RETROSPECTIVE ANALYSIS OF INCIDENCE OF DENTAL CARIES IN ANTERIOR TEETH BETWEEN DIABETIC AND NON DIABETIC PATIENTS

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ABSTRACT:

Introduction: Diabetes mellitus (DM) is a common chronic metabolic disorder which affects millions of people. Oral cavity and contagious structures can be dramatically affected by diabetes. However, there is a lack of consensus among researchers regarding the relationship between DM and dental caries. Hence, the present study was carried out to assess the anterior teeth caries prevalence among diabetic and nondiabetic adults.

Materials and methods: It is a retrospective, cross sectional study conducted among patients visiting a University dental hospital in Chennai. Microsoft Excel was used for tabulation of the parameters and then the data was exported to the SPSS software version 20.0. Descriptive statistics and relation between variables was determined using the chi square test, where $p<0.05$ was considered statistically significant.

Results: In the present study, The most common age group was 28-37 years (33.9%) . The most common gender was found to be male (64.0%). Most of the patients were non diabetic (71.8%) . Most of the patients had caries in both anterior and posterior teeth (33.9%). Majority of the non-diabetic patients had caries in anterior teeth (26.6%) whereas diabetic patients had dental caries in both anterior and posterior teeth (28.2%).

Conclusion: Within the limits of the study, Majority of the non-diabetic patients had caries in anterior teeth whereas diabetic patients had dental caries in both anterior and posterior teeth .

Keywords: anterior teeth, diabetes, anterior dental caries, innovative technique

INTRODUCTION:

The impact of oral health on general health and well-being is well documented (1). Poor oral health can cause consid- erable pain and suffering, dietary restrictions, poorer qual- ity of life, aesthetic dissatisfaction, social stigma due to oral disease (2), and reduction in social engagement (1).

Beyond the individual, poor oral health contributes to several social ills, including loss of productivity (3) , inappropriate use of emergency departments (4) , inability of military forces to deploy (5), and underemployment and unemployment (3,6) . Poor oral health may also reduce participation in the workforce due to poor appearance and low self-esteem (7–11) . This

reduction in workforce participation, especially if long term, may be a signal of low productivity and deteriorated skills (12) .

Few studies have examined the impact of dental health on employment. One study found 26 percent of the employed population lost time from work due to dental problems (13). Physical appearance influences social interaction (2,11) . The mouth and teeth are important elements in appraising a person's physical appearance, a key signaling of someone's qualities and productivity (2,11,12).

The oral cavity structure can be affected by diabetes, which may result in several complications including dental caries, periodontal disease, oral mucosal diseases, and saliva dysfunction that have a significant effect on the quality of life of diabetic patients. Also, untreated oral diseases may increase the risk of poor metabolic control (14) . The relationship between diabetes and dental caries has received the attention of researchers because both of the diseases are associated with carbohydrates. The insulin deficiency in diabetes may lead to hyposalivation and elevated salivary glucose levels, which may put diabetic patients at a high risk of caries development (15) .

The aim of the study is to determine the incidence of dental caries in posterior teeth between diabetic and non diabetic patients. Our team has extensive knowledge and research experience that has translate into high quality publications(16–25),(26–29),(30–34) (35)

MATERIALS AND METHODS:
The present study is a retrospective study. This study was approved by the institutional ethnic board.
Data Collection
A single calibrated examiner evaluated the digital case records of patients who reported to Saveetha Dental College from June 2019 to March 2021. For the present study, inclusion criteria was data of patients with dental caries .
Inclusion criteria:
- Patients with dental caries
- Patients who are diabetic or non diabetic

Exclusion criteria:
- Patient with no dental caries
- Incomplete data

The retrospective study was carried out with the help of digital case records of 1114 patients who reported to the hospital. Ethical clearance to conduct this study was obtained from the Scientific Review Board of the hospital.
Data analysis

The collected data was tabulated and analysed with Statistical Package for Social Sciences for Windows, version 20.0 (SPSS Inc., Vancouver style) and results were obtained. Categorical variables were expressed in frequency and percentage. Chi square test was used to test association between categorical variables. Chi square tests were carried out using age, gender as *independent variables* and diabetes and location of caries as *dependent variables* . The statistical analysis was done by pearson chi square test. P value < 0.05 was considered statistically significant.

RESULTS:

In the present study, The most common age group was 28-37 years (33.9%) **(Figure 1)**. The most common gender was found to be male (64.0%) **(Figure 2)**. Most of the patients were non diabetic (71.8%) **(Figure 3)**. Most of the patients had caries in both anterior and posterior teeth (33.9%)**(Figure 4)**. Majority of the non diabetic patients had caries in anterior teeth (26.6%) whereas diabetic patients had dental caries in both anterior and posterior teeth (28.2%) **(Figure 5)**.

DISCUSSION:

Diabetes mellitus (DM) is a chronic metabolic disease characterized by hyperglycemia due to either a deficiency of insulin secretion or resistance to the action of insulin or both (36,37) . Chronic hyperglycemia leads to different complications in various regions of the body including the oral cavity, so blood glucose control is very critical (14) . The oral manifestations and complications related to DM include dry mouth (xerostomia), tooth decay (including root caries), periapical lesions, gingivitis, periodontal disease, oral candidiasis, burning mouth (especially glossodynia), altered taste, geographic tongue, coated and fissured tongue, oral lichen planus (OLP), recurrent aphthous stomatitis, increased tendency to infections, and defective wound healing (14,15,36–40) . The intensity of diabetic complications is usually proportional to the degree and duration of hyperglycemia (15) .

In the present study, The most common age group was 28-37 years (33.9%) (figure 1). The most common gender was found to be male (64.0%) (figure 2). Nowadays, young people are found to be more affected by dental caries due to maintaining poor oral hygiene. Male patients were found to be more affected by caries according to a study by Kanjirath (41). Most of the patients were non diabetic (71.8%) (Figure 3). Most of the patients had caries in both anterior and posterior teeth (33.9%)(figure 4).

Majority of the non diabetic patients had caries in posterior teeth (34.5%) whereas diabetic patients had dental caries in both anterior and posterior teeth (28.2%) (figure 5). The prevalence of dental caries was significantly lower among diabetic patients than nondiabetic patients. On the contrary, Several other authors have reported similar findings (41–46) while some authors have reported no difference (47–49) and few have reported low prevalence of dental caries among diabetics (50,51) .

It must be emphasized that the results of this study may not be directly comparable with the results of others. This is due to many differences such as the population size and selection criteria for diabetic and nondiabetic groups. Because this was a hospital-based study, the results may not be generalized which suggests a larger scale, community level research in this field.

CONCLUSION:

Within the limits of the study, Majority of the non diabetic patients had caries in anterior teeth whereas diabetic patients had dental caries in both anterior and posterior teeth . This study aims in determining the incidence of dental caries in anterior teeth among diabetic patients and also to create awareness on diabetes as a cause for various oral hygiene disorders.

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Conflict Of Interest:

 There was no potential conflict of interest.

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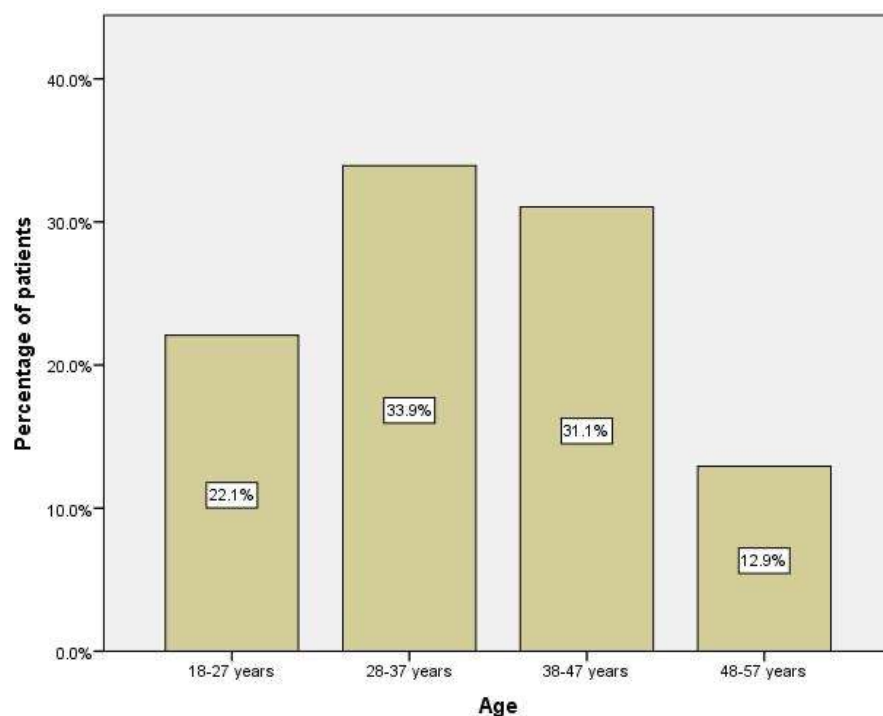
Figure 1: Depicts the age group of patients with dental caries . The X axis depicts the age and Y axis as the percentage of patients. The most common age group was 28-37 years (33.9%).
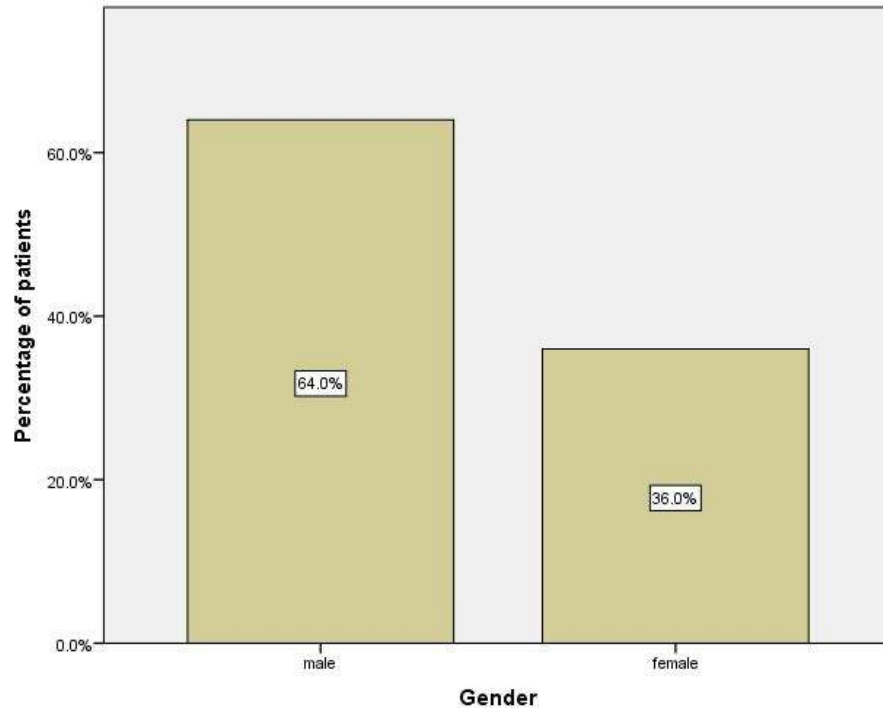
Figure 2 :Depicts the gender of patients with dental caries . The X axis depicts the gender and Y axis as the percentage of patients. The most common gender was male (64.0%).
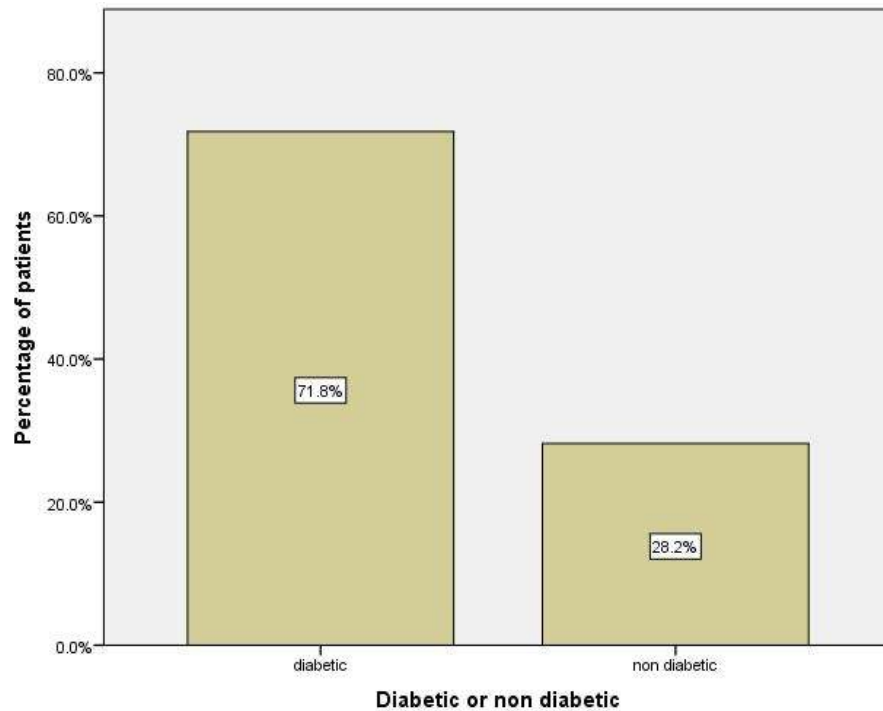

Figure 3:Depicts the diabetic or non diabetic status of patients with dental caries . The X axis depicts whether the patient is diabetic or non diabetic and Y axis as the percentage of patients. Most of the patients were non diabetic (71.8%).
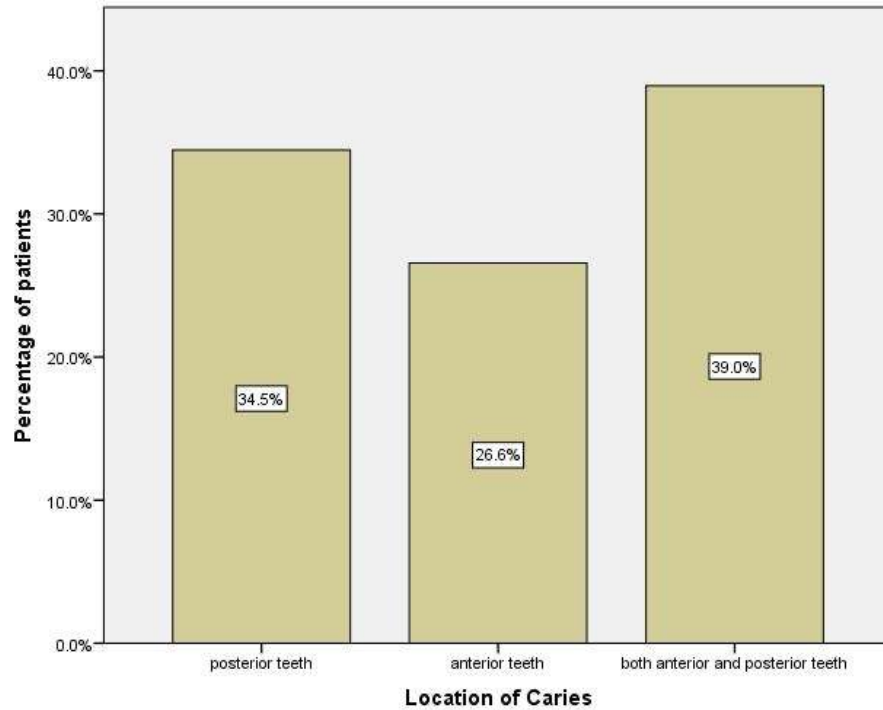
Figure 4:Depicts the location of the dental caries of patients . The X axis depicts the location of the dental caries and Y axis as the percentage of patients. Most of the patients had caries in both anterior and posterior teeth (33.9%).
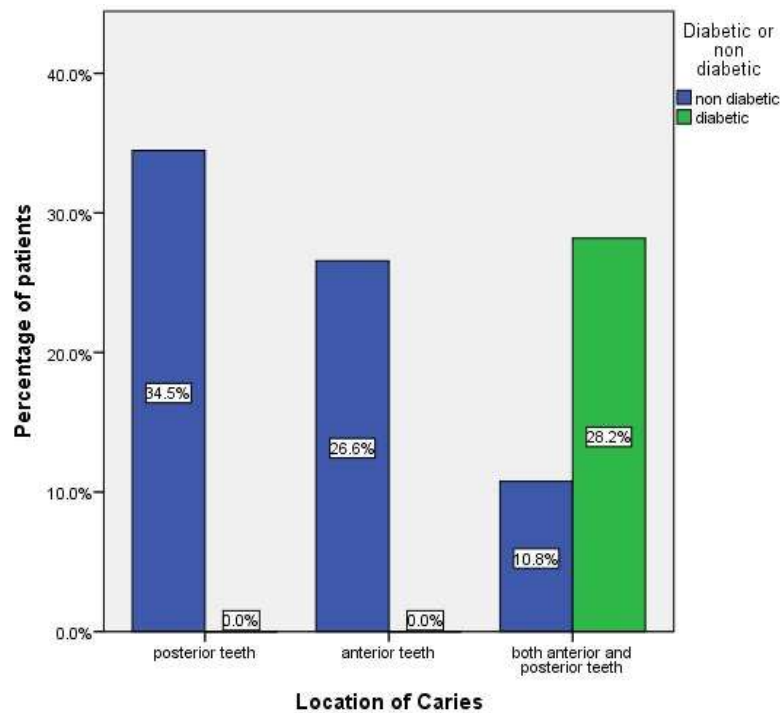

Figure 5: Shows the association between location of caries and whether the patient is diabetic or non diabetic . The X axis represents the location of dental caries and Y axis the percentage of patients .Blue bar denotes necrotising sialometaplasia, green denotes sialadenitis and

brown denotes sialolith . Majority of the non diabetic patients had caries in anterior teeth (26.6%) whereas diabetic patients had dental caries in both anterior and posterior teeth (28.2%). However, there was a significant difference between location of dental caries and whether the patient is diabetic or non diabetic . Pearson Chi square test, p =0.000 (p<0.05, statistically significant).