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Proportion and Associated Factors of Periodontitis among Diabetic Patients Attending in a Tertiary Care Hospital in Dhaka

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Abstract

This descriptive type of cross-sectional study was conducted with the aid of a standardized questionnaire and check list, information was gathered through face-to-face interviews and clinical examinations. The respondents ranged in age from 15 to 74 (46.46 ± 11.24), 62% male and 38% female. 79% did not treatment periodontitis previously; 60% brush their teeth before breakfast, 69.3% brush their teeth once daily, 53.3% used toothpaste for brushing, 74.7% did not use flosses, and 82% did not used mouth wash. 32% participants have periodontal pocket and according to index 34% of them had grade 4 periodontitis, 24% grade x periodontitis, 18.3% grade I periodontitis, (10%) grade 3 periodontitis, (7.3%) grade 2 periodontitis and rest (6%) had grade 1 periodontitis, 76.7% of them had periodontitis, and rest of them (23.3%) had not. 85% of them were have no hepatitis, 98% of them were have no tuberculosis, 53.3% of them were have high blood pressure, 53.7% smoker, 56.7% had tobacco chewing habit. Regarding periodontitis, clinical factors hepatitis, high blood pressure were statistically significant (X^2=10.59 df=1 P=.001), (X^2=51.92 df=1 P<0.01) and tuberculosis was not statistically significant (X^2=1.99 df=1 P=.160), while the life style factors like tooth brushing time, used of mouth wash, used of dental floss, tobacco chewing habit and smoking were highly statistically significant (X^2=14.80 df=3 p=.002), (X^2=42.74 df=1 p<0.01), (X^2=17.34 df=1 p<0.01), (X^2=38.99 df=1 p<0.01) and (X^2=28.30 df=1 p<0.01). The study findings recommended for provision of essential dental health services (especially periodontitis) to the diabetic patient for prevention and control of various dental health problems.

Keywords: Periodontitis, Diabetic, Dental Health, Risk Factor, Tooth Brushing

Introduction

Diabetes mellitus is a group of metabolic issues characterized by way of persistent hyperglycemia with disturbances of carbohydrates, fats and protein metabolism on account of the defects in insulin secretion, insulin motion or both[1]. The range of adults with diabetes international is anticipated to growth from one hundred thirty-five million in 1995 to three hundred million in 2025 [2, 3]. In 2000 an estimated 171 million humans inside the world had diabetes and the numbers are projected to double by way of 2030. Three Diabetes is an important public health problem, affecting 245 million people worldwide. Each 12 months, seven million individuals develop diabetes and the projection for the year 2030 expects that 366 million human beings could have the disease international [4].

Periodontitis is one of the principal oral health issues that are predominantly a Gram-terrible contamination resulting in intense irritation, with ability for vascular dissemination (via the sulcular epithelium) of microorganisms and their merchandise along with Lipopolysaccharides (LPS) for the duration of the body. Periodontal disease is the second one most important cause of oral hollow space disorders affecting the populace due to its high incidence. Therefore, if the presence of periodontal illnesses plays any role in basic systemic health, the general public fitness impact may be large [5]. The global prevalence of periodontal disorder varies from 5 to 20% of the person populace [6]. Periodontitis is the second biggest health problem and superior periodontal ailment impacts 10 to 15% of the population worldwide [7].

Both diabetes mellitus and periodontitis are chronic sicknesses affecting massive variety of population phrase extensive. Changes in human behavior and existence fashion during the last country have led to a dramatic increase within the prevalence of diabetes within the global, to the periodontitis has been considered a 6th addition to the 5 complications of diabetes (i.e., Peripheral neuropathy, retinal degeneration renal insufficiency, atherosclerosis and microangiopathy). Diabetes is a sturdy risk

issue for bone loss because of periodontitis bad control of diabetes is correlated with markers of periodontal ailment activity.

By some distance, it is the most common oral contamination in India, with a prevalence price of 66.2% among individuals of age 15 years and approximately 89.2% amongst adults in the organization of 35-44 years. The occurrence of DM has risen dramatically in current years, ensuing in a rapid growth of diabetic patients. Asia is unique has the best occurrence of diabetes in the world. Countries exhibiting the fastest price in diabetic population boom encompass India and China, amongst many other developing nations. Despite advances in recent years, the general public healthcare machine in India gives restricted get entry to dental services. This hassle is also perceived when it comes to individuals with diabetes, treatment of whom isn't prioritized by means of the machine.

Periodontitis is considered one of the predominant, oral health problems encountered in patients with diabetes. With the increase in the prevalence of diabetes global, its negative effect on oral fitness ought to be taken into consideration. Scientific proof has shown for a while that diabetes is a hazard thing for the development of periodontitis. Recent revisions verify that diabetes may be considered a danger issue for periodontitis. The affiliation among diabetes and periodontal illnesses has been recognized in dental literature for decades.

Periodontal sicknesses can be divided into gingivitis and periodontitis. Periodontitis is a sickness characterized via periodontal pocket formation, lack of connective tissue attachment, alveolar bone resorption, and gingival irritation, in the end resulting in tooth loss. When oral hygiene is compromised, oral microorganism may also shape a plaque biofilm, that's resistant to chemical compounds and immune cells [8]. Without mechanical debridement, the plaque biofilm matures and causes gingivitis in a few days. Gingivitis represents persistent however reversible inflammation and may be generally treated with the aid of right plaque manage.

Gingivitis commonly extends to irreversible periodontitis for months or years. Intriguingly, interplay and mutual impacts among diabetes and periodontitis had been indicated.

The postulated mechanism for the impact of diabetes on periodontal disease is that diabetes-better irritation and apoptosis especially influences periodontal tissues. Moreover, the improved severity of periodontal ailment in diabetes mellitus can also reflect an alteration inside the pathogenic ability of bacteria, enhancing the breakdown of periodontal tissues, resulting in more frequent and severe periodontal-tissue destruction. Evidence continuously exhibits that diabetes is a threat factor for improved occurrence of gingivitis and periodontitis [9]. Dental clinicians have lengthy located that periodontal ailment is worse in human beings with diabetes [10, 11]. Improving periodontal health to improve glycemic control has additionally been studied; however, thus far, studies have failed to show causation.

That diabetes is a chance element for gingivitis and periodontitis, and the degree of glycemic manage is a determining thing inside the vulnerability to oral health headaches which might be 3 to 4 times higher in comparison to systemically healthful individuals. Glycemic manipulate is reasoned to be a critical determinant within the immune inflammatory reaction to bacteria that isn't always conveniently seen in the ones without diabetes. Although little difference has been observed inside the cultures of periodontal sites of diabetes to those without diabetes, a enormous difference is determined inside the immune defense. The diabetic affected person shows impaired white blood cellular functions (first line of protection), which is linked to improved periodontal destruction. Eleven Most evidence additionally shows diabetes is related to an elevated risk of periodontitis, as well as multiplied disorder severity and progression. It is usually concept that poorly controlled diabetes increases the threat of headaches whilst nicely-controlled diabetes reduces the chance, even though some studies provide mixed effects had been poorly controlled patients does not expand periodontitis and we eleven-managed patients do.

Studies advise a potential link on periodontitis to the have an effect on and pathogenesis of systemic sicknesses thru inflammatory modifications which are elicited from the onset, fueling a persistent contamination especially wherein periodontal treatment is lacking [12]. Researches will continue searching for proof on outline the virulence and invasiveness of periodontal sickness by way of its mechanism of putting strain in the frame thru spreading microorganism, growing the inflammatory burden, or both. This study determined the proportion and its associated factors of Periodontist among diabetic patient attending in a tertiary care hospital in Dhaka.

Material and Methods

This descriptive Cross-sectional Study was performed at the population those were all Diabetic patients attending the dental outside branch of Z.H.Sikder Women's Medical College and Hospital on the time of data collection. This study was conducted for three months August 2018 to November 2018. The Inclusion Criteria are Diabetic affected person of all ages and gender attending the dental out of door dental branch of Z.H.Sikder Women's Medical College Dhaka and having as a minimum 4 natural everlasting teeth. The Exclusion Criteria included Inability to offer consent, Patients carrying fixed orthodontic appliance, other conditions or medications interfering with diabetic manage.

Data collection Tools

A semi-dependent interview Questionnaire was developed with the aid of presetting. It was comprised of numerous sections. There were open and closed ended query on the socio-demographic characters, information about oral hygiene practice and clinical information was gathered via reviewing diabetic record book.

Checklist by community periodontal index were prepared which of

0 = Healthy

1 = Bleeding observed, directly or by using a mouth mirror, after probing.

2= Calculus detected during probing.

3 = Pocket 4-5mm (gingival margin within the black band on the probe)

4 = Pocket 6mm or more (black band on the probe not visible)

X^ Excluded sextant (less than two teeth present)

9^ not recorded.

Instrument used: Dental mirror, torch light and C probe (periodontal probe).

Data Management and Analysis

Data was entered and analyzed using SPSS vs 17. Chi-square take a look at was used to recognize the affiliation or the connection between to the variables. Statistical importance was considered when P value < 0.05.

Results

Table 1 showed the demographic data of the participants. Out of 300 patients, the mean age of the patient 46.46 years and the standard deviation was 11.24 with the range of 15 to 74. Among the participants, 62% were Male and 38% were Female. Majority (32.7%) of them had secondary education, higher secondary education & graduate, rest (17%) had primary & post graduation degree.

Table 2 showed the oral hygiene maintenance of the patient. Out of all patient's majority (79%) did not treatment periodontitis previously, and rest of them (21%) treatment, which depicted in the following table-3. Majority (60%) were brush their teeth before breakfast, (21%) brush their teeth after breakfast, (11%) brush their teeth after dinner, (8%) brush their teeth at night. Majority (69.3%) of them were brush their teeth once daily, (15.3%) brush their teeth two time daily, (8.3%) did not brush their teeth and rest (7.1%) brush their teeth three times daily. Majority (53.3%) used toothpaste for brushing, (15.7%) used powder for brushing, (16%) used meswak for brushing, and rest (15%) used ash for brushing. Out of all patients, majority (74.7%) did not use flosses and rest (25.3%) used flosses. Furthermore, majority (82%) did not use mouth wash, and rest (18%) used mouth wash.

Table 3 showed the periodontal status. It was found that 32% of the participants were have periodontal pocket, 27.7% had mobility of tooth, 27.3% gum bleeding and the remaining 13% had gingival swelling. Out of all patient, most (72%) of them were not informed about periodontitis, and rest of them (28%) informed. The majority (72%) of them were not applicable, (15%) friends/relatives, (6.3%) newspaper/magazine, (3.3%) others and rest (2.7%) informed by electronic media. Majority (34%) of them had grade 4 periodontitis, (24%) grade X periodontitis, (18.3%) grade I periodontitis, (10%) grade 3 periodontitis, (7.3%) grade 2 periodontitis and rest (6%) had grade 1 periodontitis. Out of all patient, most (76.7%) of them had periodontitis, and rest of them (23.3%) had not.

Table 4 showed the Effect of Systemic disorder. It was revealed that 85% of them were having no hepatitis, and rest of them (15%) has hepatitis, which is depicted in the following table-9. Out of all patient, most (98%) of them were have no tuberculosis, and rest of them (2%) have tuberculosis, which is depicted in the following figure-8. Out of all patient, most (53.3%) of them were have high blood pressure, and rest of them (46.7%) have no high blood pressure.

Table 5 showed the habit of tobacco consumption. The study showed that out of all patient, most (53.7%) of them were smoking, and rest of them (46.3%) were smoking. Out of all patient, most (56.7%) of them were have tobacco chewing habit, and rest of them (43.3%) have no habit.

Table 6 showed the Association between periodontitis with clinical factors. It was found that

high blood pressure were statistically significant (X^2=10.59 df=1 P=.001), (X^2=51.92 df=1 P<0.01) and tuberculosis was not statistically significant (X^2=1.99 df=1 P=.160). Regarding periodontitis, life style factors like tooth brushing time, used of mouth wash, used of dental floss, tobacco chewing habit and smoking were highly statistically significant (X^2=14.80 df=3 P=.002), (X^2=42.74 df=1 P<0.01), (X^2=17.34 df=1 P<0.01), (X^2=38.99 df=1 P<0.01) and (X^2=28.30 df=1 P<0.01).

Table 1: Demographic data of the participants

		Frequency	Percent
Age (Years)	15-34	50	16.7
	35-54	154	51.3
	55-74	96	32.0
Sex	Male	186	62
	Female	114	38
Educational qualification	Primary	51	17.0
	Secondary & higher secondary	98	32.7
	Graduate	98	32.7
	Post Graduate	53	17.7

Table 2: Oral hygiene maintenance of the participants

		Frequency	Percent
Periodontal treatment previously	Yes	63	21.0
	No	237	79.0
Tooth brushing time	Before breakfast	180	60
	After breakfast	63	21
	After dinner	33	11
	At night	24	8
Equipment	Tooth Paste	160	53.3
	Tooth Powder	47	16
	Meswak	48	16
	Ash	45	15
Dental Floss	Yes	76	25.3
	No	224	74.7
Frequency of tooth brushing	None	25	8.3
	Once	208	69.3
	Twice	46	15.3
	Thrice	21	7.1

Table 3: Periodontal status of the participant

	Frequency	Percent
Mobility of tooth	83	27.7
Periodontal pocket	96	32.0
Gum bleeding	82	27.3
Gingival swelling	39	13.0
Periodontal Index		
Grade 1	18	6.0
Grade 2	22	7.3
Grade 3	30	10.0
Grade 4	102	34.0
Grade X	73	24.3
Grade I	55	18.3

Table 4: Effect of systemic disorder

	Frequency	Percent
Hepatitis		
Present	45	15
Absent	255	85
Tuberculosis		
Present	6	2
Absent	294	98
Blood pressure		
High	165	53.3
Normal	140	46.7

Table 5: Habit of tobacco consumption

	Frequency	Percentage
Smoking		
Yes	161	53.7
No	139	46.3
Tobacco Chewing		
Yes	170	56.7%
No	130	43.3%

Table 6: Association between periodontitis with clinical factors

Variable		Periodontitis		P value
		Yes	No	
Hepatitis	Present	43	2	P=.001
		95.56%	4.44%	
	Absent	187	68	
		73.33%	26.67%	
High blood pressure	Present	149	11	P<0.01
		93.13%	6.87%	
	Absent	81	59	
		57.86%	42.14%	
Tuberculosis	Present	0	5	P=.160
		0%	100%	
	Absent	84	211	
		28.47%	71.53%	

Discussion

This simple descriptive type of cross-sectional study was conducted among the diabetic patients for their dental problems attending the dental out of door of Z.H. Sikder Women's Medical College Dhaka.

The mean age of the respondents was 46.46 and SD was ±11.24 Minimum age of the respondents was 15, maximum age of the respondents was 74, among the respondents, Majority (62%) was male and (38%) were female. A similar study conducted by Rwanda found the minimum age was 15 years and maximum age 63 years old. Majority (54.1%) of them was male and (45.9%) were female. This variation of age and sex between the studies can be justified by the fact that this present study in a south Asian country. While the study of Rwanda was conducted in a African country.[13]

Majority (32.7%) of them had secondary education, higher secondary education & graduate, rest (17%) had primary & post-graduation degree. Most (65%) of them were Muslim followed by (26%) were Hindu, (5%) Christian and (4%) Buddhist.

Majority (79%) did not treatment periodontitis previously, and rest of them (21%) treatment, majority (60%) were brush their teeth before breakfast, (21%) brush their teeth after breakfast, (11%) brush their teeth after dinner, (8%) brush their teeth at night.

Majority (69.3%) of them were brush their teeth once daily, (15.3%) brush their teeth two time daily, (8.3%) did not brush their teeth and rest (7.1%) brush their teeth three times daily, majority (53.3%) used toothpaste for brushing, (15.7%) used powder for brushing, (16%) used meswak for brushing, and rest (15%) used ash for brushing, majority (74.7%) did not use flosses and rest (25.3%) used flosses, majority (82%) did not used mouth wash, and rest (18%) used mouth wash. A similar study conducted by Rwanda found, Majority (69.3%) of them were brush their teeth once daily, (15.3%) brush their teeth two time daily and (8.3%) irregular. Most (99.8%) of them were used toothpaste and (0.2%) did not used toothpaste, majority (98%) did not use flosses and rest (2%) used flosses, this variation of age and sex between the studies can be justified by the fact that this present study in a south Asian country while the study of Rwanda was conducted in African country [13].

Most (32%) of them were have periodontal pocket, (27.7%) were have mobility of tooth, (27.3%) were have gum bleeding and (13%) were have gingival swelling, most (72%) of them were not informed about periodontitis, and rest of them (28%) informed, majority (72%) of them were not applicable, (15%) friends/relatives, (6.3%) newspaper/magazine, (3.3%) others and rest (2.7%) informed by electronic media.

According to index majority (34%) of them had grade 4 periodontitis, (24%) grade X periodontitis, (18.3%) grade I periodontitis, (10%) grade 3 periodontitis, (7.3%) grade 2 periodontitis and rest (6%) had grade 1 periodontitis, most (76.7%) of them had periodontitis, and rest of them (23.3%) had not. A similar study conducted by Chania found, Majority (47.8%) of them were have gingivitis, (28.9%) have mild periodontitis, (10%) have moderate periodontitis, (8%) have severe periodontitis and (5.1%) were normal. This variation of periodontitis between the studies can be justified by the fact that this present study in a developing country while the study of Chania was conducted in a developed country.[9]

Most (85%) of them were have no hepatitis, and rest of them (15%) have hepatitis, most (98%) of them were have no tuberculosis, and rest of them (2%) have tuberculosis, most (53.3%) of them were have high blood pressure, and rest of them (46.7%) have no high blood pressure. Most (53.7%) of them were smoking, and rest of them (46.3%) were not smoking, most (56.7%) of them were have tobacco chewing habit, and rest of them (43.3%) have no habit.

Regarding periodontitis, clinical factors hepatitis, high blood pressure were statistically significant (X^2=10.59 df=1 P=.001), (X^2=51.92 df=1 P<0.01) and tuberculosis was not statistically significant (X^2=1.99 df=1 p=.160), while the life style factors like tooth brushing time, used of mouth wash, used of dental floss, tobacco chewing habit and smoking were highly statistically significant (X^2=14.80 df=3 p=.002), (X^2=42.74 df=1 P<0.01), (X^2=17.34 df=1 P<0.01), (X^2=38.99 df=1 P<0.01) and (X^2=28.30 df=1 P<0.01).

Conclusion

The prevalence of diabetes is growing rapidly worldwide, especially in developing nations. In our contingent, diabetes had a strongest predictive value in the development of the disease. Based on these findings, we recommend a closer cooperation between dental practitioners, endocrinologists and general practitioners, aimed at prevention, early detection and diagnosis of periodontal diseases. Periodontitis is the second largest oral health problem, affecting the world's population, if dental practitioners are presented with the elaborated model for assessing the risk of developing chronic periodontitis, it will be possible, as early as upon taking the patient's history and in the presence of the factors of diabetes, stress, misshapen and overlapping teeth, to apply a more adequate prophylactic approach to periodontitis and the prevention of its development.

Proper patient management requires close interaction between the dentist and physician. Working with diabetic patients can be challenging and rewarding when open lines of communication 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.

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