

## ORIGINAL ARTICLE

# Epidemiological Survey on Caries in Premolars in South-Western Coastal Population of India

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## ABSTRACT

**Aim and Objective:** The aim of the present study was to assess the prevalence of caries in premolars with respect to, age, gender, site, and arch in the urban and rural South-western coastal population of India.

**Materials and Methods:** The data were collected from a total of 1000 patients after obtaining their written consent, of which 500 were examined from outpatient Department of Conservative Dentistry and Endodontics and 500 were examined in Rural Satellite Centres of A.B. Shetty Memorial Institute of Dental Science, Mangalore.

**Results:** Of the 1000 patients that were examined in rural and urban areas, 320 had carious premolars with an overall percentage of 32%.

**Keywords:** Caries, Premolar, Incidence, South western coastal

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## INTRODUCTION

Dental caries is an infectious disease of the teeth; if left untreated can cause loss of tooth which will affect the physical and mental well-being of an individual. Thus, to provide the most beneficial treatment in an individual, dentists must be able to assess the presence and severity of all carious lesions and thereby initiate prompt treatment for the same.<sup>[1]</sup> Premolars perform both shearing and tearing as well as grinding the food.<sup>[2]</sup> They maintain the vertical dimension of face.<sup>[3]</sup> When all the molars are lost they serve the

function of mastication, if four to eight occluding premolars are present. Therefore, understanding the distribution of carious premolars in the local population is of immense importance, hence the need for the study.

## MATERIALS AND METHODS

The study was conducted for a period of 6 months in South-West Coastal population of India from the total of 1000 patients, 500 were examined in outpatient Department of Conservative Dentistry and Endodontics and 500 were examined in Rural Satellite Centers of A.B. Shetty Memorial Institute Of Dental Science, Mangalore. Ethical clearance was obtained from the Institutional Ethics Committee. Each patient was examined for carries in premolars under good illumination using sterilized mouth mirror, explorer, and tweezers.

The patients who had caries in premolars were examined and questioned based on the standard questionnaire from Oral Health Survey WHO format 2013 to evaluate the association between age, gender, habits, and diet.

## Data Analysis

Data were analyzed using the statistical package for the social sciences (SPSS software 22). Chi-square test was used to assess the significance of *P* value.

## RESULTS

Of 1000 patients, 320 of them had premolar caries with an overall percentage of 32, with males (53.1%) being affected more than females (46.9%) [Table 1]. 30–40 age group showed the highest percentage with 29.7% [Table 2]. Among all the teeth examined, maxillary right 2<sup>nd</sup> premolar had highest caries prevalence (21.62%) [Table 3]. The combined carries effect for individual teeth shows 2<sup>nd</sup> premolars (64.9%) to be highest [Table 4] when compared with respect to the maxillary and mandibular arch more prevalence was seen in maxillary premolars (62.1%) than that of mandible [Table 5]. Among the people who brushed once and twice a day premolar caries were seen more in people who brushed once (75%) [Table 6].

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**Table 1:** Gender and premolar caries

Gender	Premolar caries		Total
	Absent	Present	
Male			
Count	450	170	620
% within premolar caries	66.2	53.1	62.0
Female			
Count	230	150	380
% within premolar caries	33.8	46.9	38.0
Total			
Count	680	320	1000

Pearson Chi-square=15.733; P<0.001 sig

**Table 2:** Age group and premolar caries

Age group	Premolar caries		Total
	Absent	Present	
<20			
Count	90	30	120
% within premolar caries	13.2	9.4	12.0
20–30			
Count	329	91	420
% within premolar caries	48.4	28.4	42.0
30–40			
Count	165	95	260
% within premolar caries	24.3	29.7	26.0
40–60			
Count	55	55	110
% within premolar caries	8.1	17.2	11.0
>60			
Count	41	49	90
% within premolar caries	6.0	15.3	9.0
Total			
Count	680	320	1000

Pearson Chi-square=62.987; P<0.001 sig

**DISCUSSION**

In the current study, 1000 patients were examined randomly of which 320 patients had premolar caries. It has been shown in the present study that second premolars are more vulnerable to caries than the first premolar which is in accordance to a study conducted by Loto and Denloye *et al.* which stated occurrence of second premolar caries more than the first premolar.<sup>[4,5]</sup> A study conducted by Demirci *et al.* concluded that the first premolars were more affected by caries which contrasted with the results of the current study.<sup>[1]</sup> The age group of 30–40 years was more affected than the other groups in this study which can be correlated with another study conducted by Hegde *et al.* where they stated that the prevalence of caries in anterior teeth was highest in 36–45 years age group, similar to the present study.<sup>[6]</sup> The type of day to day dietary habits has a great influence on the susceptibility of teeth to caries which is in accordance with a study conducted by Mithra *et al.* where they concluded that people consuming mixed diet had the highest prevalence.<sup>[6]</sup> Caries is

**Table 3:** Percentage of caries in each tooth

Tooth no.	Frequency	Percentage (in the total population with caries in premolars)
14	50	13.51
15	80	21.62
24	30	8.1
25	70	18.9
34	20	5.4
35	40	10.8
44	30	8.1
45	50	13.51
Total	370	100.0

**Table 4:** 1<sup>st</sup> premolar versus second premolar caries

Type of premolar	Frequency	Percentage (among carious premolars)
1 <sup>st</sup> premolar	130	35.1
2 <sup>nd</sup> premolar	240	64.9
Total	370	100.0

**Table 5:** Maxillary premolar caries versus mandibular premolar caries

Upper/lower jaw	Frequency	Percentage (in total population)
Maxillary premolar	230	62.1
Mandibular premolar	140	37.9
Total	370	100.0

**Table 6:** Brushing frequency and premolar caries

Brushing frequency	Premolar caries		Total
	Absent	Present	
Once			
Count	330	240	570
% within premolar caries	48.5	75.0	57.0
Twice			
Count	350	80	430
% within premolar caries	51.5	25.0	43.0
Total			
Count	680	320	1000

Pearson Chi-square=62.208; P<0.001 sig

also seen more in maxillary premolars as compared to mandibular premolars which are in accordance to studies conducted by Demirci *et al.* and Luen *et al.* which found that maxillary teeth were more affected by caries than mandibular teeth.<sup>[1,7]</sup> The present study showed an inverse relationship between the incidence of caries and the frequency of brushing. The population who observed brushing once daily had a greater caries incidence than those who brushed twice daily. Therefore, it can be concluded as better oral hygiene habits lead to a decrease in the prevalence of caries which was also reported in a study conducted by Tarsitani *et al.* and Chestnut *et al.*<sup>[8,9]</sup>

## CONCLUSION

Prevalence of caries in premolars according to age and gender was done, and statistical analysis was performed to correlate the above parameters. Caries was more prevalent among 30–40 years age group, with second premolar showing more prevalence than first. Caries was more in maxillary jaw compared to the mandibular jaw. The study showed an inverse relationship between the incidence of caries and frequency of brushing. Thus, in the above study, we can conclude that the prevalence of caries is multifactorial. Thus, there are various measures that play a critical role in predicting and curbing the occurrence of caries.

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