levels, that is primary canines. The results of our study can be correlated with a Chinese study that evaluated the incidence of dental caries in adult and elderly patients for 10 years. They concluded that caries prevalence was on the lower end in left mandibular canines. Among all canines, right maxillary primary canines are most affected by caries in children between the age group of 3 and 5 years.^[8]

Limitations

This study included only 200 children reported from June 2015–February 2021. Extensive research including more populations is required to confirm the findings.

CONCLUSION

The following conclusions are made from the study:

1. Caries prevalence was more in right maxillary primary canines than left maxillary primary canines
2. Caries prevalence was more in left mandibular canines than right mandibular canines
3. Caries prevalence was more in maxillary primary canines when compared to mandibular canines
4. Maxillary primary canines are five times more susceptible than mandibular primary canines

5. Gender does not affect caries rates on individual teeth. However, in this study, males have more predilection for caries in primary canines than females
6. Younger patients are more prone to caries and the rate decreases with age.

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Conflicts of interest

There are no conflicts of interest.

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