

Retrospective analysis of incidence of dental caries in posterior teeth in males and females.

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Abstract

Introduction: Dental caries is a chronic disease which is considered to be a major public health problem globally. There is evidence indicating that many caries risk factors provide a gender bias due to such as different salivary composition and flow rate, hormonal fluctuations, dietary habits, genetic variations, and particular social roles among their family.

Aim: The main objective of this study was to analyze the incidence of dental caries in posterior teeth in males and females.

Materials and Methods: This retrospective study was conducted among patients who were diagnosed with dental caries in a university teaching hospital in Chennai during the period of December 2020 to May 2021. The collected data was then subjected to statistical analysis using Statistical Package for Social Science (SPSS). Descriptive statistics and Chi square tests were used.

Results: Dental caries were most frequent in the posterior teeth in females with 54.4% of the total population. It was noted that Class II was most frequently diagnosed with 53.4% of the population. It was noticed that Class I caries was predominant in females and Class VI was predominant in males.

Conclusion: Within the limits of this study, it was observed that:

1. Dental caries were most frequent in the posterior teeth in females.
2. It was noted that Class II was most frequently diagnosed.
3. It was noticed that Class I caries was predominant in females and Class VI was predominant in males.

Keywords: Dental caries, Tooth diseases, Gender bias, Females, Males.

Introduction

Dental caries is a multifactorial disease that starts with microbiological shifts within the complex biofilm and is affected by salivary flow and composition, exposure to fluoride, consumption of dietary sugars, and by preventive behaviors (cleaning teeth) [1-4]. The disease is initially reversible and can be halted at any stage, even when some dentine or enamel is destroyed (cavitation), provided that enough biofilm can be removed [5-7]. Dental caries is a chronic disease that progresses slowly in most people. The disease can be seen in both the crown (coronal caries) and root (root caries) portions of primary and permanent teeth, and on smooth as well as pitted and fissured surfaces [8].

There is evidence indicating that many caries risk factors provide a gender bias, placing women at a higher caries risk than men [9]. These factors may include different salivary

composition and flow rate, hormonal fluctuations, dietary habits, genetic variations, and particular social roles among their family [10]. Additionally, there are systemic diseases that have been found to be associated with caries and to have an association with the female gender [11].

The issue of gender is controversial. In children, girls were found to have a higher risk for caries [12-14], whereas others have found it to be a modifier, [15] and yet others found boys to have a higher or similar risk [16]. In adults, white men have been found to be at a higher risk for root caries [17,18], whereas studies on other tooth surfaces have either found no effect of gender on caries risk or found women to be at a higher [16].

Some studies report about the gender differences in their findings and those that do, often show disparities. Some studies have stated a higher prevalence of tooth loss in women, whereas

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some studies showed a higher prevalence in men, while still others showed no significant relationship with gender [19-26]. The variations could be because better dental behavior is seen among females due to better perception on esthetics and also women have a greater sensitivity towards illness and discomfort. In contrast women experience variations in estrogen and progesterone levels throughout their life cycle [27]. This is considered to make them more susceptible to periodontal disease than men [28]. Men on the other hand consume alcohol more often and smoke more cigarettes which make them more susceptible to tooth loss [28]. Our team has extensive knowledge and research experience that has translate into high quality publications [29-40].

Materials and Methods

Study Setting

This university hospital-based retrospective study was carried out by reviewing the dental records of patients diagnosed with dental caries who visited a university teaching hospital in Chennai. Since this was a university hospital setting the large sample size and distribution of population contributed a major advantage for this study. Data collected was reliable and with evidence. The study was conducted after obtaining approval from the Institutional Ethical Review Board.

Sampling

Data was reviewed and collected from 50,000 patient records over a one month period from December 2020. Data of those

patients who were diagnosed with dental caries was collected. 1169 patients who were diagnosed with dental caries and in the age group of 1-60 years, were included in the study while those with incomplete hospital records were excluded from the study. Cross verification was done using photographs and radiographs.

Data collection

The following patient data were recorded as follows: hospital record number, gender, age, type of caries, radiographic/dental diagnosis. The Total population of patients who were diagnosed with dental caries was 1169. Data collected was then exported to Microsoft Excel 2010.

Data analytics

The acquired data was subjected to statistical analysis. Microsoft Excel 2010 data spreadsheet was used for tabulation of parameters and later exported to the Statistical Package for Social Science (SPSS version 20.0) for Windows. Descriptive statistics were applied to the data and chi-square tests were applied at a level of significance of 5% ($P < 0.05$).

Results

Dental caries were most frequent in the posterior teeth in females with 54.4% of the total population (Figure 1). It was noted that Class II was most frequently diagnosed with 53.4% of the population (Figure 2). It was noticed that Class I caries was predominant in females and Class VI was predominant in males (Figure 3).

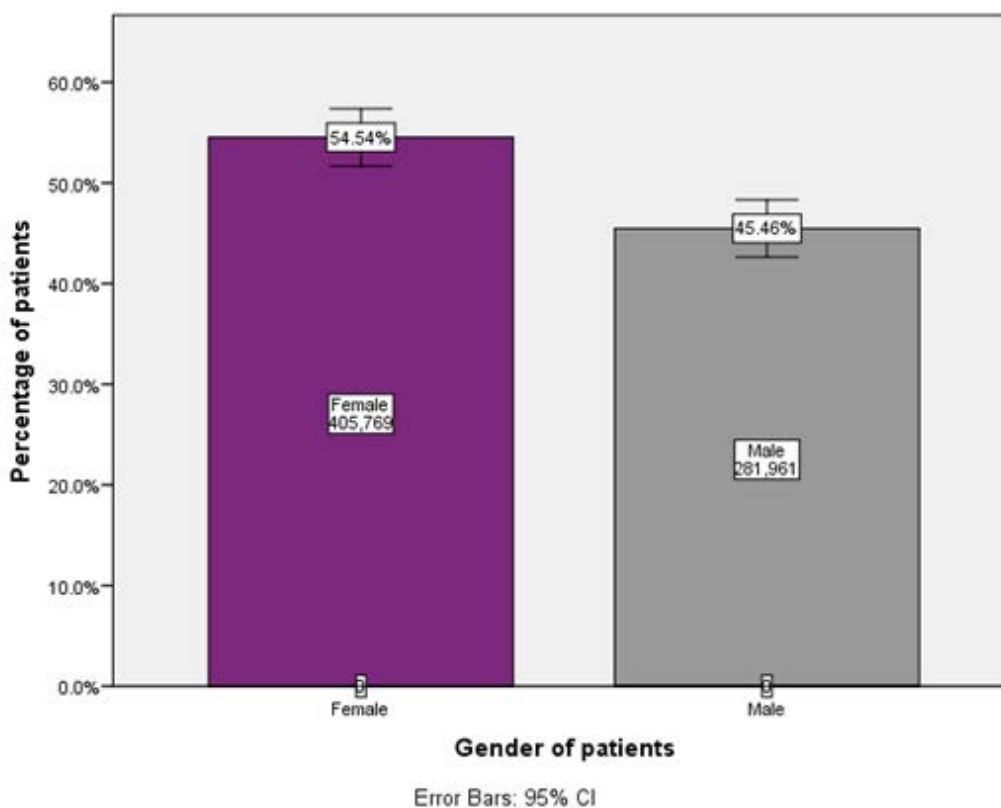


Figure 1. Gender distribution of patients who were diagnosed with dental caries. Purple depicts females and grey depicts males. It was noted to be Females 54.5% and Males 45.5%. X-axis represents the gender and the y-axis represents the percentage of patients. Dental caries were most frequent in the posterior teeth in females with 54.4% of the total population.

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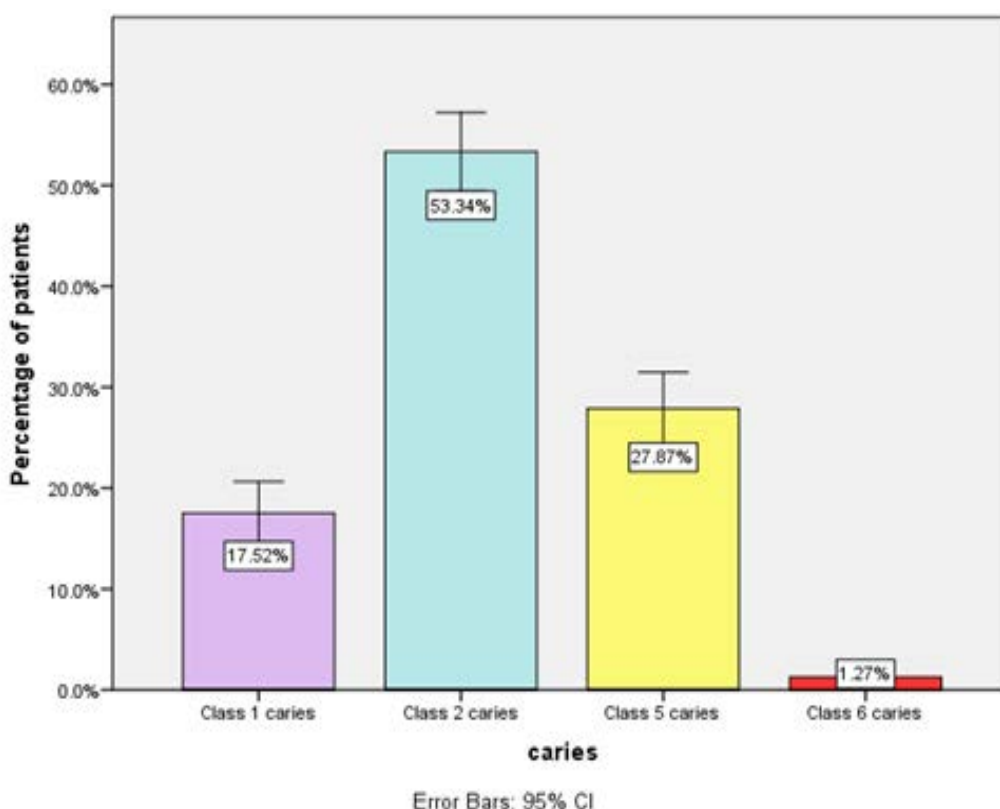


Figure 2. This bar graph represents the class of caries seen in posterior teeth. Lavender depicts Class I, Blue depicts Class II, yellow depicts Class III, and red depicts Class VI. X-axis represents the classification of caries and the y-axis represents the percentage of patients. It was noted that Class II was most frequently diagnosed with 53.4% of the population.

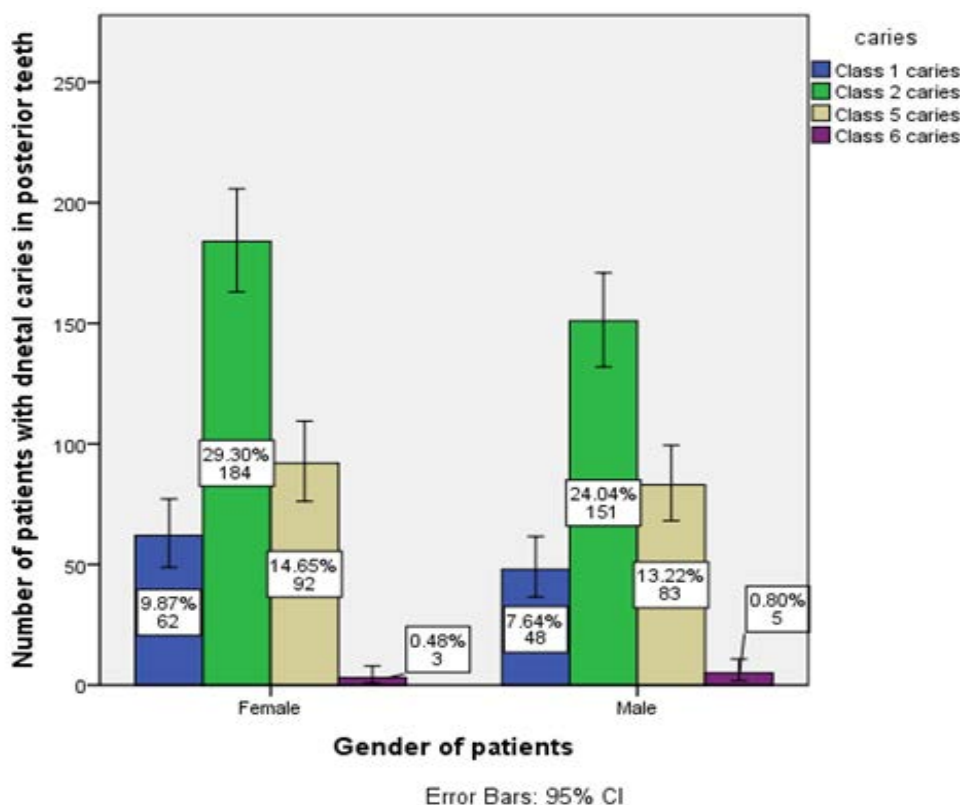


Figure 3. Bar graph depicting association between caries and gender. X-axis represents the gender with the class in the X cluster and Y-axis represents the number of patients who had dental caries in posterior teeth. Blue colour denotes Class I, green colour denotes Class II, beige colour denotes Class V and violet denotes Class VI. Chi-square test was done and the association was found to be statistically not significant. Pearson chi square value: Hence statistically not significant proving there was no significant association between gender and dental caries in posterior teeth. However, it was noticed that Class I caries was predominant in females and Class VI was predominant in males.

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Discussion

Dental caries have been reported to disproportionately affect women in many populations all around the world. The magnitude of this disparity in dental caries by gender increases from childhood to adolescence and into adulthood. This difference was observed as early as 4000 BP. Surveys conducted in India, Hungary, Bangladesh, Spain, Nepal, Sri Lanka, and in isolated traditional Brazilian villages have reported higher caries rates in women than men [41-48]. Following a similar pattern as observed in caries, extraction in women is greater than in men and also has been linked to caries and parity [49]. Findings in this study corroborate with the above mentioned studies, it was noticed that dental caries were most frequent in the posterior teeth in females with 54.4% of the total population. There are suggestions that higher caries prevalence among women could be caused by easier access to food supplies and frequent snacking during food preparation and by behaviors related to access to dental care [41]. In certain countries, the gender difference in oral health seems to involve social and religious causes, such as son preference, ritual fasting, and dietary restrictions during pregnancy [44]. Genome-wide association studies have found caries susceptible and caries protective loci, some of which are X-linked, that influence variation in taste, saliva, and enamel proteins, affecting the oral environment and the microstructure of enamel, which may partly explain gender differences in caries. Because of the complexity of the data related to sociodemographic factors in caries risk assessment and management, they should be considered as a modifier or potential contributor to risk [45].

Class II carious lesions involve the proximal surfaces (mesial and distal) of posterior teeth with access established from the occlusal tooth surface. It was observed that Class II was most frequently diagnosed with 53.4% of the population, also Class I caries was predominant in females and Class VI was predominant in males. A study by Arshad Hassan et al had similar findings. The reason for prevalence of proximal caries may be due to the fact that deep seated debris and plaque inside the embrasures are often hard to clean with simple mechanical tooth brushing, whereas other classification sites are relatively easy to cleanse. Our study was the first of this kind that was done locally. Although local caries burden is known, studies on incidence of dental caries in posterior teeth in males and females are lacking.

Conclusion

Within the limits of this study, it was observed that:

1. Dental caries were most frequent in the posterior teeth in females.
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