

Oral Mucosal Complications and Oral Hygiene Practice Among Diabetic and Non-Diabetic Patients

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ABSTRACT

Diabetes mellitus is a group of metabolic conditions categorized by anomalous secretion of insulin and metabolic activity. It goes without saying that the general health and oral health are related with each other.

Aim: The aim of the analysis was to evaluate oral complications in patients with and without diabetes, as well as to evaluate oral knowledge and practice.

Place and Duration: In the dental department of Ayub Medical College, Abbottabad and Islamic International Dental College, Islamabad for six-months duration from July 2021 to December 2021.

Methods: The study was conducted on diabetic and nondiabetic women and men who came to the dental hospital for dental and oral treatment. The researcher asked questions orally in Urdu and complete the questionnaire form which comprised the dental, oral hygiene and diabetic related questions. 180 total people (100 diabetic patients and 80 non-diabetic patients) answered the questionnaire. The patients sample mean age was 48.20 (SD 7.10), diabetic patients mean age was 47.2 (SD 7.05), and non-diabetic patients mean age was 47.80 (SD 7.10). The patients age range varies from 30 to 70 years of age. 41.7% of the patients were women and 58.3% were men.

Conclusions: The survey showed that the awareness, practice and oral health of patients with diabetes in our community are poor. Information on oral health was lacking in both the diabetic and nondiabetic groups.

Keywords: awareness, diabetes, knowledge, oral health

INTRODUCTION

Diabetes mellitus is a metabolic disease that occurs with hyperglycemia and intolerance to glucose because of insulin deficiency or impaired insulin function¹⁻². Diabetic retinopathy, nephropathy, cerebrovascular accidents, coronary heart disease and impaired healing of wound are the main symptoms in patients with chronic and uncontrolled diabetes³⁻⁴.

According to estimates by the World Health Organization, in 2014 there were about 42.2 billion diabetics in the world who were > 18 year of age⁵. From the end of the twentieth century, it was considered a public health problem, and its prevalence in low and middle-lying countries is rising as compared to the high-income countries⁶. Periodontitis, which occurs 2-3 times much often in patients with diabetes as compared to the people with standard glucose levels, additional communal oral symptoms related with diabetes are tooth loss, gingivitis, burning in the mouth, hyposalivation and taste alteration⁷⁻⁹. Reduced saliva production from the salivary glands decreases the capability to clean the oral cavity, leading to dry mouth, which in turn rises the proportion of formation of plaque on the teeth and gum surfaces, and subsequently raises the jeopardy of gingivitis, periodontitis and caries⁹. Various researches exhibited that the most communal symptom of oral cavity in diabetic patients is dry mouth. Oral practices for hygiene like multiple brushing, regular dental visits and using dental floss have an optimistic impact on periodontal well-being and control glycemic status¹⁰⁻¹¹. Dental hospitals are friendly places for screening tests for diabetes, where people may come for regular treatment and dental follow-ups¹². There is a lack of information on the consequences of diabetes and complications in the oral cavity among diabetic patients¹³. The research will help healthcare providers to intervene, improve and provide oral health education for diabetic and nondiabetic patients, thereby treating diabetes and eventually enhancing life quality. The aim of the analysis was to evaluate oral complications in patients with and without diabetes, as well as to evaluate oral knowledge and practice.

METHODOLOGY

A cross-sectional survey study was conducted on diabetic and nondiabetic women and men who came to the dental hospital for dental and oral treatment for the duration of six-months from July 2021 to December 2021. Due to the short duration of the study,

participants were recruited using the convenience technique of sampling, an equal number of participants was divided into two groups, and the study included 100 diabetic and 80 non-diabetic patients. Diabetes. The criteria of selection were defined as being over 18 years of age. The females with gestational diabetes were excluded. A self-structured questionnaire was added based on previously published articles and interesting variables to create a questionnaire consisting of information from patients gender, age, information about diabetes, i.e. the impact of diabetes on overall health, and the impact of diabetes on health, patient interest in understanding the oral cavity, brushing habits, frequency of brushing, brushing, smoking, self-assessment of gingival bleeding during dental visits, and the impact of diabetes on overall health and oral health. The questionnaire also included questions about the patient's dry mouth, burning sensation in the mouth and taste disturbances. The professional dentists collected the data from all patients in face-to-face interviews. The researcher asked questions orally in Urdu and complete the questionnaire form which comprised the dental, oral hygiene and diabetic related questions. The hospital ethical committee approved the study and informed Consent was taken with privacy of the study outcomes also ensured to the patients. The statistical analysis was accomplished by calculating descriptive statistics from the data. For categorical variables, the standard deviation and mean for frequency, percentage and age were calculated. The chi-square test was applied to analyse the alterations in information between dental patients with and without diabetes. The Social Sciences Statistics Package (SPSS) version 20 is applied for statistical analysis and data entry.

RESULTS

180 total people (100 diabetic patients and 80 non-diabetic patients) answered the questionnaire. The patients sample mean age was 48.20 (SD 7.10), diabetic patients mean age was 47.2 (SD 7.05), and non-diabetic patients mean age was 47.80 (SD 7.10). The patients age range varies from 30 to 70 years of age. 41.7% of the patients were women and 58.3% were men.

As can be seen in Table-I, burning sensation in the mouth, dry mouth and alteration of taste were higher in diabetics compared to non-diabetics, and the changes perceived among these 2 groups were statistically significant with p-value < 0. 01.

The variation in knowledge of oral health and practices between diabetic and nondiabetics is accessible in Table-II.

Table 1: Differences of oral symptoms among non-diabetic and diabetic patients

Oral symptoms	Dental patients with Diabetes N=100	Dental patients without diabetes N=80	Total 180	P-value
Dry mouth				
Yes	43(43%)	11(13.8)	54(30%)	<0.01
No	57(57%)	69(86.2%)	126(70%)	
Burning mouth sensation				
Yes	60(60%)	15(18.8%)	75(41.7%)	<0.01
No	40(40%)	65(81.2%)	105(58.3%)	
Taste alteration				
Yes	68(68%)	20(25%)	88(48.9%)	<0.01
No	32(32%)	60(80.0%)	92(51.1%)	

Table 2: Practice and knowledge regarding oral hygiene among non-diabetic and diabetic patients

Variables	Dental patients with Diabetes N=100	Dental patients without Non diabetic N=80	Total 180	P-value
Diabetes effect on oral health				
Yes	23(23)	12 (15)	35 (19.4)	NS
no	72 (72)	56 (70)	128 (71.1)	
may be	5(5)	12 (15)	17(9.4)	
Brush your teeth regularly				
Yes	67(67%)	38 (47.5%)	105(58.3%)	< 0.01
No	33(33%)	42 (52.5%)	75(41.7%)	
How often brush teeth				
Once a day	64 (64%)	51(63.8%)	115(63.9%)	NS
Twice a day	25(25%)	25(31.2%)	50(27.8%)	
Once a week	11(11%)	4(5%)	15(8.3%)	
Bleeding during brushing				
Yes	48(48%)	40(50%)	88(48.9%)	NS
No	42(42%)	36(45%)	78(43.3%)	
sometimes	10(10%)	4(5%)	14(7.8%)	
Diabetes cause dental caries				
Yes	30 (30%)	11(13.8%)	41(22.8%)	NS
No	61(61%)	61(76.2%)	122(67.8%)	
May be	9(9%)	8(10%)	17(9.4%)	
Diabetes effect gingiva				
Yes	26(26%)	20(25%)	46(25.6%)	NS
No	74(74%)	60(75%)	134(74.4%)	
Learn information of diabetes from any source				
Yes	40(40%)	21(26.3%)	61(33.9%)	< 0.05
No	60(60%)	59(73.7%)	119(66.1%)	
Ever visited dentist for examination				
Yes	35(35%)	38(47.5%)	73(40.6%)	NS
No	65(65%)	42(52.5%)	107(59.4%)	
Smoke cigarette				
Yes	42(42%)	45(56.3%)	87(48.3%)	NS
No	54(58%)	32(40%)	86(47.8%)	
Sometimes	4(4%)	3(3.7%)	7(3.9%)	

DISCUSSION

Statistics from the diabetics and nondiabetic group exhibited that both groups had insufficient information of overall oral well-being¹²⁻¹³. Research on the awareness and knowledge of oral hygiene in patients with diabetes mellitus has shown that diabetic patients have deficiencies in this area. The analysis found that 48% of the patients with diabetes had dry mouth, which resulted in a statistically significant difference between the two groups¹⁴. Another study which has similar results found that 44% and 64% of the patients with diabetes have the common complaint of dry mouth due to less salivation. The link between diabetes and dry mouth has also been stated in additional studies. In one study of patients with diabetes, the outcomes contradict with our study, in which 5.4% of subjects testified dry mouth¹⁵⁻¹⁶. BMS is a chronic pain syndrome that has been testified with systemic ailments like diabetes and postmenopausal females¹⁷. In this analysis, 60% of the participants in the diabetic group had BMS, and 68% of the participants in the diabetic group had a taste impairment. In another study, the results contradicted ours, in which the pervasiveness of dysgeusia and BMS was 20% and 10%,

correspondingly¹⁸⁻¹⁹. In alternative study, alteration of alteration in controlled and uncontrolled diabetic patients was 28% and 44%, and BMS was 32% and 24%, respectively. Only 19.4% of participants in this study answered that diabetes affects oral health, 23% in the diabetic group and 15% in the non-diabetic group²⁰. The results of qualitative research on patients with diabetes showed that only 6% of respondents knew that diabetes is associated with complications in the oral cavity. The results were inconsistent with the results between the studies of diabetic patients in alternative analysis where the result was 77%. The following indicates that the diabetic participant may be poorly educated or unemployed about the oral aspect of diabetes²¹⁻²². The overall toothbrushing frequency among study participants was 58.3%. In the study, the one-time frequency of toothbrushing in diabetic patients was 64%, and 275% in diabetic patients brushed their teeth two-times. In additional research, 50% of participants brushed their teeth regularly, while 27.8% of participants brushed their teeth twice. Tooth brushing is considered to be an essential tool for maintaining proper oral hygiene and removing plaque from

the tooth surface in order to prevent tooth decay and periodontitis²³⁻²⁴.

CONCLUSION

The outcomes of the study exhibited that both those with diabetes and those without diabetes had insufficient knowledge about the impacts of diabetes mellitus on the oral cavity. Additional significant verdict from this study was that the diabetic group described more symptoms, such as burning sensation in the mouth, dry mouth, and altered taste, than the non-diabetic group. GPs and dentists should pay special attention to patients with diabetes. Early diagnosis, treatment and the provision of information about the impacts of diabetes on oral and general health can lessen the course of the disease and reduce complications of diabetes mellitus.

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