Oral Health Status of diabetic adult patients in selected tertiary level hospital

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Abstract:

This was a descriptive type of cross-sectional study on oral health status of diabetic adult patient in tertiary level hospitals. The study was conducted among diabetic patients of BIRDEM Hospital. Data were collected by semi-structured questionnaire and clinical examination. Oral examination were recorded by fill up the WHO oral health assessment form about dentition status and periodontal status. Oral health status was assessed by DMFT index (Decayed, Missing, Filled Teeth) to measure dental caries and periodontal index to measure gingival bleeding and periodontitis. Total 100 respondents were selected randomly for the study, This study found that among the diabetic patients majority of the respondents were housewife 68.0% and 13.0%of the respondents were service holder while very few of the respondents 5% were unemployed and 6% businessman. Regarding this study among the diabetic patients more than one third of the respondent's education level was primary passed 34.0% and 30.0% were illiterate while 15.0% and 11.0% were SSC and HSC passed respectively. Education of the respondents was significantly associated with diabetes status of the patient (p= <0.001, ÷=24.479).

Study shows among the respondents who were diabetic patient, maximum of the respondents were suffering from diabetes for more than 5 years and one third of the respondents were suffering from diabetes for more than 1 year and 13.0% of the respondents were suffering from diabetes for less than 1 year. One fourth of the respondents used injectable medicine 25.0% and 43.0% of the respondents used tablet while 31.0% of the respondents used both tablet and injectable medicine. Here 53.0% of diabetic patient had dental caries, 29.0% of the patient had gingivitis, 60.0% periodontitis, 40.7% of the had 4 to 5 mm periodontal attachment loss while only 2.9% of the them had 6 mm or more periodontal attachment loss. Missing teeth in diabetic patient was 47.0%. It is necessary to make the health professionals and the patients aware of the magnitude of problem and chalk out proper preventive procedures.

Introduction:

Diabetes mellitus is a silent epidemic which affects large number of people around the world and is directly related to the oral health status of the patients. It is the most common endocrine disorder or metabolic diseases characterized by elevated blood glucose levels (hyperglycemia) resulting from defects in insulin secretion, insulin action or both. According to the (WHO), at least 220 million people or 2.8% of the population worldwide suffer from diabetes. Its incidence is increasing rapidly, and is estimated that by the year 2030, this number will almost double. The greatest increase in prevalence is expected to occur in Asia and Africa. The increase in incidence of diabetes in developing countries follows the trend of urbanization and lifestyle changes (Wild et al, 2004). Diabetes can lead to changes in the oral cavity such as gum-related problems like gingival hyperplasia and periodontitis, dental decay, candidiasis. Some individuals notice a fruity (acetone) breathe and others report xerostomia (Chi et al 2010; hatch 1989).

Diabetes mellitus is the most common endocrine disorder. It is the result of a malfunction of insulin-dependent glucose and lipid metabolism (Loe 1993; grossi 2001.)

There are two major forms of diabetes mellitus:

- Type 1, which is caused by the destruction of pancreatic beta cells that produce insulin.

- Type 2, in which target tissues do not respond to insulin.

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Type 1 diabetes is considered an absolute deficiency of insulin and is commonly diagnosed at a young age. Type 2 diabetes is associated with insulin resistance and deficiency both, and is commonly diagnosed later in life.

Individuals with diabetes are more likely than non-diabetics to develop gingivitis and periodontal disease. (NEng J Med 2000, McKenna 2006, Southerland et al 2006, AAP 2006.) This holds true for both type 1 and type 2 diabetes (Loe 1993.)

Periodontal disease has been identified as a major complication of diabetes, along with cardiopathy, nephropathy, neuropathy, retinopathy and loss of distal extremities (Li et al 2000, hugoson et al 1989.) An increased level of glucose in the blood, along with the metabolic products of glucose, is thought to contribute to these complications (Thorstensson et al 1993, Emrich et al 1991).

Periodontal disease results from an immune response of an individual to chronic infection of gram-negative bacteria, which leads to the destruction of the periodontal tissues, including the gingiva, periodontal ligament and alveolar bone (sastrowijoto et al 1990). Risk factors for periodontal disease include the presence of specific subgingival microorganisms, smoking and diabetes mellitus (NEng J Med 2000)

The oral complications of uncontrolled diabetes mellitus are devastating. These may include, but are not necessarily limited to, gingivitis and periodontal disease; xerostomia and salivary gland dysfunction; increased susceptibility to bacteral. viral and fungal (that is, oral candidacies) infections; caries; periapical abscesses; loss of teeth; impaired ability to wear dental prostheses (related in part to salivary dysfunction); taste impairment; lichen planus; and burning mouth syndrome (Vernillo 2001).

Unfortunately, caring for the oral cavity is often overlooked when trying to control other problems associated with diabetes which may contribute to hidden morbidity and undue suffering from oral health problems.

1.1 Rational of the study:
Diabetes mellitus affects people of all ages, and its prevalence has been increasing. Providing safe and effective oral medical care for patients with diabetes requires an understanding of the disease and familiarity with its oral manifestations.

It will enhance to quality of health-care delivery, improve patient outcomes, and serve as an impetus for medical

and dental care professionals to coordinate and collaborate towards the goal of improving the health of individuals with diabetes. This study will open venues of different aspect of dental diseases among diabetic patients and will help for further studies in the field to explore the determinants and predictions of dental health problems among diabetes mellitus patients.

1.2 Objectives:

General Objective:
To find out the oral health status of diabetic adult patients in BIRDEM Hospital.

Specific objectives –
i)   To assess the oral health status of diabetic patients.

ii) To find out the oral hygiene practice of the study population.

iii) To find out the food habit of the study population.

iv) To determine the socio-demographic and socio-economic status of the study population.

2.0 Materials and Methods :
This study was a descriptive type of cross-sectional study. The study was carried out at Dental outpatient department (OPD) of BIRDEM hospital Dhaka. Diabetic patients selected by Convenient random sampling over a period of one year starting from January 2014 to December 2014.

2.1 Data collection technique
Face to face interview

Clinical Oral Examination

2.2 Data Collection tools
The questionnaire was prepared on English and Bengali that was based on the socio-demographic characteristics, oral habit and oral hygiene practice of study population. Recording oral examination and fill up the oral health assessment form about- Dentition status- Decayed, Missing, Filled Teeth to measure dental caries status, Periodontal status- Modified CPI Index (Community Periodontal Index) to measure periodontal disease.

2.3 Data Collection:
Attending adult patients were at first check by departmental dental surgeon and giving his medication, I took verbal consent from the patients. After taking verbal consent of the patients, I filled up the questionnaire that was based on socio-demographic characteristics, oral habit and oral hygiene practice. Then I recorded oral health

status of the patients according to WHO proforma. The examination was done using artificial light with a mouth mirror and periodontal probe.

2.4 Data Analysis:

After collection of data, all data was verified. Finally data was analyzed by using statistical package for social science (SPSS) program. (Version-19)

3 Result:

This study was carried out to find out oral health status of diabetic adult patient in selected tertiary level hospitals. 100 was diabetic patients were selected for the study. Data were collected by semi structured questionnaire. Findings of the study are presented by graphs and tables.

3.1 Socio-demographic characteristics of the respondents

Table-I
Distribution of respondents according to age

Age	Diabetic	
	Number	%
30 years and below	6	6.0
31 to 40 years	21	21.0
41 – 50 years	36	36.0
Above 50 years	37	37.0
Total	100	100.0

The age of the respondents ranged between 18 and 70 years with a mean of 40.55 ± 13.285 years. Table-I proportion of diabetic patient's age was highest among above 50 years age group and lowest was among 30 years and below while 36.0% and 21.0% respondent's age was among 41 to 50 years and 31 to 40 years age group.
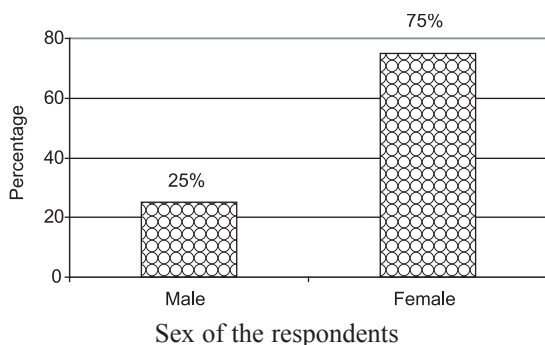

Fig.-1: *Distribution of respondents by sex*

Among the patients 25.0% were male and 75.0% were female.

Table-II
Socio-demographic characteristics of the respondents

Socio-demographic characteristics	Diabetic	
	Number	%
Marital status		
Married	98	98.0
Unmarried	1	1.0
Divorced	1	1.0
Total	**100**	**100.0**
Occupation		
Service	13	13.0
Unemployed	5	5.0
Business man	6	6.0
Student	3	3.0
Housewife	68	68.0
Day laborer	5	5.0
Total	**100**	**100.0**

$p = <0.001, \chi^2 = 36.650$

Education		
Illiterate	30	30.0
Primary	34	34.0
SSC	15	15.0
HSC	11	11.0
Honors	10	10.0
Total	**100**	**100.0**

$p = <0.001, \chi^2 = 24.479$

Among the diabetic patients most of the respondents were married (98.0%) and only 1.0% of the respondents were divorced and unmarried. Among the patients majority of the respondents were housewife (68.0%) and 13.0% of the respondents were service holder while very few of the respondents were unemployed and businessman. (22.0%) Ocupation of the respondents was significantly associated with diabetes status of the patient (p= <0.001). Among the diabetic patients more than one third of the respondents education level was primary passed (34.0%) and 30.0% were illiterate while 15.0% and 11.0% were SSC and HSC passed respectively. Education of the respondents was significantly associated with diabetes status of the patient (p= <0.001)

Table-III

Information related to diabetes (n=100)

Characteristics	Number	%
Duration of diabetes		
Less than 1 year	13	13.0
More than 1 years	33	33.0
More than 5 years	54	54.0
Medicine used for diabetes		
Tablet	43	43.0
Injection	25	25.0
Both	31	31.0
None	1	1.0

Study shows among the respondents who were diabetic patient, maximum of the respondents were suffering from diabetes for more than 5 years and one third of the respondents were suffering from diabetes for more than 1 year and 13.0% of the respondents were suffering from diabetes for less than 1 year. One fourth of the respondents used injectable medicine 25.0% and 43.0% of the respondents used tablet while 31.0% of the respondents used both tablet and injectable medicine.
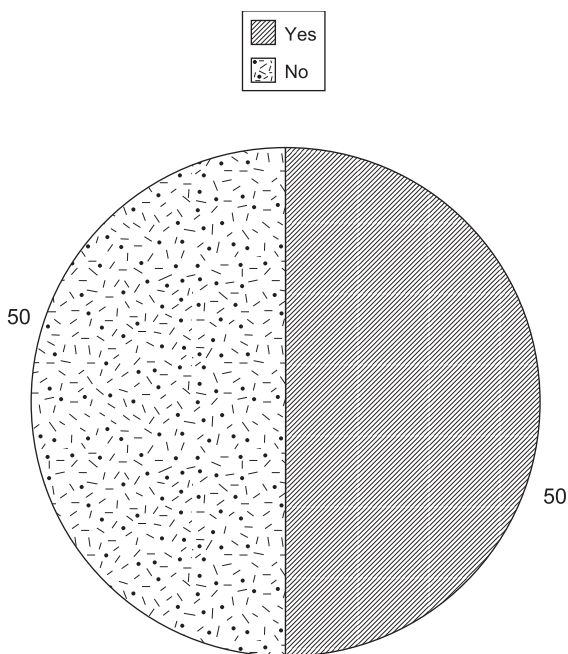

Fig.-2: *Distribution of respondents by insulin use*

Figure shows half of the respondents 50% among diabetic patient used insulin & half of the respondents 50% did not take insulin.

Table-IV

Distribution of respondents by family history of diabetes

Family history of diabetes	Number	%
Yes	59	59.0
No	41	41.0
Total	100	100.0

Among the diabetic patient 59.0% of the respondents had family history of diabetes and 41.0% had no family history of diabetes (Table-IV)

Table-V

Distribution of diabetic respondents by other diseases

Other Diseases	Number	%
Heart disease	15	15.0
Kidney disease	3	3.0
Hypertension	18	18.0
Oral ulcer	7	7.0
Others	38	38.0
No disease	19	19.0
Total	100	100.0

Regarding this study among the diabetic patients 15.0% and 18.0% of the respondents had heart disease and hypertension and 38.0% of the respondents had other disease than mentioned while 19.0% of the respondents had no disease (Table-V).

Table-VI

Distribution of respondents by frequency of oral hygiene practice

Frequency of oral hygiene practice	Diabetic	
	Number	Percentage
Once	38	38.0
Twice	58	58.0
More than twice	4	4.0
Total	100	100.0

p=0.105, χ^2=4.560

Study shows all of the patients cleaned mouth regularly. Among the diabetic patients maximum of the respondents cleaned their mouth twice daily 58.0% and 38.0% of the respondents cleaned their mouth once daily while only 4.0% of them cleaned their mouth more than twice daily. Frequency of mouth clean was not significantly associated with diabetic status of the patient (p= 0.105)

Table-VII

Caries, Missing, Gingivitis, Periodontitis presence in the diabetic subjects

	Absent	Present
Caries	4747.0%	5353.0%
Missing	5353.0%	4747.0%
Gingivitis	7171.0%	2929.0%
Periodontitis	3940.0%	6160.0%

In this study 53.0% of diabetic patient had dental caries, 29.0% of the patient had gingivitis, 60.0% periodontitis.

Conclusion:

Diabetes mellitus is one of the most dreaded and silent epidemic health problems, especially in the developing countries. But, very few health professionals and patients have an idea of the implications of diabetes on oral health. This contributes to an ever increasing burden of underlying, undiagnosed, and untreated morbidity in the community.

Here 53.0% of diabetic patient had dental caries, 29.0% of the patient had gingivitis, 60.0% periodontitis, 40.7% of the had 4 to 5 mm periodontal attachment loss while only 2.9% of the them had 6 mm or more periodontal attachment loss. Missing teeth in diabetic patient was 47.0%. It is necessary to make the health professionals and the patients aware of the magnitude of problem and chalk out proper preventive procedures.

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