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# Association Of Gender And Caries Experience Based On Dmft Index - Retrospective Analysis Of Patient Records

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**Abstract:** Dental caries is a very complex disease affecting people worldwide. Its incidence is witnessing a decline in developed countries due to proper availability of fluoride products, better oral health services, and awareness regarding etiology of caries. To apply measures which can prevent or control caries , DMFT indexes are used which is one of the most important quantitative factors, in measuring tooth caries level of an individual.The aim of the present study was to determine association between DMFT score and gender in adult patients who reported to a Private hospital in Chennai. An institutional record based study was done to assess the association between gender and caries experience in outpatients.The study was carried out on an one-year period, (June 2019 to April 2020) on a total of 4643 patients ( 2541 males and 2102 females) records which were analysed for DMFT index. The results obtained were analysed through SPSS software. From the results obtained the DMFT score of 8-14 was found highest among 44.2 % patients. DMFT score of 0-7 was highest in males compared to females. DMFT scores of 8-14, 15-21 and 22- 28 were highest in females compared to males. (p value = >0.05).The study concludes that higher caries experience was found among females than males but the study was insignificant..

**Keywords**: Caries experience, DMFT, Gender, Index

## INTRODUCTION

Tooth decay or dental caries is the most common chronic disease worldwide and that exhibits disparities between privileged and disadvantaged populations (Cate and ten Cate, 2009). Dental caries interferes with that of normal nutrition intake, speech, and daily routine activities. (Prabakar, John and Srisakthi, 2016). Oral health is being recognised as equal to general health. Having healthy teeth and oral tissues are important for any section of society. Oral health uses mainly dental indices to focus on presence or absence of oral diseases.

DMFT index is one of the simplest and most commonly used indices in epidemiologic surveys of dental caries. It quantifies dental health status based on the number of carious, missing and filled teeth. (Anaise, 1984) Many studies have demonstrated gender disparities correlation with DMFT scores (Shaffer et al., 2015).

Epidemiological and clinical studies, through the use of tools like DMFT and DMFS scores, have revealed a consistent trend and caries development; where females have higher prevalence than males (Lukacs and Largaespada, 2006) (Srudhy and Anitha, 2015).The flowrate of saliva in the host oral environment could be a source of susceptibility of caries formation in women. Hence lower salivary flow rate in females put them at a greater risk of caries (Ferraro and Vieira, 2010).

On the other hand males can also have higher DMFT scores and missing teeth mostly because of using tobacco chewing and infrequent teeth cleaning (Rani, 2003).Studying and assessing the efficacy of tobacco cessation interventions, especially behavioural interventions, must be carried out by all countries (Harini and Leelavathi, 2019; Pavithra, Preethi Pavithra and Jayashri, 2019)

Many people are unaware of the acidogenic and cariogenic property of carbonated drinks which may subsequently lead to dental erosion, dental caries and also decrease in salivary pH and in the surface hardness of restorations. Decrease in salivary pH can create an acidic oral environment causing dry mouth, tooth decay and bad breath.(Pratha, Ashwatha Pratha and Prabakar, 2019).

In a study done by Payal Kahar et al, a greater percentage of females had untreated decay and caries experience; Males also showed a higher mean DMFT score than females (Kahar et al., 2016).Children are at higher risk hence effectiveness of school-based interventions to prevent early childhood caries among preschool children is also being studied (Samuel, Acharya and Rao, 2020a),(Mebin George Mathew et al., 2020). Our team has rich

experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J et al., 2018; Menon et al., 2018; Prabakar, John, I. M. Arumugham, et al., 2018; Rajeshkumar et al., 2018, 2019; Vishnu Prasad et al., 2018; Wahab et al., 2018; Dua et al., 2019; Duraisamy et al., 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu et al., 2019; Mehta et al., 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran et al., 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma et al., 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi et al., 2020; Samuel, Acharya and Rao, 2020b)

The aim of this study is to find an association on gender and DMFT scores among patients who had reported to a Private hospital in Chennai during a particular time period.

## MATERIALS AND METHODS

**Study setting:** The present study was record based descriptive study that was conducted in a dental college in Chennai

**Study duration:** This is an institutional based retrospective study which was carried out on a one-year period duration from June 2019 to April 2020 .The study was performed on a total of 4643 adult patient's records in that (2541 were males and 2102 were females). All available and relevant datas were collected using an electronic dental record system.

**Ethical approval:** Ethical approval for conducting the study was obtained from the institutional ethical committee. Ethical approval number SDC/SIHEC/2020/DIASDATA/0619-0320.

**Data collection:** All case sheets of patients were reviewed and analysed within the given time period. DMFT scores of the patients were recorded along with the gender of the patient. Caries experience based on DMFT score was assessed and cross verification was done using photographs. DMFT score was categorised into four groups as 0-7, 8-14, 15-21 and 22-28. Data collection was done by one of the examiners. All the available data was included to reduce sampling bias.

**Statistical analysis:** Information obtained was entered into Microsoft Excel documents and results were obtained. .Statistical analysis was done using Pearson's Chi– Square test from IBM by SPSS software version 23.0. Descriptive statistics was used to describe frequency and percentage distribution of gender and DMFT scores. The level of statistical significance was set at a value $P<0.05$

## RESULTS AND DISCUSSION

Descriptive study done on gender distribution of the study population revealed that 54.73% were males and 45.3% were females , males were more prevalent than females.Figure-1. DMFT score distribution of study participants where shown in Figure-2 where , 38.21% patients had a score range from 0-7 , 44.22 % patients had a score range from 8-14 , 10.21 % patients had a score range from 15-21 and 7.37 % patients had a score range from 22-28. Association of gender and DMFT scores were shown in Figure-3 and Table-1.

0-7 DMFT score was prevalent among males (40.1%) than females (36.0%). 8-14 DMFT score was prevalent among females (45.9%) than males (42.8%). 15-21 DMFT score was prevalent among females (10.7%) than males (9.8%) and 22-28 DMFT score was prevalent among females (7.4%) than males (7.3%). The results revealed that DMFT score of 0-7 was prevalent in males than females and DMFT score of 8-14 ,15-21 and 22-28 was prevalent among females than males,hence not significant ( Chi-square test, Value =8.478 , p value=0.074).

Oral health is an essential factor for general well-being and is related to the quality of life. (Pavithra, Preethi Pavithra and Jayashri, 2019),(Neralla et al., 2019).The present study provides information on the prevalence of females having higher DMFT scores compared to males (Chaloob, 2013). In a study done by Shaffer , females had fewer teeth with current decay and more dental restoration which suggests that they have utilised dental health care to a greater degree than men (Shaffer et al., 2015).

The DMFT score varies among genders in different populations. Vegetarian diet among Indian population can contribute to caries formation. Mostly women are vegetarian than men hence higher prevalence of caries are observed (Shah, 2003)(L et al., 2015). This is because in the pattern of tooth eruption females tend to acquire their teeth at an earlier age than males . Hence

prevalence of caries level among gender disparity is evident at an early age. Some studies say that females are more concerned about their oral hygiene than males (Oliveira, de Oliveira and Sheiham, 2004),(Bernabé et al., 2008) which makes females seek for an early dental treatment compared to males. Prevalence of dental caries in a study done by Prabhakar J et al was found to be (47.3%) less than the reported caries prevalence of India (53.8% ). In the National Oral Health Survey (Prabakar, John and Srisakthi, 2016) males (47.5%) were slightly more affected than females (46.9%) with caries. Oral Health is a serious issue and because of high caries prevalence and incidence it can cause periodontal disease and eventually lead to tooth loss (Soto-Rubio and Hausman, 2019), (Irigoyen et al., 2012).

Distribution of the current study showed 54.7 % males and 45.3 % females similar to a study done by Deepesh Khanna which showed 44% males and 56% females participation.(Kahar et al., 2016). Not many literatures were studied on the highest range of DMFT score value. In the present study DMFT score of 8-14 was prevalent among males compared to females A study done in our Private hospital showed caries can be arrested using sealants which prevents colonization of the pits and fissures with new bacteria and also prevents the penetration of fermentable carbohydrates to any bacteria remaining in the pits and fissures.(Prabakar, John, I. Arumugham, Kumar and Srisakthi, 2018),(Kumar, Pradeep Kumar and Vijayalakshmi, 2017),(Khatri et al., 2019). Many studies have also shown a strong correlation between sealant and absence of caries.(Prabhakar, Murthy and Sugandhan, 2011) (Patturaja, Leelavathi and Jayalakshmi, 2018)

Sufficient fluoride intake can also limit the risk of caries.(Kannan et al., 2017), (Kumar, Pradeep Kumar and Preethi, 2017),(Prabakar, John, I. Arumugham, Kumar and Sakthi, 2018; Neralla et al., 2019). Majority of the source of fluorination is from drinking water and toothpastes (Mohapatra et al., 2019)(Leelavathi et al., 2016). Hence proper nutritive measures and preventive measures are to be advised for good oral health and maintenance in both genders.Gender disparities is an essential feature in determining the caries experience .It can differ in studies because of variation in sample size and individual count of decayed, missing and filled teeth.

The study was limited to a particular private setting and does not represent all ethnic groups or populations from all over the world. Index recording was not performed in all outpatients. This study did not emphasise on the cause of individual tooth variation with DMFT scores. Further studies need to be performed with association of gender and individual tooth also to identify the causes of such gender disparity among the population to reduce the risk of caries experience.Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh et al., 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; Vijayashree Priyadharsini, 2019; M. G. Mathew et al., 2020)

## CONCLUSION

Within the limitations of the study the DMFT score of 0-7 was highest in males compared to females. DMFT scores of 8-14, 15-21 and 22-28 were highest in females compared to males. Hence caries experience is seen higher in females compared to males but the study was not statistically significant.

## AUTHORS CONTRIBUTION

First author [Monisha.K.] performed the analysis, and interpretation and wrote the manuscript. Second author [Dr.Leelavathi] contributed to conception, data design, analysis, interpretation and critically revised the manuscript. Third author [Dr.Aravind Kumar S] participated in the study and revised the manuscript. All the three authors have discussed the results and contributed to the final manuscript.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interests

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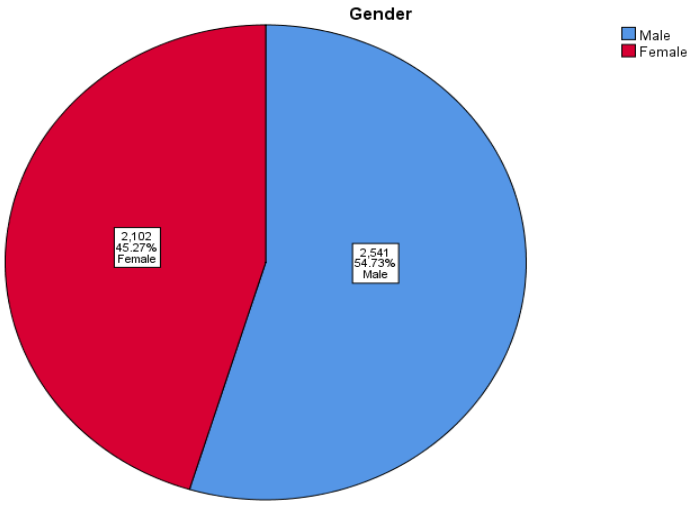


**Fig.1:Pie-chart representation of gender wise distribution of study population which shows that 54.73 % of the study population were males (blue) and 45.27 % of the study population were females (red). Hence males were the maximum number of participants**

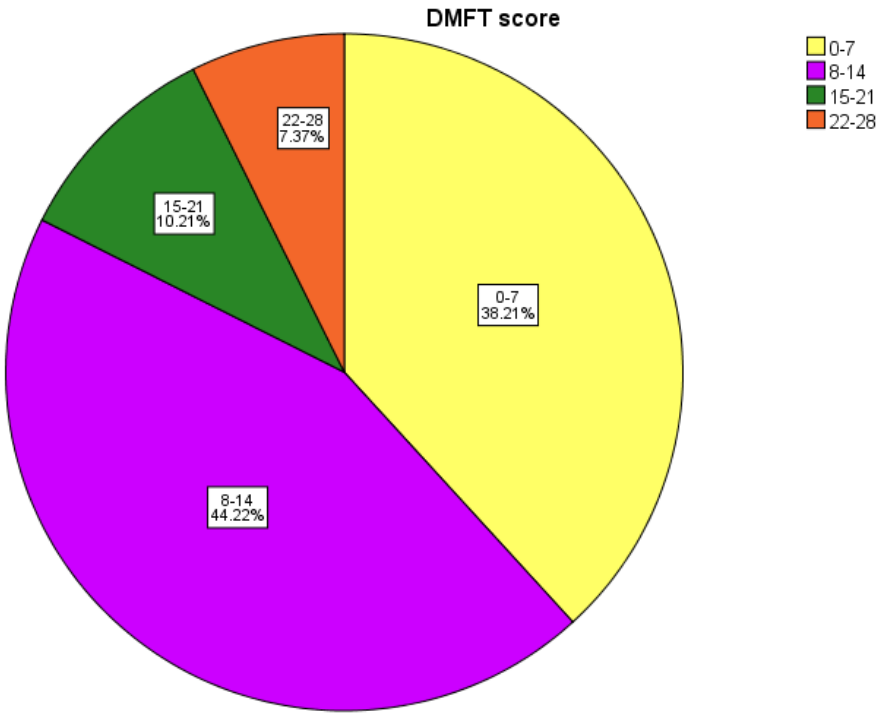


**Fig.2: Pie-chart representation of DMFT score distribution. DMFT score 0-7 (yellow) was prevalent among 38.21 % of the participants , DMFT score 8-14 (purple) was prevalent among 44.22 % of the participants, DMFT score 15-21 (green) was prevalent among 10.21 % of the participants, DMFT score 22-28 (orange) was prevalent among 7.37% % of the participants, suggesting DMFT Score of 8-14 was most prevalent among the study population.**

**Table1:Tabular representation of Gender and DMFT score.**

| | | Gender | | Total N(%) | Chi-square value | P value |
|---|---|---|---|---|---|---|
| | | Male N(%) | Female N(%) | | | |
| DMFT Score | 0-7 | 1018(40.1%) | 756(36.0) | 1774 (38.2%) | 8.478 | 0.074* |
| | 8-14 | 1088(42.8%) | 965(45.9%) | 2053(44.2%) | | |
| | 15-21 | 249 (9.8%) | 225(10.7%) | 474(10.2%) | | |
| | 22-28 | 186(7.3%) | 156(7.4%) | 342(7.4%) | | |
| Total | | 2541(100%) | 2102(100%) | 4643(100%) | | |

* p value <0.05- statistically not significant, Chi-square value = 8.478

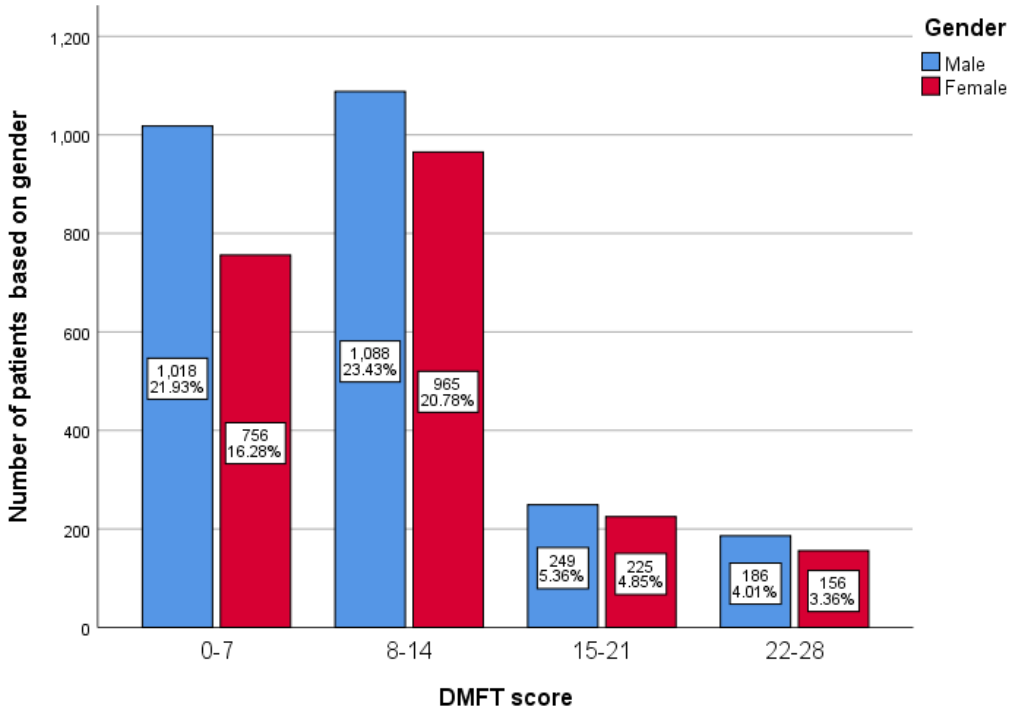


**Fig.3: Bar chart representing the association between DMFT scores and Gender. The x-axis denotes DMFT scores and y-axis number of patients based on gender in each category.The blue bar depicts males and the red bar depicts females. DMFT score less than 8 was more prevalent among males, whereas DMFT score more than 8 was more prevalent among females when compared to males. However this was not statistically significant (Chi square value= 8.478,p value =0.07)**