



PREVALENCE AND SEVERITY OF DENTAL CARIES IN OUTPATIENT DEPARTMENT OF RAJIV GANDHI MEDICAL COLLEGE KALWA, THANE

Dental Science

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ABSTRACT

Introduction/Background Knowledge: Dental caries is one of the most important dental health problems in developing countries prevalence rate being 50 to 60 %. This study aimed to estimate the prevalence and severity of dental caries in subjects (both males and females, divided into 5 groups, age between 5 to 74 years) of the outpatient department of Rajiv Gandhi Medical College Kalwa, Thane.

Methodology: This research was performed as descriptive and cross-sectional study for a period of 3 months from October to December 2018 on 1505 subjects. A revised World Health Organization (WHO) Questionnaire was used. The dental examination was performed according to the methodology of oral status evaluation recommendations by WHO. The prevalence of dental caries, DMFT/deft Index score, and Significant Caries Index were determined. The statistical test Chi-square test was used to find the association between variables.

Results: The overall prevalence of dental caries was 99.26%. Mean DMFT Index was 4.08 and Caries Significant index was 6.97. No significant association was found between tobacco/ gutka consumption habit and dental caries. A high prevalence of caries was noted due to lack of proper oral hygiene awareness and lack of accessible and affordable oral health services

KEYWORDS

Dental caries, Prevalence, Decayed, Missing and Filled Teeth

INTRODUCTION:

Dental caries is a disease with multifactorial causes. The prevalence and incidence of dental caries in a population is influenced by a number of risk factor such as sex, age, socioeconomic status, dietary patterns and oral hygiene habits. Dental and oral health can affect the quality of life as it relates to the general health condition. Dental caries is the major oral health condition in developing countries, affecting 60-90% of the school children and the vast majority of adults.¹ In India, the prevalence of dental caries is reported to be 50-60%.² Over the last few decades an increasing caries experience in developing countries has been reported.^{3,4} India, too, has seen the increasing trend⁵ and the trend may continue in the future due to growing globalization. The globalization in turn, is bound to increase the availability of processed food items as well as sweets. The association between diet, particularly sucrose, and dental caries has been well-documented in cross-sectional, longitudinal and ecological studies.⁶⁻⁸

Aims and Objectives:

The aims and objectives of this study were

- 1) To evaluate prevalence and severity of dental caries
- 2) To evaluate knowledge, beliefs and preventive practices of dental caries.

MATERIALS AND METHODS

This research was performed as descriptive and cross-sectional study for a period of 3 months from October to December 2018 on 1505 subjects. Before beginning the study, an ethical clearance was obtained from the Ethical Clearance Committee of the Institution. The study participants were given clear explanations about the objective of the study and written informed consent was taken.

The sample size was calculated on the basis of the prevalence of dental caries of 50% and allowable error 2.5% (5% of prevalence rate). Hence

sample size was determined as 1505. The sample size was calculated by the formulae : $n = Z^2 pq / d^2$ at the level of significance of 5%.

Inclusion criteria: Patients of all age group and both sex above 5 years.

Exclusion criteria: Patients below 5 years of age, medically compromised patients, pregnant patients, and edentulous patients.

The World Health Organization recommends basic oral health surveys in selected age-groups (i.e., 5 years, 12 years, 17-18 years, 35-44 years, and 65-74 years).⁹ Accordingly the subjects were divided into five age groups from 5-11 years, 12-16 years, 17-34 years, 35-64 years, and 65-74 years respectively. The caries status data was obtained by examination using DMFT index on permanent teeth and deft index on deciduous teeth. The record that was used during inspection were D (decayed) for the carious teeth, where the dental explorer tip was pointed to the cavity; M (Missing) for the revoked teeth due to caries, teeth extraction trace or presence of root residue; and F (Filling) for restored teeth.¹⁰ On the assessment of deciduous tooth, d (decayed) for carious teeth; e (exfoliated) for the revoked teeth due to caries, and teeth extraction trace or presence of root residue; f (filling) for restored teeth;¹⁰ then summation was done to obtain the results or DMFT and deft values, and also to found out the DMFT and deft average value.

Tools used in this research were deft/DMFT forms for intra oral examination results, cotton, mouth mirror, dental explorer, excavator, mask, gloves, alcohol on the concentration of 70%, disinfectant, and flashlight. A pre-tested questionnaire,¹¹ as shown in Table 1 (a local adaptation of WHO's standard oral health questionnaire) consisting of questions on personal details, oral hygiene practices, dental problems, and care-seeking behavior, was used in the survey. The questionnaire was administered by the investigators and was followed by a naked-eye oral examination for dentition status, using an oral probe and mirror.

Table 1: Revised WHO Questionnaire

1)	Do you experience dental pain\ toothache a] Yes b] No
2)	Do you visit dentist for dental check up a] Yes b] No
3)	Do you brush your teeth every day? a] Yes b] NO

4)	Do you use tooth paste and tooth brush for cleaning your teeth a) Yes b) No
5)	Do you have any habit TOBACCO\GUTKA\SMOKING\MISHRI a) Yes b) No
6)	Have you ever undergone dental treatment a) Yes b) No
7)	Do you bleed while brushing your teeth A) Yes b) No
8)	Do you consume CAKE\CHOCOLATE\BISCUIT frequently [excess sugar intake] a) Yes b) No
9)	Do you have teeth which are mobile a) Yes b) No
10)	Do you have a bad smell from your mouth a) Yes b) No

The Significant Caries (SiC) Index was calculated by adding the highest one-third of DMFT scores and dividing it by one-third of the total sample size.¹²

Data analysis:

Data that was obtained was entered in an MS-Excel spreadsheet and analyzed using IBM SPSS 20.0 software (Statistical Package for Social Sciences, Chicago, IL, USA). The Chi-square test was applied to examine the association, if any, between dental caries and various factors. The DMF / def score and the DMFT / def index were calculated.

RESULTS:

A total of 1505 subjects were examined for this study. In this study of 1505 participants, 882 were females and 623 were males (Figure 1). In the age group 25 to 34, more number of participants (27.64%) were found. Mean age of the participants was 32.10 ± 30.76 years.

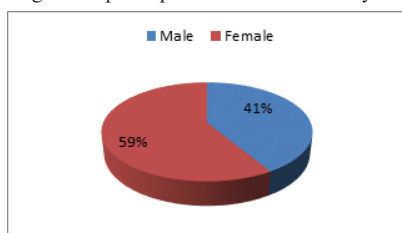


Figure 1: Percentage of male and female population.

The experience of dental caries was found to be 99.26%. Prevalence of caries was seen as 98.31% in the age group 25-34. Caries experience among the study subjects according to gender did not show a significant difference. The severity of dental caries expressed as mean DMFT index was 4.08. Caries Significant index was 6.97. No gender difference was observed either in the prevalence or the severity of dental caries. The caries prevalence and severity by age are also shown in figure 2.

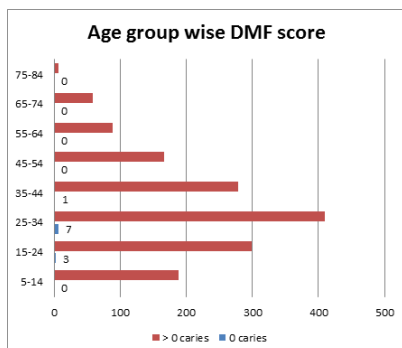


Figure 2: Age wise Caries Prevalence and Severity.

With respect to dental pain, it was found that 98.13% of the participants had dental pain. With regard to awareness regarding dental treatment 46.44% participants had awareness regarding dental treatment. However, only 6.11% study subjects had visited dentist in the past to undergo dental treatment. As for oral hygiene practices, a majority of the study population, 96.27% reported brushing their teeth at least once a day and 87% were using toothpaste and toothbrush for brushing the teeth. There were 25.31% individuals who were current users of

tobacco and gutkha. About 30% of participants had gum bleeding problem and only 5.38% had mobile teeth. However, 68.63% had excess sugar intake in form of cake/chocolate/biscuit or in beverages like tea or coffee. (Figure 3)

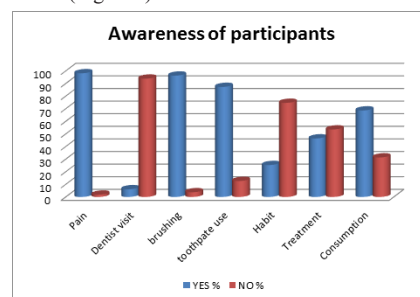


Figure 3: Results obtained from the WHO revised questionnaire.

Chi-square test was used for checking of association between Tobacco/Gutka consumption and dental caries. The chi-square statistic was 1.5428. The p -value was 0.214199. This result was not significant at $p < .05$. Even the chi-square statistic with Yates correction was 0.7994. The p -value was 0.371258 which was not significant at $p < .05$. Hence no association was found between tobacco/ gutka consumption habit and dental caries among the study population.

DISCUSSION:

The present study is one of the few studies that has investigated the prevalence of dental caries among five different age groups i.e. 5-11 years, 12-16 years, 17-34 years, 35-64 years, and 65-74 years. A total of 1505 subjects were examined for this study. In this study of 1505 participants, 882 were females and 623 were males. In the age group 25 to 34, more number of participants (27.64%) were found. Mean age of the participants was 32.10 ± 30.76 years. The number of study subjects according to gender and the five age groups is shown in Table 2.

Table 2: Distribution of study subjects according to gender and age group

Age Group	No of Females	No of Males	Grand Total
5-14	97	91	188
15-24	176	126	302
25-34	257	159	416
35-44	173	107	280
45-54	95	72	167
55-64	48	40	88
65-74	35	23	58
75-84	1	5	6
TOTAL	882	623	1505

The caries prevalence as well as dental treatment needs in this study population was quite high; prevalence of 99.26% and 98.13% of the participants had dental pain which needed dental treatment on at least one tooth in the oral cavity. The high levels of caries in Indian population are consistent with results from previous studies,¹³⁻¹⁵ and reiterate the burden of oral diseases among the rural communities in India.

Reasons for very high prevalence of dental caries in the given study population are

- Location of study population
- Accessibility of transportation
- Communication

- Health care facility
- Lack of awareness and knowledge of subjects/parents.

Results of the present study indicate very high levels of dental caries as well as dental treatment needs among Indian population. Dental caries levels were found to be associated with excess sugar intake in form of cake/chocolate/biscuit or in beverages like tea or coffee, and negative perception of oral and general health. The high prevalence of caries and levels of dental treatment needs shows that the population in rural areas is not receiving adequate dental care. The findings reiterate the urgent need for prevention and treatment programs. The study subjects appear to be not knowledgeable of the consequences of delaying dental treatment and also unaware of the early signs of dental caries. Health education is one of the keys to prevention of dental diseases and early dental visits are imperative for better oral health. Long-term preventive and treatment strategies need to be implemented for the betterment of the society.¹⁶⁻¹⁷ Therefore, children, youth and adults should be made aware of the basic concepts of dental disease prevention so, that they can continue to practice optimal oral hygiene practices throughout their respective lives.

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