

Prevalence of dental caries among outpatients attending a dental college in Chennai

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ABSTRACT

Aim: This study aims to assess the prevalence of dental caries among outpatients attending a dental college in Chennai. **Materials and Methods:** A cross-sectional study was conducted among 100 outpatients attending dental college. Caries prevalence was assessed using decayed, missing, and filled teeth index proposed by Henry Klein, Carrole E. Palmer, and Knutson J. W., in 1938. A questionnaire containing 15 questions was framed which includes oral hygiene practice, dietary habits to assess their oral health practices. Descriptive statistics were used. **Results:** In this study, a total of 100 people were screened. Out of them, 60 were female and 40 were male. Decayed, missing, and filled teeth (DMFT) score for females was found to be 5 and males were found to be 3. Nearly two-third of people practices oral hygiene habits such as brushing and rinsing of mouth after meal, whereas remaining were recommended to practice oral hygiene habits. **Conclusion:** Hence, DMFT score for female is comparatively higher than males. Oral hygiene practices among the study participants have to be improved. This study is helpful to analyze the respective role of different dietary factors including protein-rich diet, age, and gender on the prevalence of dental caries, which can be helpful to counteract the potential increase in the cases of dental caries and to design and plan preventive strategies for the persons at greatest risk.

KEY WORDS: Brushing habits, Dental caries, Oral hygiene practice

INTRODUCTION

Dental caries is defined as a localized devastation of exposed dental hard tissues by acidic by-products from bacterial fermentation of dietary carbohydrates.^[1] Oral health is an integral component of general health and is important for well-being. There is evidence to establish facts of interrelationship between oral and general health.^[2] Adolescence is the period in the human life when the relationships between biological, behavioral, socioeconomic, and psychological conditions have a very strong effect on caries etiology.^[3] According to the World Health Organization (WHO), adolescents are individuals aged from 10 to 19 years.^[4]

Many general health conditions will have oral exposure which will increase the risk of oral disease; in turn, it

is a risk factor for abundant systemic diseases such as diabetes, and cardiovascular diseases. Anyhow, the wider meaning of oral health does not become the relevance of the two globally leading oral afflictions which are dental caries and periodontal diseases.^[4] There is practically no geographic area in the world whose inhabitant does not exhibit some proof of dental caries which will affect both the sexes, all races, all socioeconomic status, and all age groups.^[5]

Dental caries is a disease from the interaction of many genes that start with microbiological shifts which forms complex biofilm and is overwhelmed by salivary flow and composition, exposure to fluoride, consumption of dietary sugars, and by deterrent behaviors, oral hygiene practices.^[6] Transplanting by mutans streptococci and other cariogenic bacteria at a starting age could be a key risk factor for caries growth.^[7] It is a continuous disease which progresses moderately and it can be appreciated as coronal caries and root caries in both primary and permanent

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dentition. Its surface can also be on occlusal, smooth or pitted, and fissured. The most repeatedly affected site is the occlusal surface of the first and second molars. Molars are exposed to dental caries not only because of where it is located, also can be occurred due to anatomy.^[8] The disease at the beginning is initially reversible and can be stopped at any stage, even when some dentine or enamel is annihilated (cavitation), provided that enough biofilm can be removed.

Dental caries only causes pain and discomfort and it also causes damages in other parts of organs in our body. Plenty of people have lost their teeth due to caries, it is overwhelming public health and economic burden to the country, especially in developed and underdeveloped countries.^[9] Dental caries is the most similar oral health condition in developing countries, affecting 60–90% of the schoolchildren and more number of adults. Risk indicators of dental caries among adults have been judged by different investigators in different parts of the world, with age being the most frequently reported factor associated with a higher number of dental caries.^[10,11] Women were reported in few articles to have more dental caries than men,^[12,13] while another study did not show any significant differences between men and women.^[14] Income and education have always been reported to be associated with dental caries.^[15-17] Poor oral hygiene practices also lead to increased dental caries.^[17] Other known factors associated with the dental caries are location (urban or rural), sociobehavioral factors, and diet. This objective of the study is to assess the knowledge of the prevalence of dental caries and to create awareness among the people by enhancing the proper brushing habits and other oral hygiene practices.

MATERIALS AND METHODS

A cross-sectional study was carried out in Chennai city to assess the prevalence of dental caries among outpatients attending a dental college. Individuals were selected using convenient sampling method to get information about the prevalence of dental caries among the outpatients. Dental caries occurrence was recorded using decayed, missing, and filled teeth (DMFT) index proposed by Henry Klein, Carrole E. Palmer, and Knutson J. W., in 1938. Mirror and explorer were also used during the examination. The instruments used were sterilized after every single use. Examiner was well trained and examiner calibration was done. The site infected with dental caries was recorded. Patient age and gender were also recorded to infer the status of disease in locality. Oral information about the study was given to each patient before examining the oral cavity. Lesions were recorded as present when a carious cavity was apparent on visual inspection. The catching of the probe in a pit and fissure was not enough to warrant

the diagnosis of caries unless there was additional visual evidence (WHO, 1997). The study collected the information about the age, gender, and educational levels as well as oral hygiene behaviors such as frequency of teeth cleaning per day, rinsing of mouth after meal, and visit to a dentist. Information was also collected on daily habits such as the snacking habits and consumption of fizzy drinks. Questions were also based on causes of tooth decay, experience of any food lodgement during chewing, experience of toothache, treatment carried for dental caries, type of treatment undergone for dental caries, and to create awareness among the people information was collected on the prevention of dental caries. Frequency distributions of demographics and caries prevalence (mean DMFT scores and percentage of adults with caries) were obtained using the SPSS statistics. Average percentage was calculated for the responses made by the patients to know the knowledge of the dental caries. Graphical representation has done to assess the prevalence of dental caries toward the people.

RESULTS

In the present study, a total of 100 people were screened. DMFT score for female was found to be 5 and male was found to be 3 [Table 1]. Therefore, DMFT score for female is higher than male. Around 61% brushes once daily, 39% brushes twice daily. Around 51% have a habit of rinsing their mouth after meals and 49% rinses sometimes their mouth after meals [Table 2]. About 20% says that dental caries caused due to germs while remaining says that it can be due to too much sugar, bad oral hygiene and 11% says due to all above factors [Figure 1].

In the present study, 89% of the study participants were aware of dental caries and about 11% were not aware

Table 1: Distribution of the study population based on gender and caries experience

Gender	Mean	n	SD
Female	5	60	3.613
Male	3.55	40	3.250
Total	4.42	100	3.528

Table 2: Oral hygiene practices of the study participants

Questions frequency	Reponses
Frequency of toothbrushing (%)	
Once daily	61
Twice daily	39
Rinsing of mouth after meal (%)	
Sometimes	49
Always	51
Visit to dentist (%)	
Routine	20
During pain	54
Never	26

of dental caries. About 77% of the study participants reported to consume sugar-containing foods. About 55% of the study participants experienced food lodgement during chewing and about 45% have not experienced food lodgement. More than half of the study participants (56%) experienced toothache and 44% have never got toothache. Less than ½ of the study participants (45%) have undergone some form of dental treatment and 55% of them have not undergone any treatment. About 17% prefer fizzy water more than twice per day, 17% twice per day, 26% consumes once per day, and 40% do not consume fizzy water. In the study, about 38% of the respondents reported to have continuous pain, 37% has intermittent pain, and 17% says pain aggravates during chewing food and others do not have pain. Among the study participants, it was found that the respondents underwent that dental filling was 20%, extraction was 16%, 9% for root canal therapy, and 53% did not undergo any treatment [Figures 2 and 3].

DISCUSSION

Dental caries is a complex disease inveigled by many aspects such as age, gender, diet, microorganisms, trace elements, saliva, genetic predisposition, and tooth morphology.^[18,19] Combined effects of multiple factors such as fermentable carbohydrate diet, inadequate fluoride exposure, and poor oral hygiene practices lead to cariogenic risk in oral cavity.

Dental caries is a mechanism of production of acid by fermentation of sugar by acidogenic bacteria that lead to decalcification of dental enamel.^[11]

However, oral health knowledge does not compulsorily related to better health behavior, people who have observed this knowledge and feel a sense of personal control over their oral health are more likely to adopt self-care practices.^[20] Dental hygiene is the art and rule of the recognition, treatment, is useful in preventing the oral diseases. Good oral hygiene is the foundation for a healthy mouth and prevents 80% of all dental problems.^[21]

In the present study, DMFT score for a female is higher than male. DMFT score was found to be 5 ± 3.55 . Studies done by Ingle Anand *et al* shows score of 5.22 ± 2.68 , which is relatively similar to our studies. From this we signifies that DMFT score was high will lead to poor oral health among population.^[9] The high prevalence of poor dental health observed in this adult population is characterized by a very high global DMFT index and an excessive number of dental extractions.^[22] However, a more detailed and long-term study is required to analyze the long-term effect of age on the development of dental caries among the population.^[23] Gender is a major determinant of oral hygiene status. The result of this

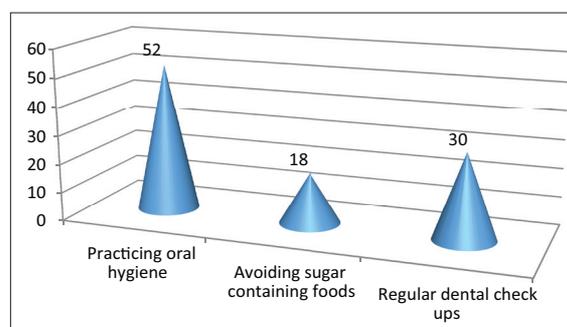


Figure 1: Study participant's responses toward dental caries prevention methods

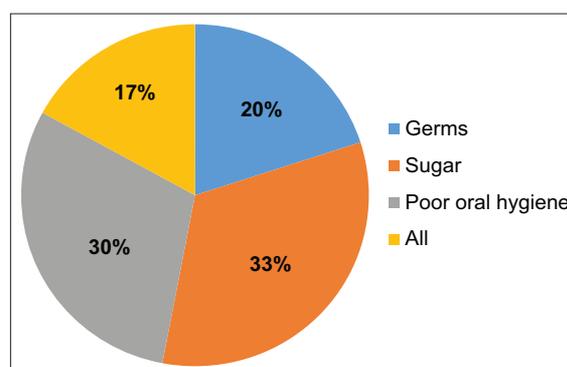


Figure 2: Responses by the study participants regarding dental caries causative factors

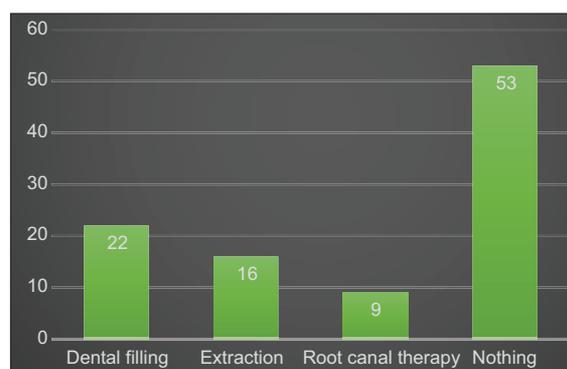


Figure 3: Distribution of the study population based on the treatment underwent for dental caries

study showed that females had significant better oral hygiene status than males. This finding is in agreement with that of other studies.^[24] The better oral hygiene status reported among women has been attributed to better oral health-care-seeking behavior exhibited by women as compared with men.^[25] The oral hygiene status recorded in this study was grossly inadequate considering the pivotal role of plaque and calculus in the etiopathology of dental caries and periodontal diseases, which constitute the primary oral health diseases of worldwide distribution and significance. The number of elderly representation in this study was grossly inadequate and the data may not represent the true oral health indexes for this age group. A bigger

survey with good representation of the different age groups is recommended.

Creating awareness in a rural environment is important for prevention of oral Disease as they are lack of the latter which can lead to an increase in detrimental habits, like eating sweets, tobacco use and insufficient oral hygiene.^[26] These are factors that can worsen the oral health status of an individual and in some cases lead to more severe oral infections. Nevertheless, not only education is important, it also requires proper oral hygiene habits.^[27] In our present study, nearly two-third of people practice oral hygiene habits such brushing and rinsing mouth, whereas remaining people are less in practicing oral hygiene habits. In contrast to the above results, a study by Lian *et al.*, among secondary school students showed that about 95.7% of the respondents brush their teeth at least twice per day.^[14] Shah shown a result of 24.5% brushes twice a day or once per day which is comparatively less than in this study. As to gender differences in behavior and knowledge concerning oral health, several studies have suggested that girls present advantages in most issues such as flossing and brushing their teeth, diet, self-esteem, and regular use of dental care. Although the higher commitment of girls to their own oral health should be encouraged, we observe that these differences are a consequence of discrepant gender roles and educational patterns, which may be harmful to the oral health of boys.^[28]

Some even says that dental caries can be due to germs, bad oral hygiene, and intake of more sugar, in certain studies by Dash *et al.*^[29]

Almost 75% shows high exposure to sugar-containing foods such as candies, honey, and carbonated drinks and the oral hygiene practices about 53% included for regular or occasional rinsing mouth after meals.^[7,12] Nearly one-third of people have not visited dentist, others have visited dentist for routine checkup and few went due to intolerable pain.^[30-34] In other studies by Shamsher *et al.*, 15.7% have gone for routine checkup, 49% have gone for toothache, and 35.3% have not gone to dentist.^[13] About 32% of the students experienced bleeding gums, only 51% visited the dentist for dental checkup, a study done in Benin City, Nigeria, showed that 41% of the subjects visited the dentist for dental checkup. Moreover, 44% of the students brushed their teeth twice daily.^[35]

This study showed that knowledge of dental health was seen in 83% of them while only 52% knew about interdental aids. These findings were consistent with the findings of a study done by Lorna Carnerio also with a study done in Punjab.^[35]

In general, people seemed to be well aware of the most important aspects of oral health care, i.e., effects

of sugar consumption, effects of fluorides, as well as visiting the dentist. However, there seemed to be areas, i.e., the role of plaque, periodontal diseases, and transmission of oral bacteria, where their knowledge was poor.^[14,15,36,37]

Treatment undergone for dental caries is relatively half the study sample, whereas rest of them have never undergone any treatment. In related studies done by Moses *et al.*, 13.7% gone for filling, 22.5% have gone for extraction, and 41.2% have gone for general examination.^[16] Chakraborty *et al.* in Siliguri studies shows (57.03%) of prevalence in dental caries. Since the study report was higher, hence, certain measures have to be undertaken such as regular visit of dentist to maintain the oral hygiene; brushing twice a day; initial stages of caries can be prevented by scaling; and also, preventive and restorative treatment can be done to prevent deep caries.^[17]

The data can be helpful for estimating the condition of this disease in local population and to give a reliable measure over the workforce requirement and oral health management costs. The study results cannot be generalized and hence another study comprising large sample size to be conducted. This study showed that the prevalence of dental caries remains high among outpatients. The awareness of good and bad oral hygiene practices was found out to be low among the study participants. Most of the individuals with dental problems relied on home remedies and thus neglected dental care. This study reveals that there is a need for accessible and affordable oral health services to be provided to this urban community. This can be in the form of oral health education in the community and school settings to create awareness of oral health in the general population. Simultaneously, services for oral health care at the primary level can be established to bring oral health care to the doorsteps of the people. This will need to be supported by referral mechanisms for those who need specialized treatment in secondary or tertiary centers.

CONCLUSION

Dental caries experience was higher in females than males. Oral hygiene practices were not sufficient enough to maintain caries-free oral cavity. This study is helpful to analyze respective role of different dietary factors including age and gender on the prevalence of dental caries, which can be helpful to counteract the potential increase in the cases of dental caries and to design and plan preventive strategies for the persons at greatest risk. The impact of these diseases on individuals and communities as a result of the pain and suffering, impairment of function, reduced quality of life, and eventually increased economic burden is considerable. To reduce the incidence rate of dental

caries, we must conduct the awareness programs and dental camps in rural and urban areas where people were not educated about the dental caries.

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