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COMPLETELY EDENTULOUS PATIENTS AND ASSOCIATION WITH DIABETES - A RETROSPECTIVE STUDY

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Abstract

Introduction: *Diabetes mellitus is a disorder in which blood sugar (glucose) levels are abnormally high because the body doesn't produce enough insulin to meet its needs. Patients with Poorly controlled diabetes are at greater risk of dental problems. Classified as type 1 and type 2, the cardinal signs seen are polydipsia, polyphagia, polyurea.*

Materials and Method: :*The data were obtained from the patients who reported to Saveetha Dental college during the time period of June 2019 –March 2020.Records of the patient and their history were obtained . Data of patients with complete dentures were identified and the history was taken.A total of 40 diabetic complete denture patients were identified ,all the relevant data extracted and analyzed . The results were analyzed using SPSS software version 2.0 by BM.*

Result: *The data collected from the patients management software were tabulated in SPSS and descriptive statistics were obtained. Out of the total 40 patients, 24 were male patients and 16 were female patients. In which they were ranging from 45 years to 50 years in age. The most common age range for diabetes in completely edentolous patients were seen in 47-50 years of age with 37.50% prevalence. Male complete denture wearers (60%) were more prevalent to diabetes than females (40 %)*

Conclusion: *Our study assessed the prevalence of diabetes in completely edentulous patients, the overall results showed that male edentulous patients were more diabetic and were ranging from the age 45 years of age to 50 years of age. This study will help to create more awareness regarding diabetes patients who enter the clinic and methods of safe treatment*

Keywords : *Complete denture , Diabetes mellitus ,Glucose, insulin,patients*

Introduction

Diabetes Mellitus is a disease of glucose, fat and protein metabolism resulting from impaired insulin secretion. (1) Hyperglycemia is the most clinically important metabolic aberration in diabetes mellitus and the basis of diagnosis. Management of the diabetic dental patient must take into consideration the impacts of diabetes on dental disease and dental treatment (1)Diabetes is classified type1 or type 2, type 1 insulin dependent, from childhood called Juvenile diabetes. Type 2 is non insulin dependent occurs only after the age of 40 years (2)

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The number of people with diabetes is proportionately increasing due to population growth, aging, urbanization and increased prevalence of obesity and physical inactivity. Quantifying the prevalence of diabetes and the number of people affected by diabetes and the prevalence of diabetes it is important to allow rational planning and allocation of resources .[(3),(4),(5)]

India has acquired the label of ageing nation, data available suggest that 50% of the Indian elderly suffer from one or more chronic disease with the prevalence of the disease increasing with age [(6),(7),(8)]The tooth selection should be made during the trial insertion stage of the denture and should be confirmed through consultation with the patient for any suturing so that infection to oral cavity will be prevented The susceptibility to periodontal disease is the most common oral complication of diabetes [((9)]

Removable acrylic resin partial dentures tend to adversely affect periodontal parameters when teeth are in contact with resin base, it is recommended to keep the dentures well relieved from the gingival margin so that infection Elevated glucose levels have also been associated with an increased probability of patients with diabetes presenting periodontitis compared with non-diabetic patients and can influence outcome of prosthodontic treatment[(10-23)]The purpose of the study was to compare diabetic and non diabetic patients wearing complete dentures with regards to salivary flow, salivary buffering capacity denture retention and oral mucosal lesion

Material and Method

The study is done under a university setting. The similar characteristics of the study is that it is done under available date and under similar ethnicity of the population. The disadvantage of the study can be the geographical location.The study was approved by the institutional ethics board. Two reviewers are involved in the study. The data were taken from patients who checked in Saveetha Dental college during the time period of June 2019 –March 2020.

Records of the patient and their history were obtained . Data of patients with complete denture and the history was taken. Chief complaint of each patient, History of presenting illness and statistical analysis was done.The obtained data were tabulated and entered in the MS excel sheet.The data collection was imported to the SPSS variable definition process and was done using tables and graphical illustration.

By using the statistical software IBM SPSS version 20. Statistical tests like descriptive statistics tests and inferential statistics were done keeping demographics. Such as age, gender as independent variables and diabetes dependent variables.

Descriptive (mean, standard deviation and percentage) and inferential test (chi-1 square test) were done and the results were obtained and tabulated.

Result

The data collected from the patients management software were tabulated in SPSS and descriptive statistics were obtained. Out of the total 40 patients, 24 were male patients and 16 were female patients. In which they were ranging from 45 years to 50 years in age. The most common age range for diabetes in completely edentolous patients were seen in 47-50 years of age with 37.50 % prevalence. Males were 60 % more prevalent to diabetes with complete denture than females who were 40 %. So from this study we were able to evaluate the prevalence of diabetes in completely edentolous patients who visited Saveetha Dental college from the month of june 2019 to march 2019.

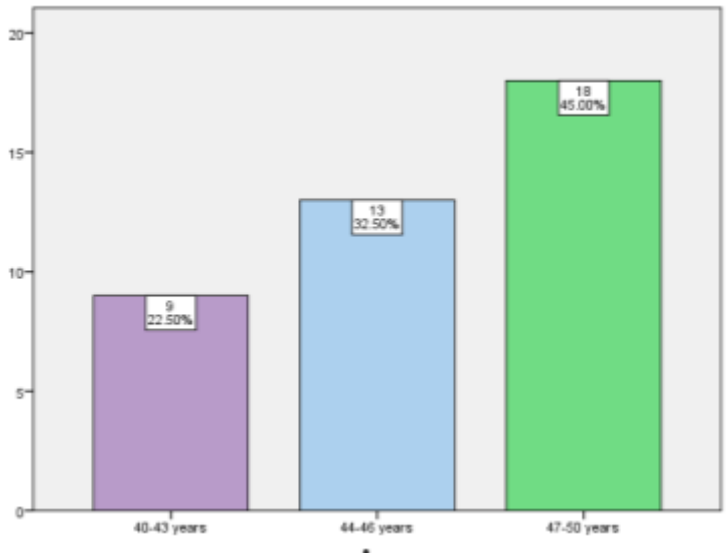

Figure 1:The graph shows the age distribution of diabetic completely edentulous patients . X axis shows the age groups and the Y axis shows the number of diabetic patients with complete denture . 22.50% were in age range 40-43 years(purple) , 32.50% were in age range 44-46 years(blue) and 45% were in age range 47-50 years.(green)

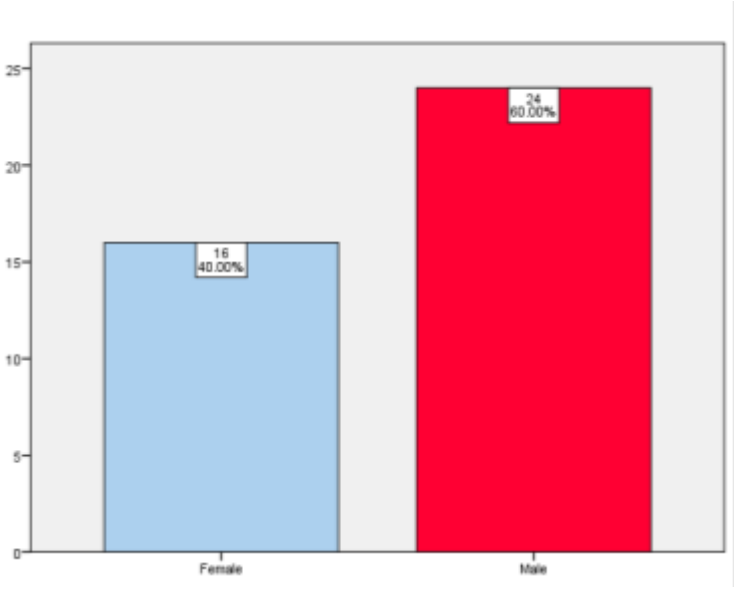

Figure 2: The graph shows gender distribution of diabetic completely edentulous patients . X Axis shows the gender of diabetic completely edentulous patients and Y axis shows the number of diabetic patients with complete denture . 60% of patients were males (red) and 40% were female (blue).

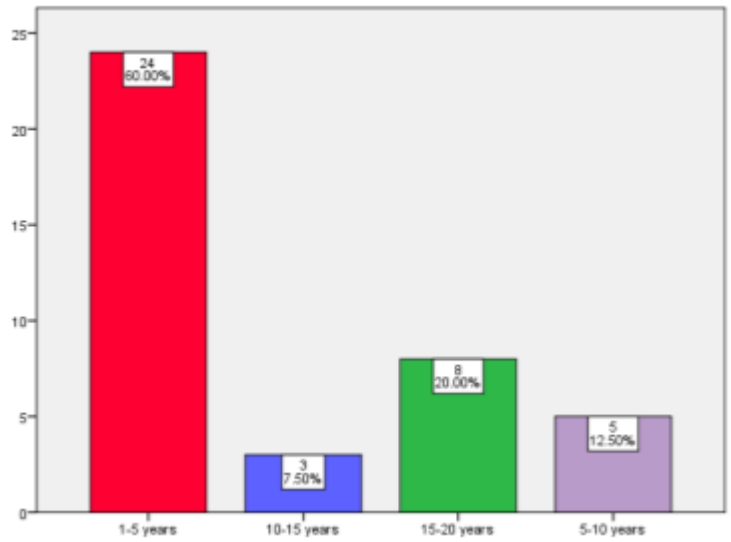

Figure 3: The graph shows history of diabetes in completely edentulous patients .X axis shows relative history of diabetes and Y axis shows the number of diabetic patients with complete denture 60% have diabetes for the past 1-5 years, (red) 12.50% have for the past 5-10 years (purple). 7.50% have for the past 10-15 years (blue), 20% have for the past 15-20 years (green)

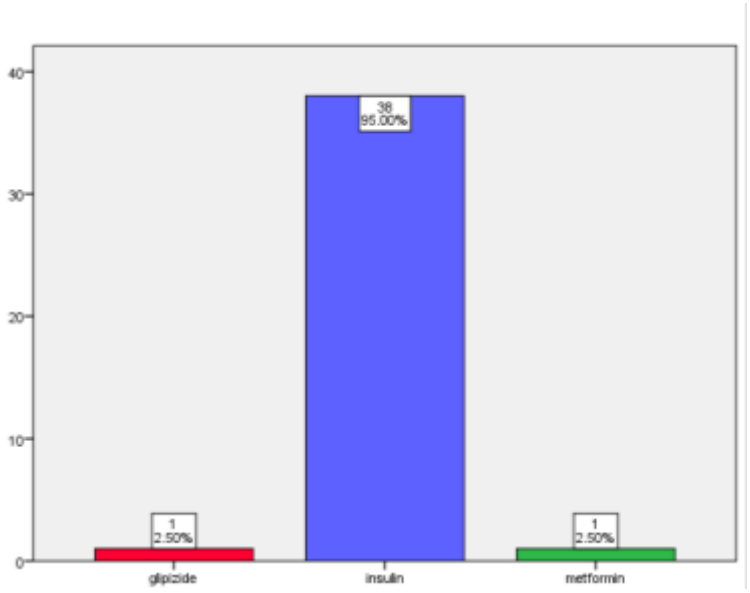

Figure 4: The graph shows the medication used for diabetes in completely edentulous patients . X axis shows anti-diabetic therapy and Y axis shows the number of diabetic patients with complete denture . 95 % of patients were under insulin(blue) , 2.50% were under metformin (green) and 2.50% were under glipizide (red).

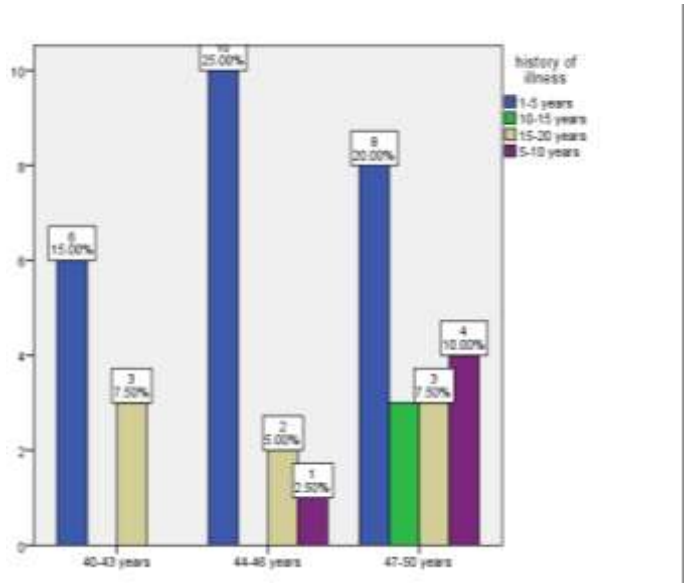

Figure 5 :Bar Graph showing relation between age and history of illness . X axis gives the age of completely edentuous patients and Y - axis represents the number of patients with diabetic illness . The age group more prevalent to diabetes were ranging from 47 years to 50 years of age (37.50%) compared to other age groups with a statistically significant difference(Pearson Chi square Test; P=0.01P<0.05).

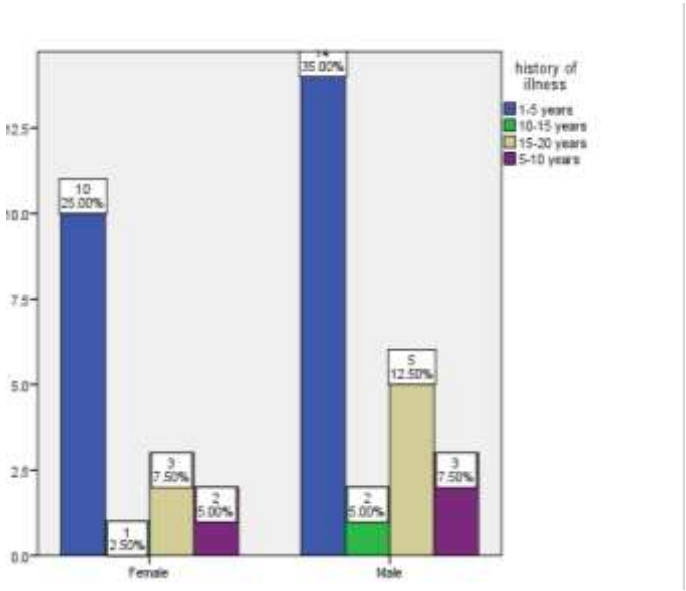

Figure 6 : Bar Graph showing relation between gender and history of illness . X axis gives the gender and Y - axis represents the number of patients with a history of illness . Female (40%) completely edentulous patients were more prevalent to diabetes than male (60%) completely edentulous patients with a statistically significant difference p=0.01 (Pearson Chi square Test; P=0.01P<0.05).

Discussion

Prevalence of diabetes in completely edentulous patients in this study was less compared to previous study analysis. The use of antidiabetic[24] agents, higher glucose levels in older patients can be due to increased insulin resistance observed in this age group. However, after adjusting for age, the results remained statistically significant and clinically relevant. It can be hypothesized that older adults may have presented with diabetes for a much longer period compared with the younger age groups.

Although diabetes duration was not evaluated in this study, it is known that the longer the diabetes duration the worst are the complications associated with it.[25] Thus, older patients may present with greater duration of the disease and consequently have also been exposed to periodontopathogens for a longer period, presenting signs of periodontal disease, and a faster disease progression leading to tooth loss.

Nonetheless, the causes of tooth loss were not investigated in this study. It can also be hypothesized that patients with diabetes who are negligent with their overall health could also be negligent with their oral health, and present with more complications associated with diabetes[26].Another factor that could have contributed to the finding of edentulism in older groups is that until the late 1980s the dental service offered by the public health system in Brazil was, in the vast majority, tooth extraction.

A very important aspect of this population was its characterization. All individuals used the Brazilian healthcare system, were diabetic and used some type of antidiabetic medication to control the disease. The patients were residents of the urban area of the same city and it was assumed that everyone had the same eating habits, living conditions, overall quality of life and socioeconomic statu[s.(1)]Another important topic was the fact that they were all non-smokers. Smoking is a risk as well as a detrimental factor for both diabetes and periodontal disease[27].Since the study population consisted of non-smokers, it is possible to infer that smoking did not influence the onset and course of both conditions, which is highly recommended when evaluating the relationship between systemic diseases and their risk factors.[1]

Patients were found to be diabetic from the age 45- 50 years.It was also found that the male edentulous patient.Age and female gender were significantly correlated in both older and younger age groups. In those ≥50 years old, lower education, smoking, arthritis, asthma, diabetes were also significantly associated with edentulism.[28]Countries with high overall edentulism prevalence rates also tended to have higher rates in the younger age group. Only a limited number of published studies have reported on the trans-national prevalence of edentulism in older individuals and only one study has reported rates of edentulism in younger persons[29]

Out of the total sample size (40 cases) results value obtained were, males constituted 60% and female 40% and also that increased age of male has higher incidence of diabetes than in female populationIn association with age it was found the age range was from 45 years to 50 years of age.A study by Varon F , Mack-Shipman had similar results he had stated that diabetes generally occurs after the age of 40 years and it's prevalence increases with age with maximum peak between 65 years-75 years [8]In association with gender it was found that male patients had prevalence of diabetes incomplete denture than female patients.

A study by Srinivasan K, had similar results, stating that diabetes was the second most prevalent medical illness and was reported to be seen among both genders mostly among men.[30]However there were few limitations encountered in this study. This study had geographic limitation i.e assessment of predominantly South Indian population.Furthermore the study was unicentered with the sample size collected in a relatively small population.The scope of the study was to create awareness regarding diabetes and their prevalence in completely edentulous patients.Diabetes screening would be recommended for edentulous patients. Further longitudinal studies, controlling for confounding factors and possibly for periodontitis inflammatory markers, are necessary in order to clarify the relationship between type 2 diabetes, and tooth loss.

Conclusion

This study is conducted to find out the association of diabetes in completely edentulous patients, the overall results showed that diabetes mellitus is a cofactor in male edentulous patients compared with females, and predominance is found in male patients aged between 45 to 50 years. This study will help oral prophylaxis and to create more awareness regarding the medical management of diabetes in preventing complications .

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Authors Contributions:

Author 1 (Debarun david) carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis . Author 2 (Dr. Dhanaraj) aided in conception of the topic , has participated in the study design , statistical analysis and has supervised in preparation of the manuscript . Author 3 (Dr Manjari) has participated in the study design and coordinated in developing the manuscript . All the authors have discussed the results among themselves and contributed to the final manuscript

Conflict of Interest : None

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