GENDER DIFFERENCES ON PERIODONTAL DISEASES AMONG TYPE II DIABETIC PATIENTS IN DHAKA

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Summary

Periodontal disease is a slowly progressing disease but the tissue destruction that occurs is largely irreversible. Diabetes mellitus is a notorious risk factor for periodontal disease.

It is a cross-sectional type of observational study. Purposively selected 190 diabetic patients, diagnosed by previously oriented dentists at outdoor of BDCH, BIRDEM & SSMCH during June 2014- November 2014 (Six months). Collected data was recorded in a pre-tested checklist and statistically managed using SPSS Verson 20. To find out the most prevalent gender based of specific age groups of people in case of periodontal disease and type II diabetes mellitus; gap between knowledge and practice we had conducted the study. Total 190 patients were studied. Male & female patients represented equally i.e. 95 & 95. About 74.7% female and 66.3% male were from urban area. Age range 30-65 years. All respondents were literate (Can read, write & understand simple math). Respondents have been gone through both physical and full mouth examination based on RBS and CPITN index, labeled as suffering from diabetes and periodontal diseases. The study findings revealed, 68.3% male and 71.6%female was aware about the complications of type 2 Diabetes Mellitus. 82.1% male and 72.6% female consumes carbohydrate rich foods. Based on the CPITN index 68.4% male and 52.6% female were presented with features of gingivitis, 71.6% male and 44.2% female were presented with features of Periodontitis. Rate of Periodontal disease is higher among diabetic patients & there is male preponderance. Ensuring oral hygiene periodontal disease could be reduced significantly. Further in-depth studies are necessary to extract other relevant information in this regard.

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Key words

Type II diabetes mellitus; Periodontitis; Gingivitis; Community periodontal index of treatment needs; Random blood sugar.

Introduction

Periodontal disease had proposed as sixth long term diabetic complication in patient with type II diabetes mellitus [1]. Periodontal disease and diabetes mellitus are two common chronic disease affecting human beings. The relationship between diabetes mellitus and periodontal disease has been the subject of more than 200 articles published in English during the past 50 years. An overall assessment of available data strongly suggests that diabetes is a risk for gingivitis and periodontitis [2]. Diabetes mellitus is a metabolic disease characterized by hyperglycemia. The prevalence of diabetes is increasing worldwide and varies depending on age and race. Although 85-90% of diabetic cases are diagnosed with type 2 diabetes mellitus and results from insulin resistance [3]. Developed countries have a higher prevalence of diabetes mellitus than developing countries and more women than men are affected with type 2 diabetes mellitus constitute 90% of the cases [4]. Diabetes mellitus affects 2-10% of human population [5]. Diabetes mellitus affects an estimated 20 million Americans, about 35-40% of whom have not received a diagnosis [5]. Diabetes mellitus remains undiagnosed in more than 6 million of these individuals according to CDC. Estimates [6].

Oral manifestation of diabetic patient takes on a more diverse aspect. India and Bangladesh share more in common than being two of the most populous nations in terms of population density. The two countries are also considered to be affected by periodontitis, major reason for tooth loss in adults, which is higher than western nations [7].Diabetes mellitus also increases the risk of experiencing continued periodontal destruction overtime. For example a two year longitudinal study demonstrated fourfold increase the risk of progressive alveolar bone loss in adults with type 2 diabetes mellitus compared with adults who did not have diabetes [8]. Periodontal

diseases involves an inflammatory process that develops in the gingiva in response to bacterial action destroying the periodontal tissues [9]. Recent evidence suggests that effect of periodontal disease might not be limited just to the oral cavity but it might have systemic consequence. An estimated 47.2% or 64.7 million Americans have mild, moderate or severe Periodontitis or gum diseases according to an analysis of data collected as part of CDC 2009-1010 National Health and Nutrition Survey [6]. Prevalence rates increase to 70.1% for adults 65years and older. The data also indicates certain prevalence disparities [10]. Periodontal disease is higher in men than women 56.4% and 38.4% respectively, and highest in Mexican Americans 66.7% compared to other races [11]. The prevalence rate is 64.2% for current smokers, 65.4% for adult living below in federal poverty level and 66.9% for adult with less than a high school education [12]. WHO reported that 10-15% of the world populations suffer from sever Periodontitis [13]. Prevalence of Periodontitis was significantly higher in males and increased with age groups and slightly lower in females as reported by national survey in India [14]. Diabetic patients are more susceptible to tooth loss than non- diabetic patients due to higher risk of Periodontitis. It is important to realize periodontal disease involves a shift in the oral or dental flora from the normal gram positive anaerobic bacteria to predominantly gram negative anaerobic bacteria [15]. In previous study in Bangladesh prevalence of periodontal diseases among female of tribal population were 14.2% were aged less than 30 years, 72.5% were aged 30-60years [16]. In another study in Bangladesh prevalence of periodontal disease among hospital and urban slums was 34% in 1990, 42% among hospitals and rural in 1990, 18.5% at hospitals in 2008 [7]. This is a population based descriptive type of cross-sectional study which conducted in Dhaka ,the capital city of Bangladesh at BDCH at Dhanmondi, BIRDEM at Shegun Bagicha and SSMCH at Mirpur. The objective of this study is to find out the distribution of periodontal diseases among male and female type 2 diabetic patients.

Materials and methods

This cross-sectional study was conducted considering all the availability of the expected number of male and female (95 & 95) adults (Aged 30-65 years) having history of periodontal disease and type II diabetes mellitus excluding other systemic diseases, mentally challenged and handicapped patients and those who were not willing to participate in the study, were selected for data collection. The area is focused on densely populated urban localization's hospitals, Bangladesh Dental College and Hospital (BDCH) Shaheed Shurwardi Medical College and Hospital (SSMCH) & Bangladesh Institute of Research and Rehabilitation in Diabetes Endocrine and Metabolic Disorders (BIRDEM). Respondents were selected through purposive sampling technique and data were collected through using quantitative methods only. A self administered pretested questionnaire was used for quantitative approach. Medical and dental examinations were done by specialized medical dental professionals. Full moth examination included Decayed Missing Filled Teeth (DMFT) and Community Periodontal Index of Treatment Needs (CPITN) and medical examinations included physical examinations and Random Blood Sugar (RBS) test. CPITN index labeled as follow score 1 oral hygiene instruction, score 2 Scaling and polishing, score 3 deep scaling and root planning, score 4 complex treatments. Neither any interventions nor any invasive procedure was undertaken. However, prior to initiation of the study an ethical clearance was taken from ethical committee of North South University (NSU) Public Health Department. Data processing and analysis for quantitative data were done using Statistical Package for Social Sciences (SPSS) version 20.

Results

All data were checked, verified and analyzed. Total respondents were 190. All were type-2 diabetic patients. Male 95 and female 95. About 74.7% female and 66.3% male were from urban area. Age range 30-65 years. All respondents were literate (Can read, write & understand simple math). 68.3% male and 71.6%female was aware about the complications of type II Diabetes Mellitus. 82.1% male and 72.6% female consumes carbohydrate rich foods. Results show that out of 190 respondents 68.4% male and 52.6% female were presented with features of gingivitis, 71.6% male and 44.2% female were presented with features of Periodontitis.

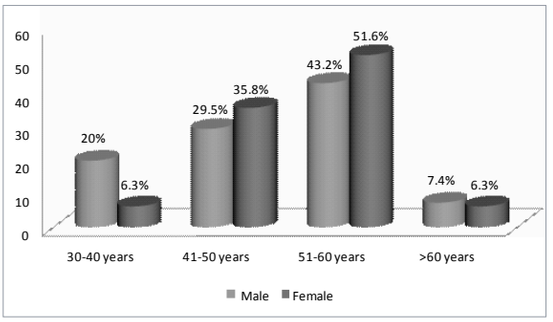

Figure 1: Out of 190 respondents 50.0 % were male and 50.0% were female. 20.0 % male and 6.3% female were in the age group of 30-40years, 29.5% male and 35.8% female were in the age group of 41-50years, 43.2% male and 51.6% female were in the age group of 51-60 years, 7.4% male and 6.3% female were in the age group of above 60 years.

Table I : Education of the respondents (n=190)

Education	Male (%)	Female (%)
Primary	71 (74.7)	66 (69.5)
SSC	24 (25.3)	27 (28.4)
HSC	0 (0.0)	2 (2.1)
Total	95 (100.0)	95 (100.0)

Table I : Out of 190 respondents 74.7% male and 69.5% female had primary education, 25.3% male and 28.4% female did their SSC, and whereas only 2.1% female completed HSC. The scoring was done by 1 scored for primary, 2 cored or SSC, 3 scored for HSC and 4 scored for Degree.

Table II : life style of the respondents (n=190)

Physical activity	Male (%)	Female (%)
Regular	11 (11.6)	7 (7.4)
Occasional	71 (74.7)	78 (82.1)
Never	13 (13.7)	10 (10.5)
Total	95 (100.0)	95 (100.0)

Table II : Out of 190 respondents 11.6% male and 7.4% female answered they do regular physical activity, 74.7% male and 82.1% female answered they occasionally do physical activity and 13.7% male and 10.5% female answered they never went for any sort of physical activity. 1 scored for regular physical activity, 2 scored for occasional physical activity and 3 scored for never done any physical activity.

Table III : Treatment needs of the respondents (n =190) based on CPITN (Community Periodontal Index of Treatment Needs) index

CPITN index	Male (%)	Female (%)
Oral hygiene instruction	5 (5.3)	50 (52.6)
Scaling and polishing	25 (26.3)	36 (37.9)
Deep scaling and root planning	58 (61.1)	7 (7.4)
Complex treatment	7 (7.4)	2 (2.1)
Total	95 (100.0)	95 (100.0)

Table III: out of 190 type2 diabetic respondents based on CIPTN index doctors recommended 5.3% male and 52.6% female needed oral hygiene instruction, 26.3% male and 37.9% female needed scaling and polishing, 61.1% male and 7.4% female needed deep scaling and root planning and 7.4% male and 2.1% female needed complex treatment. 1 scored for oral hygiene instruction, 2 scored for scaling and polishing, 3 scored for deep scaling and root planning and 4 scored for complex treatment. 28.4 % male and31.6% female answered their last visit to dentist by 1 year, 9.5% male and 14.75 female answered their last visit to dentist within 6 months and 62.1 % male and 53.7% female answered they never visited to dentist.

Table IV: Gingivitis among the respondents (n=190)

Gingivitis	Male (%)	Female (%)
Present	65 (68.4)	50 (52.6)
Absent	30 (31.6)	45 (47.4)
Total	95(100.0)	95 (100.0)

Table IV: Out of 190 respondents 68.4% male and 52.6% female presented with the features of gingivitis

Discussion

The study was aimed to find out the most prevalent gender based of specific age groups of people in case of periodontal disease and type 2 diabetes mellitus, gap between knowledge and practice. The result of the study showed that among 190 respondents respondents 78.9% male and 72.6% female were aware on symptoms of type 2 DM, so it is evident that most of the respondents have the knowledge on DM. 66.3 % male and 74.7% female were from urban and 33.7 % male and 25.3% female were from rural. Similar finding was also seen in a study in India where Diabetes occurrence in the urban metros of India is increasing the figures mentioned in the affluent migrant Indians [15].

Lifestyle and environmental changes due to industrialization and migration to urban environment from rural settings are responsible to great extent for such Type 2 diabetes in Dhaka city. Evidence of many studies show to see the heath status of urban and rural people suffering from type II DM but no specific study has been done on hospital based to see the gender difference on periodontal diseases among type 2 Diabetic patients. Several studies have been done previously to see the prevalence of periodontal diseases; as in general this study is specifically concentrated on gender as in who are more prone to periodontal disease. As we know the relationship between periodontal diseases and Type II DM has been established in almost most of the articles on in other hand, this present hospital study reveals the new information on most prone gender incase of Periodontal disease and type II DM and gap between knowledge and practice. Moreover previously most of the study was done to see the relationship between Periodontal Disease, Tooth Loss, and Atherosclerosis [17]. 20.0 % male and 6.3% female were in the age group of 30-40 years, 29.5% male and 35.8% female were in the age group of 41-50 years, 43.2% male and 51.6% female were in the age group of 51-60 years and 7.4 % male and 6.3% were in the age group of above 60 years. Similar findings also seen in another study Fifty-two percent of the 1740 participants were females. Males were older (60±8 versus 59±8 years, p=0.006) [18]. The present study shows that out of 190 respondents 71.6% male and 44.2% female type II diabetic patients who were suffering from periodontal diseases. Similar findings were also evident in a study where more male (10.65%) suffer from periodontal disease than female (6.40%) [19]. The study reveals based on CPITN treatments are necessary for both genders. In previous study similar findings also seen related to diabetics, scores of CPITN increase significantly with duration of diabetes mellitus [20]. This study shows the sedentary life style of diabetic patients which in a way affecting normal periodontal health. In addition to diabetes status, higher age, lower education, smoking, carbohydrate rich food, betel nuts, were also associated with tooth-loss predictors in a way periodontal diseases. Female suffers less from periodontal diseases due to more awareness on diabetes control and better oral hygiene according to present study.

In previous studies those respondents were selected who already have had diabetes, in this present study many respondents were first time diagnosed as diabetic. Although Diabetes is disease of higher affluent income country but gradually it is affecting the low and middle income developing country due to urbanization and growing garment industry.

Conclusion

Dentistry is the branch of medicine with enormous impact on general population. Over the past few years there has been an increasing awareness and concern about dental health among world population. Periodontal disease i.e gingivitis and Periodontitis are one of the most prevalent dental diseases. Therefore, dental professionals are required to update their knowledge on diagnosis, prognosis and design of treatment plan of periodontal diseases which are most prevalent dental diseases and a major cause of tooth loss. This study highlights the gender difference on periodontal diseases among type 2 Diabetic patients. All the respondents in the present study are literate (can write, read and understand simple math), no evidence of illiteracy. Gender is another factor which plays an important role in periodontal disease. So the study demonstrated that men present with more bonny attachment loss than women associated with Type II diabetes mellitus. Therefore, gender differences in prevalence and severity of periodontal disease is required to be considered by dental practitioner. It has been advocated that both prevalence and severity of periodontal disease increases with age especially along with systemic condition i.e. type II diabetes melltus. A large number of respondents were lacking in knowledge on the complication of type 2 DM, food habit, sedentary life style and fewer of them have knowledge but do not know how to practice in daily life. Controlling diabetes and ensuring better oral hygiene we could reduce Periodontal diseases in both gender significantly.

Recommendation

On the basis of the findings in the study of the following recommendations should be considered to control periodontal diseases among type 2 Diabetic patients.

- The Dental practitioner need to be consider the factors age, gender, diabetes, stress, sedentary life style, smoking to employ the possible strategies to improve periodontal health and modification of patient prognosis and treatment plan.
- There is a huge gap between knowledge and practice so awareness raising programme could be arranged among the elderly aged group of people.
- The study findings only gives a glimpse of Bangladesh population as it was only based on Dhaka city so more study should be done in community level and as well sub-district level to compare this study finding.

Disclosure

All the authors declared no competing interest.

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