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# ASSOCIATION BETWEEN AGE AND NUMBER OF MISSING TEETH BASED ON DMFT INDEX AMONG PATIENTS VISITING A PRIVATE DENTAL HOSPITAL

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**Abstract**

***Aim:*** *A variety of factors like poor oral hygiene, susceptibility of teeth morphology towards cariogenic bacteria etc. lead to tooth loss. In this study, an attempt was made to find an association between missing teeth based on DMFT index and age of the study participants.*

***Materials and methods:*** *A retrospective cross-sectional study was conducted in the year 2020 using patient records from the Department of Public Health Dentistry, Saveetha Dental College, Chennai after reviewing and analysing the data from patient records between June 2019 and March 2020. Microsoft Excel® was used to tabulate the data. Data was then exported to the Statistical Package for Social Sciences (SPSS) for Windows (Version 19, 2010) for further analysis. Chi square test was done to find an association between age and number of missing teeth based on DMFT index score.*

***Results;*** *The total sample size was 4730. Sample had a gender distribution of 54.3% males and 45.7% females. The sample consisted of 46.1% of 18-35 year olds, 42.8% of 36-55 year olds and 11.1% of 56+ year olds. 1-7 no. of teeth were missing mostly in 18-35 year olds, 8-14 and 22-28 no. of teeth were missing mostly in 36-55 year olds, and 15-21 no. of teeth were missing mostly in 56+ year olds.*

***Conclusion:*** *Within the limits of the study, it can be concluded that based on DMFT index, the highest possible number of missing teeth (22-28) were seen in above 56 year old study participants*

**Keywords:** *Age, Caries, DMFT, Missing teeth, Old age.*

## Introduction

The patterns of disease related to dentition have varied over the years. Yet, two of the most common dental diseases remain to be caries and periodontal disease which account for the most frequent and the most important reason for tooth loss, either naturally or through extraction. Tooth extraction due to caries is seen to be maximum in the age group of 21-30 years whereas periodontal problems are the most frequent cause of tooth extraction in the age group 41-50 years. Also, since the most commonly involved tooth for caries in molars, posterior teeth extractions are more common in a younger age group. In the old age group, anterior teeth show characteristic features of periodontal disease more commonly and are thus more frequently extracted in old individuals. [1]

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Caries which is one of the most common chronic diseases of childhood[2],[3] is often found to be a more common cause of tooth loss followed by periodontal disease. The microorganisms involved are *S. mutans*, *Actinomyces* etc. [4] Tooth loss also shows a slight female predilection as females have higher chances of getting caries due to various factors such as hormones, puberty, pregnancy, frequent snacking while preparing food. [5,6] Early prevention of dental caries pit and fissure sealant, fluoride releasing sealants, fluoride application, chlorhexidine mouthwash, remineralising toothpaste etc. can improve the prognosis of caries susceptible teeth. [7–13] Taking proper medical and dental history is important for the diagnosis and treatment planning of caries affected teeth. [14] Persons who live in areas where there is optimum fluoride content in normal water supply have lower incidence of caries and caries related tooth loss. [9,15,16] Factors such as, malnourishment, heavy intake of carbonated drinks, smoking etc increase the chances of caries related tooth loss. [17–19] Failed restorations and RCTs can also lead to extraction of a re-infected tooth. [20] Patients should be informed of the pros and cons of the treatment plan being followed to prevent medico legal problems. [21] Tooth loss can also happen due to avulsion and in such cases the tooth can be re implanted into the socket. [22]

It has been seen that as the person ages the incidence and prevalence of caries and caries related tooth loss increases. Also, the incidence of tooth loss differs among the genders. [23] Age group of 21-30 years shows a higher proportion of caries related extracted while the age group of 51-60 years shows tooth loss due to periodontal problems majorly. [24] Most frequently affected teeth due to dental caries and also the most commonly missing teeth due to the same reason are the molars. In the older age group through, an increasing member of teeth were seen to be lost in the lower anterior region although the cause was more frequently periodontal disease rather than dental caries. [25]

In this study we aim to find the association between the number of missing teeth based on the DMFT index with age.

## Materials and methods

### Study design and setting

This cross-sectional study was done during April to June, 2020 in which patient records from Saveetha Dental College, Chennai were obtained. Data was collected for missing teeth value in the DMFT index from the patients reporting to the Department of Public Health Dentistry from June 2019- April 2020.

### Data Collection

Total of 4730 patient records with missing teeth in the DMFT index were collected after reviewing and analysing data of 86000 patients. Other relevant data such as age, gender, patient ID, patient name etc. were also recorded. Repeated patient data and incomplete records were excluded. Data was segregated into three groups based on age. These groups were 18-35 years, 36-55 years and 56+ years. Clinical photos and radiographs were used to verify the number of missing teeth in a patient whenever necessary. Data was also verified by an external reviewer.

### Statistical analysis

Data was recorded in Microsoft Excel and later exported to the Statistical Package for Social Sciences for Windows (Version 19, 2010) and subjected to statistical analysis. Descriptive analysis was carried out and chi-square tests were employed with the level of significance set at $p<0.05$. Appropriate graphs, tables and charts were constructed using the same software.

## Results

The final data consisted of 4730 cases of DMFT (MT) indexed patients. Gender wise distribution among the patients (Figure 1) was found to be - 2568 (54.29%) males and 2162 (45.71%) females. Age wise distribution among the patients (Figure 2) was as follows; 2180 (46.1%) of the study population belonged to the 18-35 year old age group, 2025 (42.8%) were of 36-55 years and 525 (11.1%) were above 56 years of age. About 4390 (92.8%) of the subjects had 1-7 number of missing teeth, 269 (5.7%) had 8-14 number of missing teeth, 62 (1.3%) had 15-21 number of missing teeth and 9 (0.2%) had number of missing teeth. (Figure 3) Among 18-35 year olds, 2165 (99.31%) of the population had 1-7, 15 (0.69%) had 8-14, 0 (0%) had 15-21 and 22-28 number of missing teeth. Among 36-55 year olds, 1832 (90.48%) had 1-7, 158 (7.80%) had 8-14, 30 (1.48%) had 15-21

and 5 (0.24%) had 22-28 number of missing teeth. Among 56+ year olds, 393 (74.86%) had 1-7, 96 (18.28%) had 8-14, 32 (6.1%) had 15-21 and 4 (0.76%) had 22-28 number of missing teeth. 1-7 no. of teeth were missing mostly in 18-35 year olds, 8-14 and 22-28 no. of teeth were missing mostly in 36-55 year olds, and 15-21 no. of teeth were missing mostly in 56+year olds. (p=0.000) (Figure 4)

In the cross-tabulation done with the variables gender and number of missing teeth, among males 2424 (94.39%) had 1-7, 113 (4.4%) had 8-14, 27 (1.05%) had 15-21 and 4 (0.16%) had 22-28 number of missing teeth. Among females, 1966 (90.93%) had 1-7, 156 (7.22%) had 8-14, 35 (1.62%) had 15-21 and 5 (0.23%) had 22-28 number of missing teeth. (p=0.000) (Figure 5)

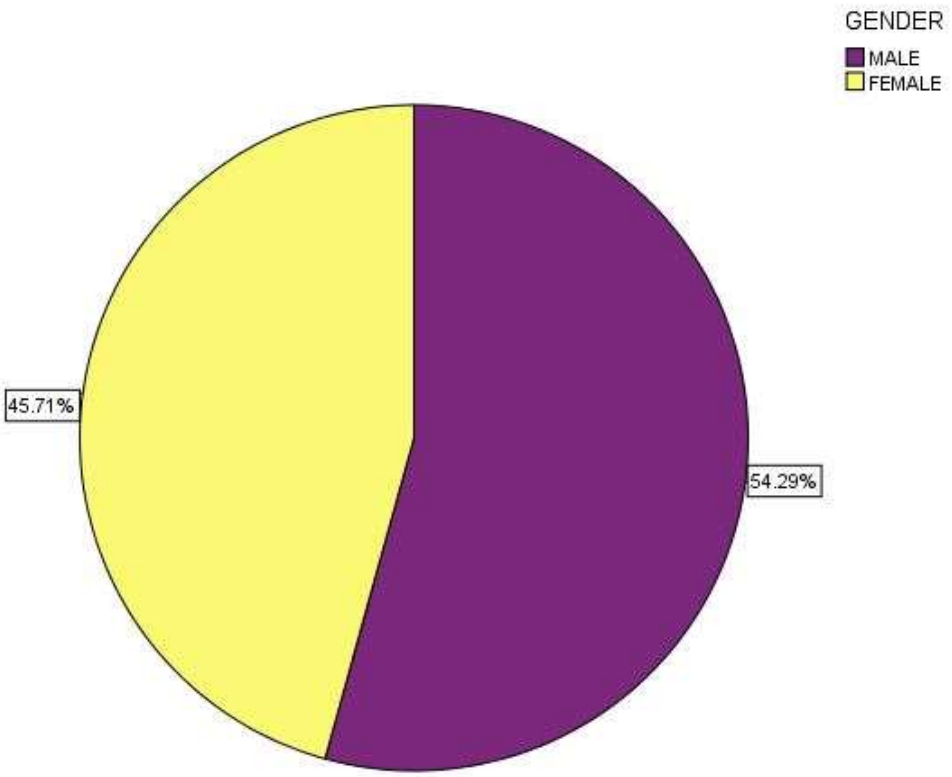


Figure 1: Pie chart showing gender wise distribution of study population. Here, purple colour denotes male gender and yellow denotes female gender. 45.71% participants were females and the majority, 54.29% were males.

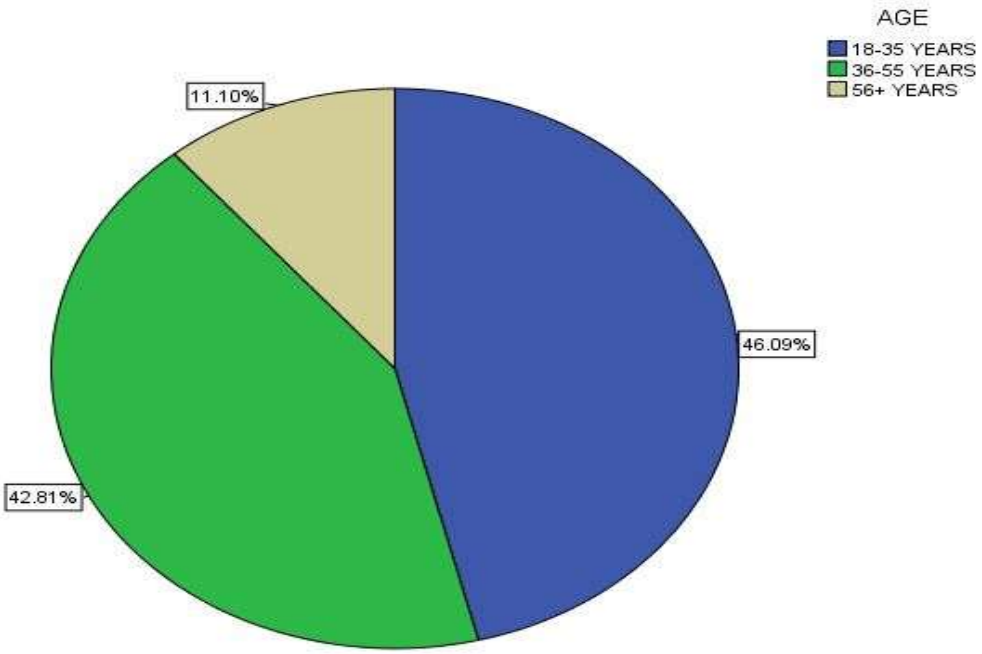


Figure 2: Pie chart showing age wise distribution of study population. Here, blue colour denotes 18-35 year olds, green denotes 36-55 year olds and brown denotes 56+ year olds. 46.09% participants were 18-35 years old, 42.81% were 36-55 years old and 11.10% were above 56 years old. Thus, 18-35 year old study participants were the majority in the study.

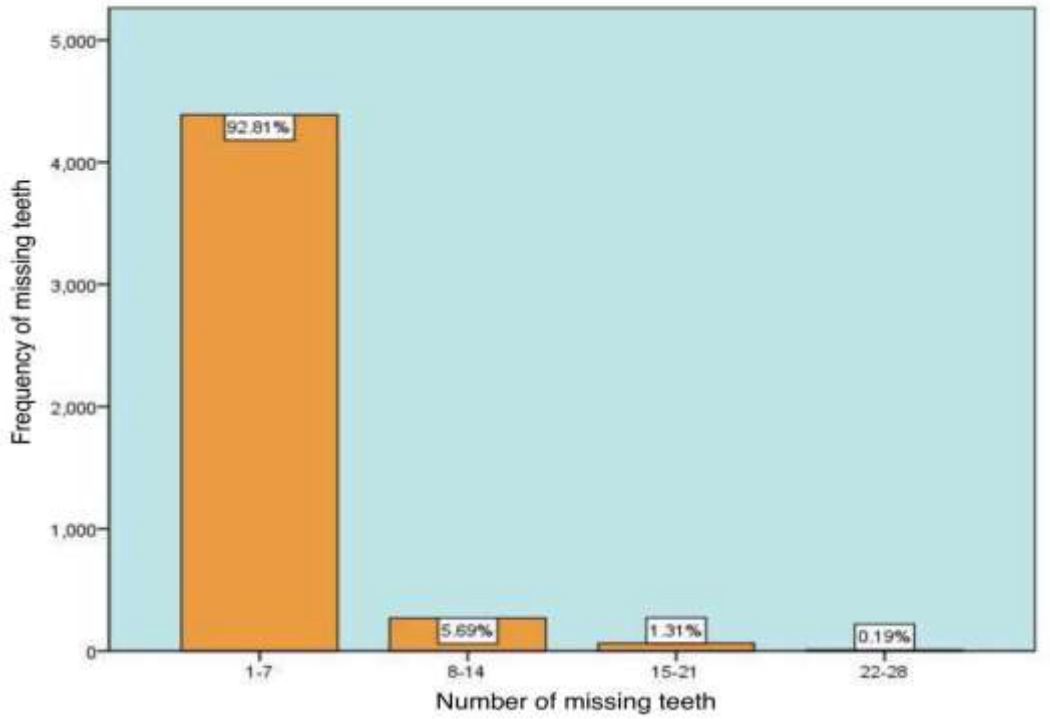


Figure 3: Bar graph showing distribution of number of missing teeth based on DMFT index in the study populations. 92.81% participants had 1-7 missing teeth, 5.69% had 8-14 missing teeth, 1.31% had 15-21 missing teeth and 0.19% had 22-28 missing teeth. Majority of the study population had 1-7 number of missing teeth.

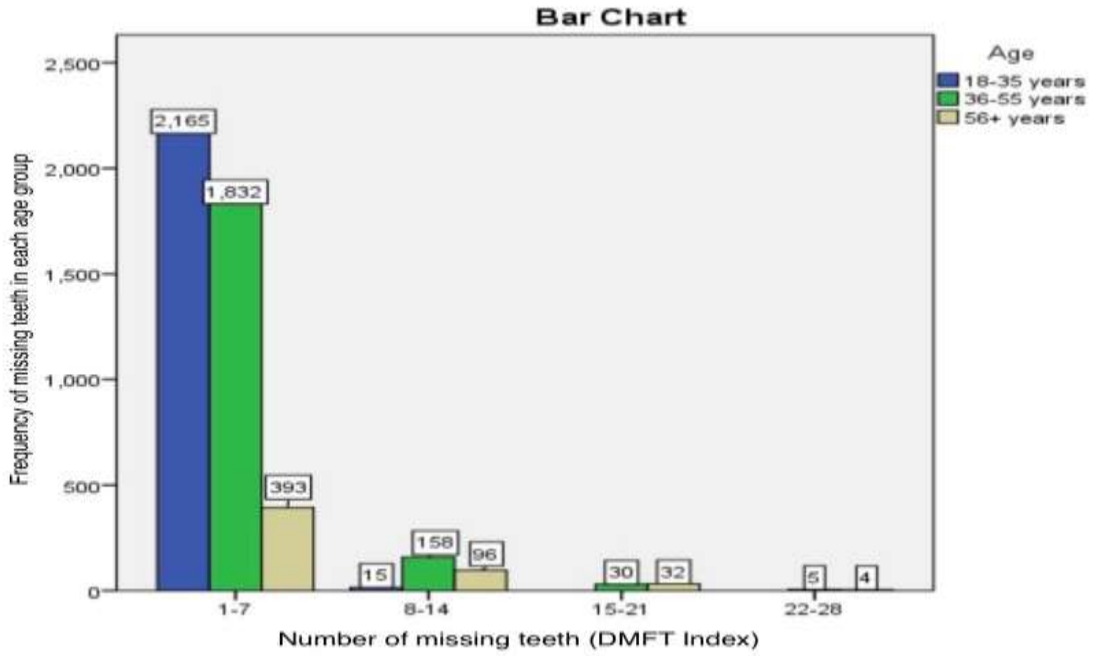


Figure 4: Bar graph showing association between age and number of missing teeth based on DMFT index. X axis denotes number of missing teeth based on DMFT index and Y axis denotes frequency of missing teeth in each age group. This graph represents the association of age and number of missing teeth where blue colour denotes 18-35 year olds, green denotes 36-55 year olds and brown denotes 56+ year olds. 8-14 number of teeth were missing mostly in 36-55 year olds [96 (18.3%)], 15-21 no. of teeth were missing mostly in 56+year olds [32 (6.1%)] and 22-28 no. of teeth were missing mostly in 56+ year olds [4 (0.8%)]. Highest possible number of missing teeth were seen in above 56 year old study participants when compared with other age groups and this association was statistically significant. (Chi-square value - 421.824; p-value=0.000; statistically significant)

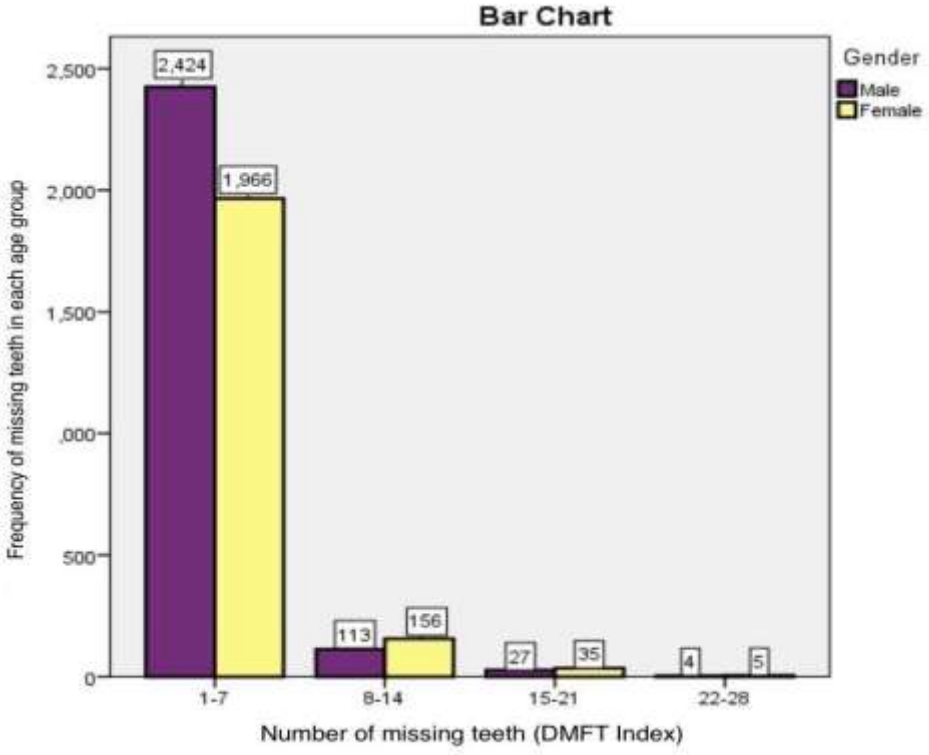


Figure 5: Bar graph showing association between gender and number of missing teeth based on DMFT index. X axis denotes number of missing teeth based on DMFT index and Y axis denotes frequency of missing teeth in

each gender. This graph represents the correlation of gender and number of missing teeth where purple colour denotes male gender and yellow denotes female gender. 1-7 numbers of teeth were missing mostly in males [2424 (94.4%)], 22-28 number of teeth were missing mostly in females [5 (0.23%)]. Higher numbers of missing teeth were seen in female participants when compared with males and this association was statistically significant. (Chi-square value- 21.106; p-value=0.000; statistically significant)

## Discussion

It has been seen in European countries that the mean number of lost teeth increases with age. [26] In our study as well the maximum number of individuals who had lost 22-28 teeth belonged to the elderly age group. Dental caries and periodontal disease are found to be the main causes of edentulism in the older age group. [27]

The mean number of teeth missing due to dental caries ranged between 2.1 and 7 teeth and exceeded by a large margin tooth loss due to periodontal breakdown in a study done in Adult Tanzanians [25]

The mean DMFT and DMFS scores in senior citizens when compared to adults were found to be significantly higher. It has also been seen that there is a decrease in the decayed teeth value although an increase in the filled teeth value. [28]

Among the genders males are found to have a higher DMFT score than females on an average. [29] Tooth loss increased from 10.8% in a study group to 22.8% over a period of 6 years in a birth cohort study. Caries experience was greatest in molar teeth and upper premolars and lowest in lower anterior. Another point was made that as people move from the third to fourth decade of life, dental caries and tooth loss experience increases. [30]

Previous studies have also shown that there are clear trends in caries prevalence from age 5 to 32 years. [31] There is a positive correlation between DMFT and its components DT, MT, FT with age all of which increase as the age of study group increases. [32]

Among the higher age group it has been noted that the incidence of root caries is higher than that of coronal caries. [33] In a study done among older age groups, the DMFT index increased from 22.2 to 30.2 on an average. There was a decline in the mean number of teeth present as well. [34] In the geriatric population, males were found to have higher incidence of root caries when compared to females. This is because of the higher prevalence of deleterious habits among males than females. [35]

Another study shows the females are more prone to caries than males, which is not in agreement with our study. [36] This could be because of the higher prevalence of habits like smoking, paan chewing etc. among males in the Indian Subcontinent. [37]

## Limitations

This study is of shorter duration and limited population as it was conducted only among the outpatients visiting a private dental college and hospital. The sample size was small and thus the results obtained cannot be generalized. So, to ascertain the findings of our study we have to do further studies in the future with large sample size, inclusive of different ethnic groups and longer duration.

## Conclusion

Within the limits of the study, it can be concluded that based on the DMFT index the highest possible number of missing teeth (22-28) were seen in above 56 year old study participants.

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**Authors Contribution**

Author 1 (Ankita Komal Labh) carried out the present study by collecting data and drafted the manuscript after performing the necessary statistical analysis.

Author 2 (L. Leelavathi) aided in the conception of the topic, statistical analysis and supervised in the preparation of the manuscript.

Author 3 (Geo Mani) has participated in the study design and coordinated in developing the manuscript.

All authors have discussed the study details among themselves and contributed to the final manuscript.

**Conflict of Interest**

None declared.

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