

Oral Hygiene Practices and Periodontal diseases in type 2 Diabetes Mellitus Patients

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ABSTRACT

Aim: To assess the frequency of oral hygiene practices among type 2 diabetics with periodontal disease, visiting the dental outpatient department of Bahawal Victoria Hospital Bahawalpur.

Study design: Descriptive Cross Sectional.

Place&duration of study: Dental outpatient department of Bahawal Victoria Hospital, Bahawalpur, from January 2015 to June 2015.

Methods: All the patients of type II diabetes mellitus between 40-70 years of age visiting the Dental Outpatient Department during the study duration were included. Immunosuppressive and with debilitating medical illnesses like cancers were excluded. Data was collected by using preformed, pretested questionnaire that comprises of two parts. First part was related to socio-demographic variables of the respondents i.e. gender, monthly family income, education and occupation while second part is related to study variables i.e., oral hygiene habit. The periodontal diseases were assessed by examining the ten index teeth in the oral cavity of each subject to represent all teeth. Each index tooth was examined at three buccal and three lingual sites for the worst CPITN score.

Results: Total 2360 patients with type 2 diabetes mellitus visiting Dental outpatient department were included in the study. Frequency of periodontal diseases among type 2 diabetes mellitus patients was 58%. Sociodemographic profile of respondents showed that among patients with periodontal diseases 84% were from urban areas and 80% were male. 12% patients were illiterate, 20% had primary education and 37% had graduation and above education. Oral hygiene practices like teeth cleaning method (0.01), brushing frequency (0.0000), paste type (0.0000), brush before going to bed (0.000), and use of mouth rinse (0.000) were significantly related with periodontal diseases.

Conclusion: Poor oral hygiene practices are significantly related with periodontal diseases among type 2 diabetes mellitus patients.

Keywords: Diabetes mellitus, oral hygiene, periodontal disease

INTRODUCTION

Periodontal disease, one of the most wide spread diseases of mankind is generally referred to gingivitis or periodontitis^{1,2}. The periodontal disease results from bacterial infection which is found in the dental plaque. Gingivitis seems to be non-specific inflammatory process that is associated with a shift from gram-positive cocci and bacilli to predominately streptococcal forms to a more complex flora including gram-negative cocci, bacilli and spiral forms. There is no single microorganism responsible from change of gingivitis to periodontitis. Several bacterial species such as porphyromonasgingivalis, prevotellaintermedia, eikenellacorrodens, wolinnella recta, treponemadenticola, capnocytophaga and

bacterioidesgingivalis are present in various combinations in chronic periodontitis. Gingivitis is defined as inflammatory process of the gingiva in which the junctional epithelium, although altered by the disease remains attached to the tooth at its original level. Most forms of the gingivitis are plaque induced³. Periodontitis is also an inflammatory condition of the gingival tissues, and is found when attachment of periodontal ligament and some bony support have also been lost. It has been thought that periodontitis is an extension of the gingivitis, but only few gingivitis sites make this transition and the full mechanism of this transition is not well understood⁴.

Although severe gingivitis is more prevalent in the developing countries compared to the developed world⁴, yet data from WHO Oral Global Data Bank⁵ suggest that the prevalence of severe form of the periodontal disease in the developing and developed world is not all that different. Epidemiological surveys conducted have led to total reversal of that concept. Relatively recent data from many parts of the world, collected during 1980s have now shown that the prevalence of severe periodontitis is in the range of

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7% to 15% in almost all populations regardless their state of economic development^{3,4}. In the dental literature periodontitis can be classified as mild, moderate, and severe form on the basis of periodontal pocket depth. Periodontitis of pocket depth of 3mm or less is considered as 'mild' that with 4-5mm as 'moderate' and one with 6mm or more as 'severe'. The severe periodontitis is regarded to be serious enough to cause or threaten the tooth loss.

The diagnosis and treatment of periodontal disease had made great strides due to better understanding of the biological basis of disease process and to the development of late therapeutic techniques and instrumentation in 20th century⁶. This disease has reduced the quality of life and has resulted in reduced masticatory efficiency. In recent years, studies concerning the pathogenesis of periodontal disease have cast doubt over much of the information on the prevalence and distribution of periodontal disease gathered during earlier studies. It has been realized that the underlying concepts were not biologically sound and many of the indices were not sufficiently discriminating to record differences between gingivitis and periodontitis⁷. So much of the earlier work has therefore proved to be of limited value in assessing accurately the amount of health care work required treating population with limited access to dental health services. This study has been conducted using WHO uniform criteria CPITN E-Probe for measurement of periodontal disease among diabetics in our setting⁸.

The objective of the was to assess the frequency of oral hygiene practices among type 2 diabetics with periodontal disease, visiting the dental outpatient department of Bahawal Victoria Hospital Bahawalpur.

METHODOLOGY

This descriptive cross sectional study was conducted from January to June 2015 at dental outpatient department of Bahawal Victoria Hospital, Bahawalpur after taking approval from hospital ethical committee. All the patients of type II diabetes mellitus already diagnosed by any medical specialist between 40-70 years of age visiting the Dental Outpatient Department during the study duration were included in the study. Patients not willing to participate, on immunosuppressive and with debilitating medical illnesses like cancers were excluded from the study. Data was collected by using preformed, pretested questionnaire that comprises of two parts. First part was related to socio-demographic variables of the respondents i.e., gender, monthly family income, education and occupation while second part is related to study variables i.e., oral hygiene habit.

The periodontal diseases were assessed by examining the ten index teeth in the oral cavity of each subject to represent all teeth. Each index tooth was examined at three buccal and three lingual sites for the worst CPITN score. The first and the second molars were examined in each of the four posterior sextants. Thus in this way, six recordings were obtained for each individual subject. The CPITN index records bleeding on gentle probing, plaque retentive factors like subgingival calculus and over hanging fillings and depth of periodontal pocket. For examination, the CPITN probe was inserted between the teeth and gingiva along long axis of a tooth with a force of not more than 20 grams. The presence of any plaque retentive factor was judged by the indication if some resistance was felt while withdrawing the probe by keeping it incontact with tooth surface. The depth of the periodontal pocket was judged by the extent to which the black band visible. Each index tooth was examined at three sites that is mesio-buccal, meiso-distal and mid-buccal both on the buccal and lingual sites. If no index tooth was available then all the functional teeth present in the oral cavity were examined and the worst score was recorded for that sextant. If only one tooth was present in the sextant, it was included in the adjacent sextant. The codes for the CPITN and gingival and plaque indices has been given at the end in the appendix. Data was entered and analyzed by using SPSS version 17. Chi square test was applied to see any statistical difference in periodontal diseases between two groups i.e.,diabeticswith periodontal disease and diabetics without periodontal disease. P value ≤ 0.05 was considered significant.

RESULTS

Total 2360 patients with type 2 diabetes mellitus visiting Dental outpatient department were included in the study. Frequency of periodontal diseases among type 2 diabetes mellitus patients was 58% as shown in table I.

Table I: Frequency of periodontal diseases among type 2 diabetes mellitus patients

Periodontal diseases	Frequency	%age
Yes	1369	58%
No	991	42%
Total	2360	100%

Sociodemographic profile of respondents showed that among patients with periodontal diseases 84% were from urban areas and 80% were male. 12% patients were illiterate, 20% had primary education and 37% had graduation and above education. Among respondents without periodontal diseases 56% were from urban areas, 73% were

male, 8% were illiterate, 16% had primary education and 42% had graduation and above education as shown in table II.

The oral hygiene practices among respondents with periodontal diseases and without periodontal diseases revealed that 68% patients of periodontal disease were using paste and brush and among respondents without periodontal disease this frequency was 63%. Twice a day practice of brushing

was observed 22% respondents with periodontal disease and in 34% respondents without periodontal disease. Only 16% respondents with periodontal disease were brushing their teeth before going to bed and 43% participants without disease were observing this practice. Mouth rinse was used by 13% of periodontal disease and 38% subjects without periodontal disease were using mouth rinse as shown in table III.

Table II: Sociodemographic profile of the respondents

Variables	Periodontal diseases			
	Yes		No	
	Frequency	%age	Frequency	%age
Area of residence				
Urban	1150	84	773	56
Rural	219	16	218	44
Total	1369	100	891	100
Gender				
Male	1095	80	723	73
Female	274	20	268	27
Total	1369	100	991	100
Educational leave				
Illiterate	164	12	79	8
Primary	274	20	159	16
Secondary	151	11	119	12
Intermediate	274	20	218	22
Graduate	315	23	268	27
Postgraduate	191	14	148	15
Total	1369	100	991	100

Table III: Oral hygiene practices and periodontal diseases among respondents

Variables	Periodontal diseases			
	Yes		No	
	Frequency	%age	Frequency	%age
Teeth cleaning method (p value 0.01)				
Paste and brush	931	68	624	63
Powders and manians	246	18	228	23
Miswak	192	14	139	14
Total	1369	100	991	100
Brushing frequency (p value 0.0000)				
Once a day	643	47	277	28
Twice a day	301	22	337	34
Once a week	425	31	377	38
Total	1369	100	991	100
Paste type (p value 0.0000)				
Normal	315	23	406	41
Medicated	534	39	248	25
Don't know	493	36	337	34
Total	1369	100	991	100
Brush before going to bed (p value 0.0000)				
Yes	219	16	426	43
No	1150	84	565	57
Total	1369	100	991	100
Use mouth rinse (p value 0.0000)				
Yes	178	13	377	38
No	1191	87	614	62
Total	1369	100	991	100

DISCUSSION

In this study we found that the frequency of various teeth cleaning methods used with development of periodontal disease in our setting. Anerud KE and his colleagues have found in 1960s that poor oral hygiene to be the strong determinant of periodontal disease in different countries.⁹ Personal oral hygiene maintenance is the key factor in the long-term preservation of periodontal health. Since chronic form of gingivitis and periodontitis is plaque oriented.

In our study we found that those who maintained their oral hygiene through proper tooth brushing they are protected from periodontal disease. Oral hygiene practices like teeth cleaning method (0.01), brushing frequency (0.0000), paste type (0.0000), brush before going to bed (0.000), and use of mouth rinse (0.000) were significantly related with protection of periodontal diseases. Literature reveals that traditional method of miswak use (chew stick) and tree barks are not making any difference for periodontal disease while in our study, the use of miswak was significantly different between two groups. If miswak is used in its proper way, it is good measure of oral hygiene maintenance, being the mechanical way to cleaning teeth^{10,11}.

CONCLUSION

Poor oral hygiene practices are significantly related with periodontal diseases among type 2 diabetes mellitus patients.

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