

## Management of Dental Health Problem of Diabetic Patients Attending in Selected Private Dental Clinics in Dhaka City

A Abrar<sup>1</sup>, KN Chowdhury<sup>2</sup>, MH Rahman<sup>3</sup>, BM Rauf<sup>4</sup>, AKM Asad<sup>5</sup>, MKFT Zahura<sup>6</sup>, MS Islam<sup>7</sup>

### Abstract

**Aim:** The rising cases of dental problems among diabetic patients have raised health concerns among dentists worldwide. The oral complications of prime concern are gum disease, dental caries, dry mouth, oral soft tissue damage, and pain in the face and mouth. This descriptive type of cross sectional study was conducted among the diabetic patients for their management of dental problems attending in selected dental clinics in Dhaka city from January to June 2012. 44% of the patients were in between 41 to 50 years age group.

**Methods:** Data were collected with a pretested semi structured questionnaire and check list was filled in after oral examination.

**Results:** Among the patients 84% were Muslims and 16% were Hindus. All the patients were married. 58% of the patients had monthly income TK. 25000-40000. Among the patients, 48% had (4-5) family members. Type of family was single for 82% of the patients. Main food was rice for 78% of the patients. 50% of the patients had habit of tobacco use. Tobacco smokers were 88%. Among the patients, calculus and gingivitis was in grade I for 54% and the condition of periodontitis was in grade I for 46%. The condition of oral thrush was in 0 grade for 66% of the patients. Most of the patients' 1 tooth was affected by dental caries. There was no dry mouth in 80% of the patients, whereas no burning mouth syndrome was in 82% of the patients; 64% of the respondents visited dentists. The reason for visiting dentists, most of them visited for sensitivity. All the patients brushed teeth everyday. 66% of the patients brushed teeth once a day. Among the patients 66% cleaned teeth before breakfast and 52% took 3-4 minutes. Among the patients, 90% used tooth brush and 88% used tooth paste for cleaning the teeth. 84% of them did not floss and the rest 62.5% flossed teeth once a day, 62% got information about type of diabetes, among them 62.5% informed about non insulin dependent type of diabetes. Among the patients, 60% got information about usual oral hygiene, 75.9% got information about usual oral hygiene from doctors.

**Conclusion:** Proper patient management requires close interaction between the dentist and the physician. Working with diabetic patients can be challenging and rewarding when open communications are established and thorough patient education is attained.

**Keywords:** diabetic patients, dental health problem, management.

### Introduction

The rising cases of dental problems among diabetic patients have raised health concerns among dentists worldwide. However, the oral health complications associated with diabetes are often overlooked.

1. Dr. Ali Abrar, BDS, MPH, Hospital Coordinator, Lab Aid Hospital, Dhanmondi, Dhaka, Bangladesh.
2. Dr. Kamrun Nahar Chowdhury, BDS, MPH, Public Health Consultant, NIPSOM, Mohakhali, Dhaka, Bangladesh.
3. Dr. Md. Mahafuzur Rahman, BDS, MPH, Assistant Professor, Udayan Dental College. Rajshahi, Bangladesh.
4. Dr. Bushra Marzan Rauf, BDS, MPH, USAID research fellow, Bangladesh.
5. Dr. Abul kalam Mohammad Asad, BDS, MPH, Lecturer, Rajshahi Medical College, Dental Unit, Rajshahi, Bangladesh.
6. Dr. Mst Kaniz Fatema Tuz Zahura, BDS, MPH, Research Officer, CIPRB, Bangladesh.
7. Dr. Md. Shirajul Islam, BDS, MPH, Trainer cum Supervisor, ACPR, Lalmatia, Dhaka, Bangladesh.

### Address of Correspondence:

Dr. Ali Abrar, BDS, MPH, Hospital Coordinator, Lab Aid Hospital, Dhanmondi, Dhaka, Bangladesh.  
E-mail: dento\_abrar@yahoo.com

The oral complications of prime concern are gum (periodontal) disease, dental caries, dry mouth (xerostomia), oral soft tissue damage, and pain in the face and mouth (orofacial pain). In order to diagnose the potential presence of these conditions, it is very important for patients with diabetes to have dental examinations at least every 6 months. In the case of systemic complications from diabetes mellitus (for example, hypertension, cardiovascular disease, retinopathy, renal insufficiency or failure), the dental hygiene practitioners must be prepared to deliver care safely to patients with DM by taking into consideration the pharmacology of diabetes medications and drugs used in dentistry.<sup>7</sup>

Diabetes mellitus (DM) is one of the most frequent pathologies that dentists encounter. Its clinical importance springs from the possible occurrence of acute complications, whose severity could mean an immediate risk for the diabetic patient's life and require urgent diagnosis and treatment. Dental care is very important for patients with diabetes because they face a higher than normal risk of oral health problems due to poorly controlled blood sugars.

Any improvement in glycemic control and/or oral disease has the potential to make a significant impact on the quality of life for individuals with diabetes. The Surgeon General's Report on Oral Health states that good oral health is integral to general health. So be sure to brush and floss properly and see your dentist for regular checkups.<sup>4</sup>

### Materials and Methods

**Study design:** It was a descriptive type of cross sectional study and conducted among diabetic patients attending in selected private dental clinics in Dhaka City.

**Duration of the study:** The duration of the study was six months from January to June 2012.

**Study places:** Study places were some selected private dental clinics (Healthy Smile Dental Clinic, Projonmo Dental, Lucky Dental and Dental Solutions) in Dhaka city.

**Study population:** The population was diabetic patients attending for health care in private dental clinics.

**Sample size:** 50 diabetic patients were selected for this study.

**Sampling technique:** Convenient sampling technique was used.

**Data collection instruments:** In order to collect data a structured questionnaire was prepared considering all objectives and variables of the study. It was then pretested. After making alterations and corrections a final questionnaire was developed.

**Data collection technique:** The self administered technique was adopted for data collection. The research ethics committee of NIPSOM gave ethical clearance of the study. The data were collected from 22nd April 2012 to 3rd May 2012. Oral examination was carried out by the researcher himself through observation of diabetic patients.

**Data analysis:** After collection data were cleared, coded and categorized. Data analysis was done by using statistical package for social science (SPSS 16) program. Tables and graphs were made and statistical procedures were applied in analyzing the data where felt necessary.

### Results

Table 01: Shows the distribution of patients according to their calculus status. [n=50]

Calculus	Frequency	Percentage
Grade 0	8	16.0
Grade 1	27	54.0
Grade 2	15	30.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Calculus was in 0 grade for 16% of the patients, grade 1 for 54%, and grade 2 for 30% of the patients.

Table 02: Shows the distribution of patients according to their gingivitis status. [n=50]

Gingivitis	Frequency	Percentage
Grade 0	15	30.0
Grade 1	23	46.0
Grade 2	10	20.0
Grade 3	2	4.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Gingivitis was in 0 grade for 30% of the patients, grade 1 for 46%, and grade 2 for 20% of the patients.

Table 03: Shows the distribution of patients according to their periodontitis status. [n=50]

Periodontitis	Frequency	Percentage
Grade 0	15	30.0
Grade 1	23	46.0
Grade 2	10	20.0
Grade 3	2	4.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

The condition of periodontitis was in 0 grade for 30% of the patients, grade 1 for 46%, grade 2 for 20%, and grade 3 for 4% of the patients.

## Discussion

This simple descriptive type of cross sectional study was conducted among the diabetic patients who smoked are at higher risk up to 20 times more likely than non smokers for the development of thrush and periodontal disease. Smoking also seems to impair blood flow to the gums which may affect wound healing in this tissue area. Among the patients 50% had habit of tobacco use whereas the other 50% had no habit of tobacco use. Tobacco users were smokers for 88% and smokeless tobacco users were 12% of the patients. Cigarette smoking and alcohol consumption have been known to affect the oral micro flora adversely. Smoking is an established risk factor for developing periodontal disease in both healthy people and diabetic patients. Moore et al. reported the prevalence of smoking among diabetics as 19%.<sup>1</sup>

Many factors play a role in the loss of teeth in patients with diabetes. First, patients with uncontrolled diabetes are more prone to the development of gingivitis and periodontal disease. If the infection persists, it can spread to the underlying bone that anchors the teeth. Complicating this situation is the fact that infections don't resolve as quickly in patients with diabetes. Among the patients calculus was in 0 grades for 16% of the patients, grade 1 for 54%, and grade 2 for 30% of the patients. Many studies indicated significantly higher mean plaque scores, more calculus and higher gingivitis indices in diabetics than in non-diabetic controls. The results of present study showed no statistically significant differences in the oral hygiene levels between the diabetic and non-diabetic children. However, when splitting the OHIS index into different categories (DI-S and CI-S) it becomes clear that the diabetics had less plaque on their teeth, but significantly more calculus.<sup>2</sup>

Patients with diabetes who smoked are far more likely to develop gum disease than patients who smoked but did not have diabetes. Poor oral hygiene is a major factor in gum disease for everyone, but it is even more so for a person with diabetes. Gingivitis was in 0 grades for 16% of the patients, grade 1 for 54%, and grade 2 for 30% of the patients.

Thrush is more common in patients with diabetes as high sugar levels lead to better conditions for the yeast to grow. A dry mouth coupled with a higher amount of glucose in the saliva can also make for favourable conditions for thrush. The condition on Oral Thrush/Candidiasis was in 0 grade for 66% of the patients, grade 1 for 30%, and grade 2 for 4% of the patients. 22% of the patients were not affected by dental caries, while 1 tooth was affected in 32%, 2 teeth were

affected in 26%, and more than two teeth were affected in 20% of the patients. There was no Xerostomia/Dry mouth in 80% of the patients; xerostomia/dry mouth was mild in 16% and moderate in 4% of the patients. The diabetic group exhibited significantly higher prevalence of caries and more severe dry mouth, taste change, and mucosa pain than the non diabetic group. The diabetic group tended to have lower predialytic salivary pH, and patients with poor glycemic control (ie, HbA1C > 9%) showed higher proportion of dry mouth, mucosal pain, and tongue coating. However, the DMFT and CPI index were not associated with glycemic control in the diabetic group.<sup>5,6,8-10</sup>

A study in India shows that only 27.8% of the HD patients brushed their teeth daily and 8.3% said that they never brush their teeth. None of the patients in the study group had a routine dental check-up and all of them reported that they went for a dental visit only when they had a dental problem<sup>3</sup>. In this study about 90% patients brushes their teeth while average brushing time was 3-4 minutes.

Among the patients who informed about type of diabetes, 37.5% informed about insulin dependent type and 62.5% informed about non insulin dependent type of diabetes. Among the patients, 60% got information about usual oral hygiene and 40% did not get any information.

## Conclusion

Patients with diabetes who had oral disease had two chronic conditions, each of which might affect the other, and both of which require frequent professional evaluations, in-depth patient education and consistent educational reinforcement by health care providers. Referral of diabetic patients for routine check-up was not satisfactory; and when patients are referred for dental care, at times their diabetic status was not fully taken into consideration. Fixed features like lower educational status, unemployment, chronic diseases, and longer duration of diabetes show a positive relationship with existence of oral problems; while changeable behavioral factors like smoking, brushing teeth, using tooth paste and powder, visiting dental clinics, acquiring and possessing health knowledge showed an inverse relationship with existence of oral problems.

Proper patient management requires close interaction between the dentist and physician. Working with diabetic patients can be challenging and rewarding when open communications are established and thorough patient education is attained.

Dentists must educate patients and their physicians about the interrelationships between oral health and glycemic control, with an emphasis on the inflammatory nature of oral diseases and the potential systemic effects of oral health infection. This was a simple descriptive type of cross sectional study and the sample size was small, so further study is required to show significant association among the variables.

### Recommendations

Considering the findings, the following recommendations are made:

1. Ask individuals with diabetes about their oral health, specifically if they have noticed any signs of infection, bad breath, or a bad taste in their mouth or if they have any other symptoms.
2. Inquire about the last dental and oral health examination.
3. Remind individuals with diabetes that they need periodic dental and periodontal examinations (every 6 months or more frequently).
4. Encourage contact with patients' dental care provider if they notice signs of infection such as sore, swollen, or bleeding gums; loose teeth; mouth ulcers; or pain.
5. Perform an oral examination.
6. Refer all diabetic patients without a dental provider, regardless of oral findings or complaints, to a dentist for preventive care.

### References

1. Moore P.A, Orchard T., Guggenheimer J., Jyant R.J. Diabetes and oral health promotion: a survey of disease prevention behaviours. *JADA*, 2000; vol 131: 1333-1342.
2. Jolanta Siudikienė, Vita Mačiulskienė, Rimantė Dobrovolskienė, Irena Nedzelskienė, Oral Hygiene in Children with Type I Diabetes Mellitus, *Baltic Dental and Maxillofacial Journal*. 2005; 7 (1): 24-27.
3. Little JW, Falace DA, Miller CS, Rhodus NL, Inc. St. Louis, Missouri: Mosby Dental management of the medically compromised patient. *Journal of Dental Hygiene*, 6th ed.; 2002:154, 248–70, 548–632.)
4. Bergman SA. Perioperative management of the diabetic patient. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2007;103:731-7.
5. Shu-Fen Chuang, Junne-Ming Sung, Shih-Chen Kuo, Jeng-Jong Huang, Su-Yuan Lee, Oral and dental manifestations in diabetic and nondiabetic uremic patients receiving hemodialysis. [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov), 2005, vol: 99, 689-695.
6. L. Malekmakan, S. Haghpanah, M. Pakfetrat, Z. Ebrahimic, and E. Hasanlic Oral health status in Iranian hemodialysis patients, *Indian Journal of Nephrology*, 2011, vol : 21, 235-238.
7. Vernillo AT. Dental considerations for the treatment of patients with diabetes mellitus. *J Am Dent Assoc*. 2003; 134:24S-33S.)
8. Diabetes Mellitus: Overview, Causes, Symptoms, Risk factors, Treatment [Last updated: Thursday, 31 May 2012, 22:22 -08:00] <http://www.health.am/db/#ixzz1tPDyKtZZ>.
9. Campus G, Salem A, Uzzau S, Baldoni E, Tonolo G: Diabetes and periodontal disease: a case-control study. *J Periodontol* 76:418 -425, 2005 CrossRefMedline.
10. Guzman S, Karima M, Wang HY, Van Dyke TE: Association between interleukin-1 genotype and periodontal disease in a diabetic population. *J Periodontol* 74:1183 -1190, 2003 CrossRefMedline.