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ASSOCIATION OF GENDER WITH DECAYED TOOTH SURFACES - A RECORD BASED STUDY

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Abstract

Aim: *Dental caries is one of the most chronic diseases of the oral cavity that interferes with daily activities. The risk of dental caries is increasing in developing countries. It is a multifactorial disease and has become a public health problem. Indices can be used to score decayed surfaces such as DMFS. Hence, this study aims to assess the correlation of gender with decayed tooth surfaces among the patients who were treated at Saveetha Dental College, Chennai.*

Materials And Methods: *A retrospective study which was executed in the year 2020, examined patient records from June 2019- April 2020. In this study 3333 patients for whom DMFS index was recorded from the Department of Public Health Dentistry, Saveetha Dental College, Chennai were shortlisted based on the inclusion/exclusion criteria. Data was collected and subjected to statistical analysis. Microsoft excel 2016 (Microsoft office 10) was used to collect data and later was exported to SPSS software (statistical package for social sciences) for Windows 20.0, SPSS Inc. co, Chicago, USA) and was subjected to statistical analysis and chi-square test was employed with the level of significance set at $p<0.05$*

Results: *The prevalence of decayed surfaces was found to be more in males (55.43%) than females (45.57%) Among the age groups of 18-35 years, 36-50 years and 51-70 years, it was more prevalent in 18-35 years age group (46.08%) Among the decayed surfaces of groups (1-32 surfaces) (33- 64 surfaces) (65-96 surfaces) and (97-128 surfaces), most of the patients had (0-32) decayed surfaces. The correlation between gender and decayed surfaces was found to be insignificant with $p> 0.05$.*

Conclusion:*Within the limits of the study, the age group of (18-35) years and male patients had a higher prevalence of decayed surfaces than females. However, no significant statistics were found for the prevalence of gender and decayed tooth surfaces $p>0.05$ (chi-square test)*

Keywords: *Decayed surfaces, DMF, DMFS, Epidemiology, Caries, Restorations.*

Introduction

Dental Caries is an irreversible microbial disease of the oral cavity which aims at destroying the organic portion and demineralizing the organic portion (calcium hydroxyapatite crystal). [1,2] Keyes in 1960 formulated a model that attempts to explain the disease. It stated that Dental Caries must be a result of interaction between the following: Substrate, the host, and microorganism.[3] The host comprises teeth and saliva. The morphology and chemical composition of the teeth are etiological factors of increased importance with Dental Caries. The saliva present in the Oral Cavity, the aid component plays an important role in the initiation of Dental Caries. When

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the saliva is in a healthy state, it provides a buffer system to neutralize the acids**.** [4]The microorganism which is known to cause caries is Streptococcus mutans and lactobacillus. [5]These are present in dental plaque and in accordance with low pH and lack of fluoride, the development of dental caries is initiated. In the absence of a balanced diet constituting fruits and vegetables and increased uptake of sugary food, carbonated drinks, and smoking, the evidence of caries increases remarkedly.[6–12] Time also plays an important role as the formation of dental caries is not a continuous process rather a cyclic episode. At the expense of demineralization upon remineralization. [13]In addition to these, there are various external factors like socioeconomic factors, behavioral factors that play a role in dental caries. [14]Dental Caries is considered as the most prevalent oral disease worldwide and is the leading cause of tooth loss. [15]The incidence of dental caries and dental trauma is increasing in the developing countries which makes it a public health problem.[16] However, the professionals are aware about public health problems and they must know how to reach out to the public. [17,18] Hence, more awareness must be spread regarding the risk factors of dental caries, oral hygiene maintenance, adequate nutrition to have a balanced diet, and also educating the patient to invest in preventive measures like fluoride application and pit and fissure sealants. [19–23] The different treatment modalities for carious lesions include a remineralizing agent for white spot lesion, restorations for enamel and dentin caries, and Root Canal Treatment if there is pulpal involvement. [24] Root canal treatment can be done either with hand files or rotary files. Although, rotary files help in better for shaping the canal in less time. [25]

In order to measure the caries experience in dental epidemiology, DMF (decayed, missing, filled index) has been in use for the past 80 years. [26] The DMF index is applied for permanent teeth and is expressed as the total number of teeth or surfaces that are decayed (D) missing (M) Filled (F) in an individual. When the index is applied on tooth surfaces it is known as DMFS and can range from 0-128 when third molars are excluded and 148 when they're included. [27]The aim of the study is to compare the gender with decayed tooth surfaces. This study aims to assess the correlation of gender with decayed tooth surfaces.

MATERIALS AND METHODS:

Study Design and setting:

The retrospective study which was executed in the year 2020 examined the patient records from June 2019-April 2020 in which 3333 patient records with Decayed Missing Filled Tooth Surface index (DMFS) were reviewed.

Ethical Approval:

Ethical approval was obtained from the Institutional Ethics Committee.

Study Population:

The Study Population included patients who were treated at Saveetha Dental College, Chennai. Patients below the age of 18 were excluded from the study.

Data collection:

Around 3333 patient records that recorded DMFS index were retrieved from patient records. Relevant data such as age, gender were included. Repeated patient records and incomplete records were removed. Data was verified by an external reviewer and then it was exported to SPSS Software.The age groups of the patients were divided as 18-35 years, 36-55 years, above 55 years. Decayed tooth surfaces were grouped as 0-32 surfaces, 33-65 surfaces, 65-96 surfaces and 97-128 surfaces

Statistical Analysis:

Data were recorded in Microsoft excel 2016(Microsoft office 10) and later was exported to statistical package for social science for windows (version 20.0, SPSS Inc., CHICAGO USA) and was subjected to statistical analysis chi-square test was employed with the level of significance set at $p<0.05$

RESULTS:

The final database consisted of 3333 patients of Indian origin in which about 1814 male patients and 1519 female patients were included.Among the various age groups included for this study, the age group which had a higher prevalence for decayed surfaces was the 18-35 years age group that is about 1536 patients (46.08%) following which was 36-55 years age group with 1429 patients (42.87%) and above 55 years around 368 patients (11.0%) had decayed tooth surfaces (figure 1)Males were predominantly distributed than females in the present study. It was found that around 1814 (54.4%) male participants when compared with 1519 females participants (45.6%) (figure 2).

It was evident from the results that 3306 patients (99.2%) had 1-32 decayed tooth surfaces with highest prevalence. About 25 patients (0.8%) had 33-64 decayed tooth surfaces and 65-96 decayed surfaces and 97-128 decayed surfaces were present in 1patients (0.0%) each. (figure 3). The association between gender and decayed surfaces of the study population was found to be statistically insignificant with $p>0.05$. (figure 4) (chi square test).

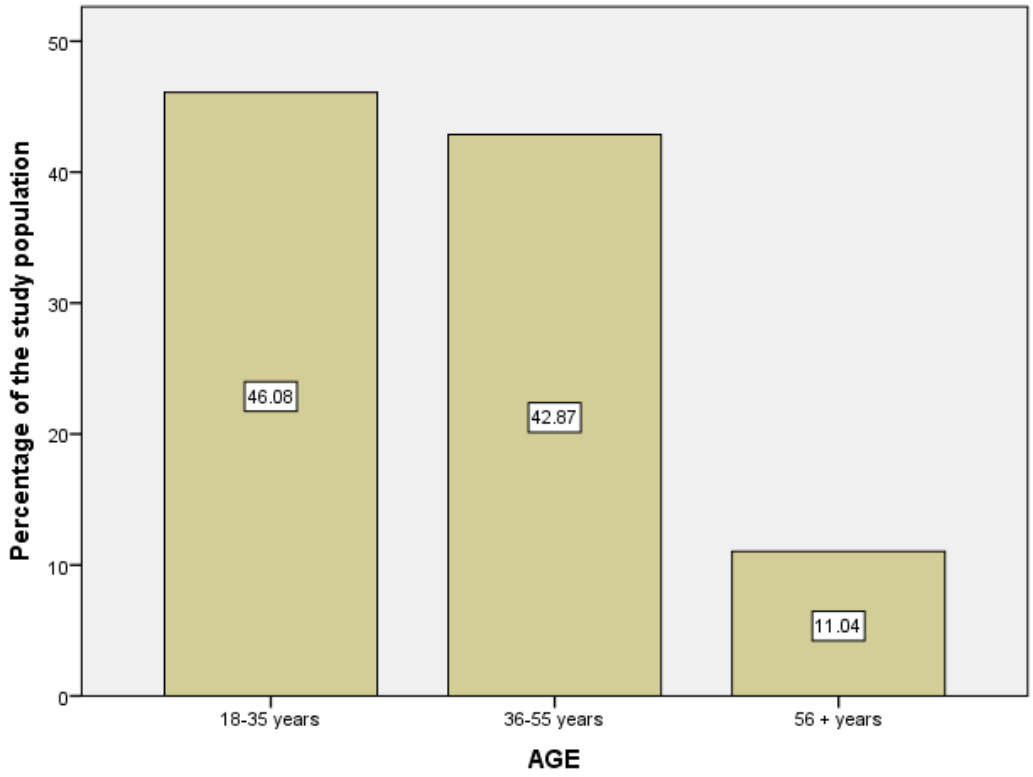

Figure 1: Bar chart showing age wise distribution of the study population. x-axis represents the age of the study population and y-axis represents the percentage of the study population. About 46.1% belonged to 18-35 years followed by 36-55 years having 42.9% and above 56 years having 11%. It is evident that 18-35 years has the highest prevalence.

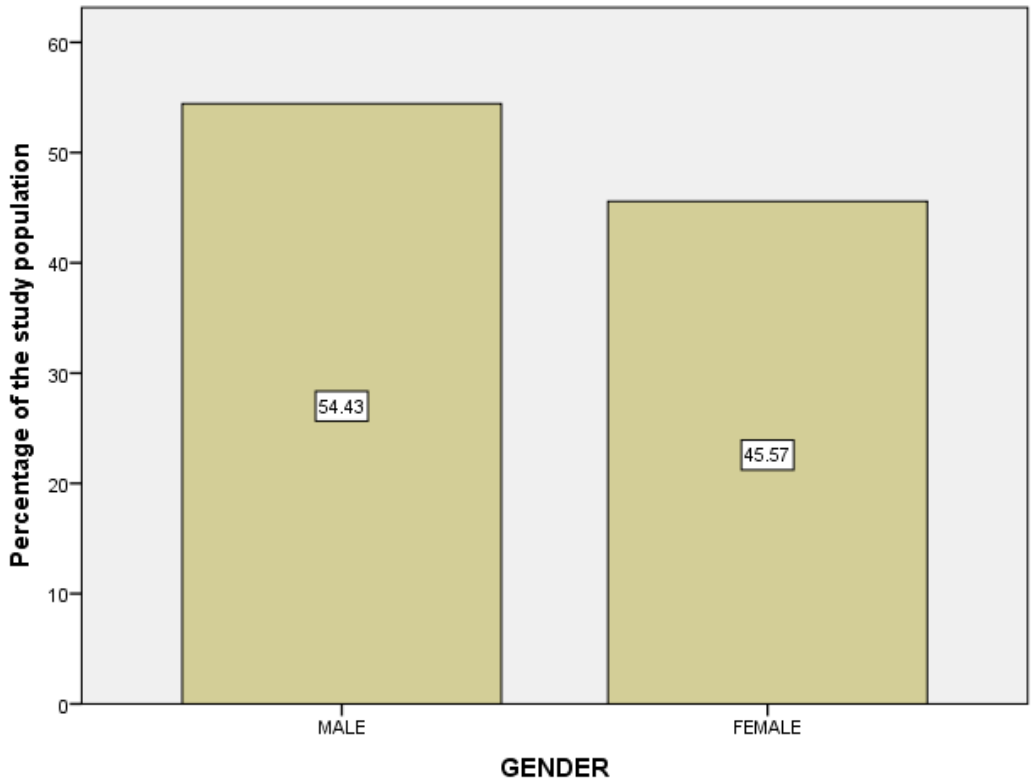

Figure 2: Bar chart shows the gender distribution of the study population where gender is represented on the x axis and the percentage of the study population is represented on the y-axis . About 54.4% of the study population were males and 45.6% were females suggesting male predominance.

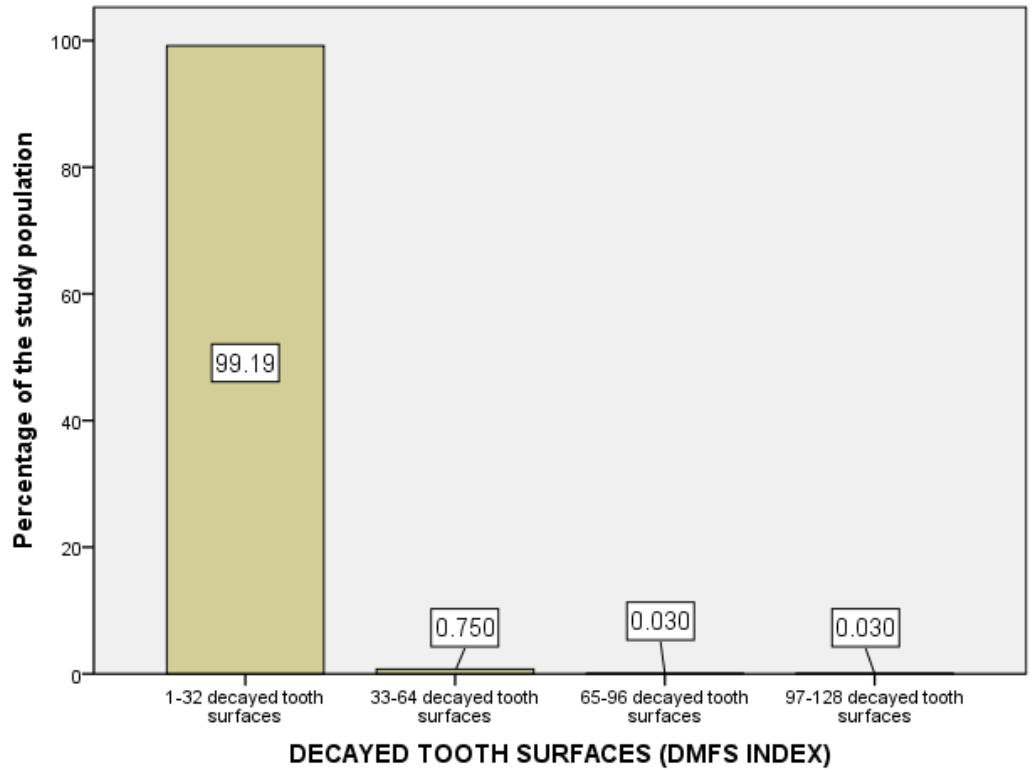

Figure 3: Bar chart representation of decayed tooth surfaces based on DMFS index among study population. X axis represents the decayed surfaces and the percentage of the study population is represented on the y-axis.

About 99.19% of the study population had 1-32 decayed surfaces followed by 33-64 decayed surfaces of about 0.8% following which 65-96 decayed surfaces and 97-128 decayed surfaces having 0.03% each. 1-32 decayed tooth surfaces were most prevalent among the study population.

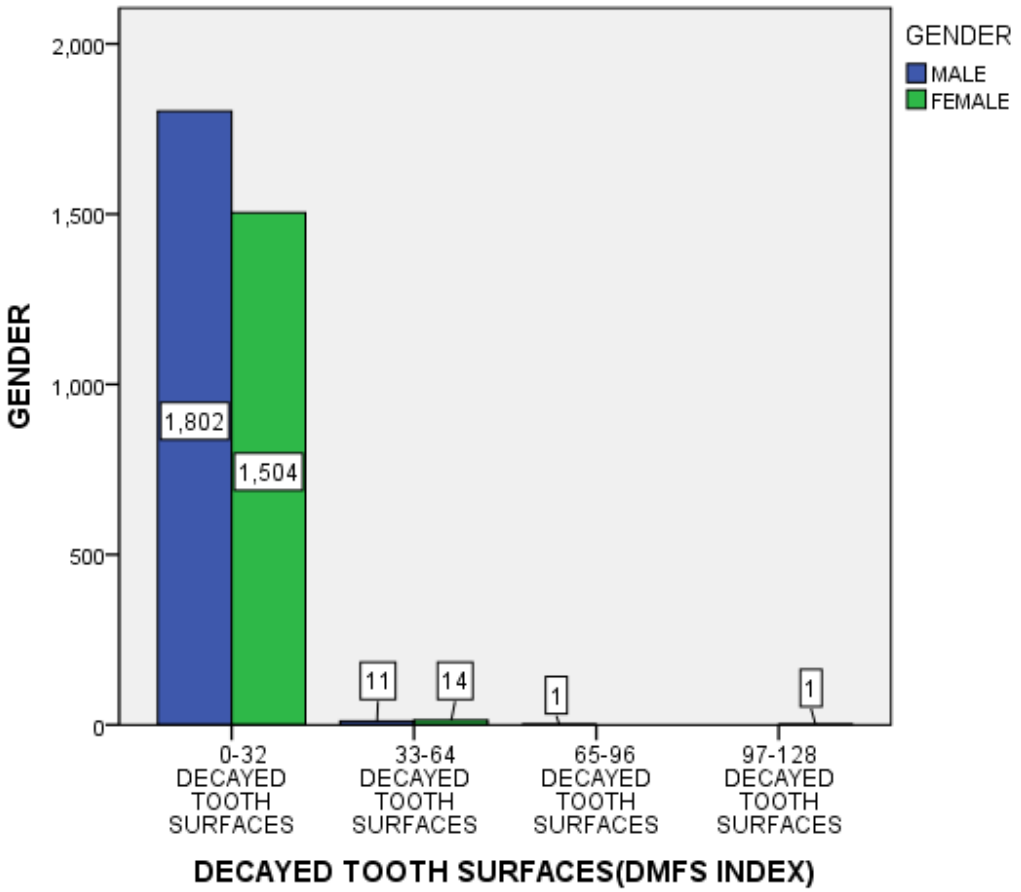

Figure 4: Clustered bar graph showing the association of gender with decayed tooth surfaces based on DMFS index. X axis represents the decayed surfaces and Y axis represents the gender, where blue represents males and green represents females. There was no significant association between gender and decayed tooth surfaces of the study population. (Pearson chi square test; p value=0.3; statistically non significant p>0.05) About 1802 out of 1814 male study participants, accounting for 99.33% and 1504 out of 1519 female participants accounting for 99.01% had 1-32 decayed tooth surfaces. However, there was no significant statistical association between gender and decayed tooth surfaces.

DISCUSSION:

The data for this retrospective study was based on residents of Chennai seeking treatment at Saveetha Dental College, Chennai. Currently there are no existing studies investigating the correlation of gender with decayed surfaces. Since all the data was included without a sorting process, no bias was expected in the selection of patients. The current study is done to compare the gender associated with the decayed tooth surface.

In the current study,the age group which had a higher prevalence for decayed surfaces was 18-35 years age group (46.08%**)** followed by the 36-55 years age group (42.87%)**.** In a study done by Binod K Et Al 2007, stated that young adults had more caries prevalence than older adults.[28] In another study by Blerimk Et Al 2006, it was noted that the highest prevalence of dental caries was found to be in the 18-35 years group. [29]

According to the current study, as the age increases, the prevalence of caries decreases and this is in concordance with many pieces of literature. [30,31] This holds true as with age the incidence of tooth loss increases as compared with decayed and missing teeth. The present study does not observe any significant sex differences in the prevalence of decayed surfaces. In the current study, there were more male participants than female participants. (54.4%) and (45.6%) respectively. However, in a study by Mamai E et al, stated that caries risk in both males and females was the same. [30]Currently, the caries experience between the study seemed to reduce during the past few years.

Females generally pose a positive behavior than males concerning the brushing frequency. Females usually care more about their body and appearance and therefore they might be more concerned about adopting behaviors and habits which promote their dental health.It is also seen that females have better dental knowledge and better oral hygiene than men.[32,33]. Patients must be educated about the importance of prophylaxis treatment in the early age of life to prevent dental decay. The majority of the study participants were males. This might bias the study results, as the sample taken is not representative of the population. Also, this study has geographic limitations and the additive flaws of the DMFS index lowers the credibility and increases the potential for human error while recording scores.Thus the interpretation of results of the study must be done keeping the above limitation in mind.

CONCLUSION:

Within the limit of the study, decayed tooth surfaces based on the DMFS index was most common among 18-35 years old study participants. With relation to gender, male study participants had a higher prevalence of decayed surfaces than female study participants. However, no statistically significant association was found for the prevalence of decayed tooth surfaces and gender.

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AUTHOR CONTRIBUTION:

Author 1 (Shivani.N) carried out this retrospective study by collecting data and drafted the manuscript by performing the necessary statistical analysis. Author 2 (Leelavathi.L) aided in the conception of the topic, has participated in the study design,statistical analysis and has supervised in the preparation of the manuscript. All the authors have discussed the results among themselves and contributed to the final manuscript.

CONFLICTS OF INTEREST:

None declared.

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