

Assessment of Periodontal Health Status among Diabetic Patients

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ABSTRACT

Background: Periodontal problems and diabetes are both highly prevalent conditions in our country, and the close association among these two common conditions has been recognised by dental professionals for many years now. Recent studies have identified that diabetes is a major risk factor for periodontal problems. The risk involved is nearly three times as compared to a non-diabetic patient, especially when the glycaemic control is not good.

Material and method: A study based analysis was conducted in our department of periodontics for period of 2 months. Our study involved a total of 88 patients, and was selected by a meticulous method of multiple screening. Minimum age for the patient was 20 years and the upper age limit was 62 years. On evaluating the periodontal status of each patient, patients presenting with a pocket of minimum 1.5 mm of depth in at least present in 4 teeth were selected as study samples. A Williams probe was used to obtain the readings.

Results: Test results for all 88 patients were obtained for HbA1c, which were above 6.8 mg/dl for all. Using Williams probe, 23 patients had a pocket depth ranging from 1.5-2.5mm (male: 18; female: 5). A pocket depth of 2.5-3.5mm was seen in 41 patients (male: 26; female: 16). A pocket depth of 3.5 and above was seen in 24 patients (male: 7; female: 17). A probing depth of 1.5-2.5mm was seen in only 7 patients (male: 5; female: 2). 23 patients had pocket depth of 2.5-3.5mm out of which 18 were male and 5 were female. A pocket depth of 3.5- and above was seen in 13 patients

Conclusion: Chances of diabetes increase the risk for periodontal issues and studies suggest that advanced periodontitis also compromises glycaemic control. Periodontal health status assessment is an important aspect in people with diabetes as it is in people not having diabetes.

Keywords: Diabetic. Periodontal Health, hypoglycaemia.

INTRODUCTION

Periodontal problems and diabetes are both highly prevalent conditions in our country, and the close association among these two common conditions has been recognised by dental professionals for many years now. Recent studies have identified that diabetes is a major risk factor for periodontal problems. The risk involved is nearly three times as

compared to a non-diabetic patient, especially when the glycaemic control is not good. ⁽¹⁾ Periodontal issues in diabetics are very common and chronic condition of the tooth-supporting tissue which is caused by bacterial deposits accumulating on tooth surface and forming dental plaque. ^(2, 3) The systemic inflammation observed in periodontal problems has been found to aggravate systemic diseases like diabetes too. ^(4, 5) Poorly managed

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diabetes can be associated with chronic bacterial infections, which may influence treatment of periodontal problems adversely. ⁽⁶⁾ Success rate with some dental procedures such as dental implants is way lower in patients with diabetes. Poorly managed periodontal problem and diabetes eventually impose a vicious circle. Both periodontal problems and diabetes mellitus are associated with changeable lifestyle habits. ^(7, 8) Periodontal issues are associated with oral hygiene, smoking, malnutrition, obesity, psychological stress and chronic alcohol consumption, also hypertension, and lack of physical activity, are well known factors for it. ⁽⁹⁾ The vicious relationship between periodontal issues and diabetes has been a topic of concern for our population, as both the conditions are highly prevalent among our population and secondly close relation in etiologic terms between these two diseases that have important clinical results for dental professionals, physicians and, most importantly, the patient. This review analysis aims to emphasis the relationship between diabetes and periodontal issues and also to discuss the clinical implications of these findings for the dental professional too. Diabetes can be understood as a group of metabolic disorders which are characterised by hyperglycaemia i.e. elevated blood sugar levels. The three main types of diabetes can be stated as (a) type 1 diabetes, (b) type 2 diabetes and (c) gestational diabetes (pregnancy). The present study was done to assess the periodontal status amongst the diabetics.

MATERIAL AND METHOD

A study based analysis was conducted in our department of periodontics for period of 2 months. Our study involved a total of 88 patients, and was selected by a meticulous method of multiple screening. Minimum age for the patient was 20 years and the upper age limit was 62 years. The study included 51 male and 37 female patients. The patient history was obtained in the outpatient department; those with a positive history of diabetes were selected as study samples and were referred to the department of periodontics. On evaluating the periodontal status of each patient, patients presenting with a pocket of minimum 1.5 mm of depth in at least present in 4 teeth were selected as study samples. A Williams probe was used to obtain the readings. Before conducting the

deep scaling and curettage in the subject patients, the diabetic status was confirmed by conducting HbA1c test in every patient. Now deep scaling and curettage was performed in all 88 patients, and were advised a strict post-operative protocol of periodontal surgery. The surgical site was secured with a periodontal pack where ever necessary. An analgesic (NSAID) was prescribed for pain, doxycycline 500mg once daily and chlorhexidine (0.2%) mouthwash after meals for 7 days was advised to every patient. Patients were followed up on every 14th day, for pocket depth, bleeding and radiographic analysis. No alteration in medication was performed, but slight diet alterations were done i.e. high protein diet was advised. Patients were also advised to avoid smoking and intake of alcohol for at least 2 months' time.

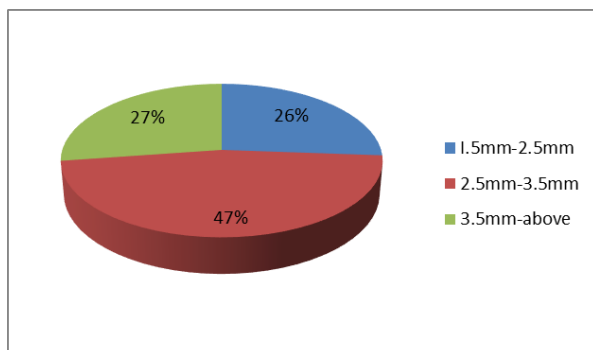
RESULTS

Test results for all 88 patients were obtained for HbA1c, which were above 6.8 mg/dl for all. Using Williams probe, 23 patients had a pocket depth ranging from 1.5-2.5mm (male: 18; female: 5). A pocket depth of 2.5-3.5mm was seen in 41 patients (male: 26; female: 16). A pocket depth of 3.5 and above was seen in 24 patients (male: 7; female: 17). (TABLE 1) (GRAPH1) (GRAPH2). After an extensive deep curettage and prophylaxis, patients were advised a strict post-operative protocol for maintaining good oral hygiene. The results of obtained were very surprising and can be considered positive. (TABLE 2) A probing depth of 1.5-2.5mm was seen in only 7 patients (male: 5; female: 2). 23 patients had pocket depth of 2.5-3.5mm out of which 18 were male and 5 were female. A pocket depth of 3.5- and above was seen in 13 patients, out of which 8 were male and 5 were female. (GRAPH 3) A drastic difference was observed in pre-operative and post-operative results of pocket depth. (GRAPH 4)

TABLE 1: Probing depth amongst the study subjects before treatment

Probing Depth	n	Male	Female
1.5mm-2.5mm	23	18	5
2.5mm-3.5mm	41	26	15
3.5mm-above	24	7	17
TOTAL	88	51	37

Graph 1: Probing depth amongst the study subjects before treatment



Graph 2: Probing depth according to gender

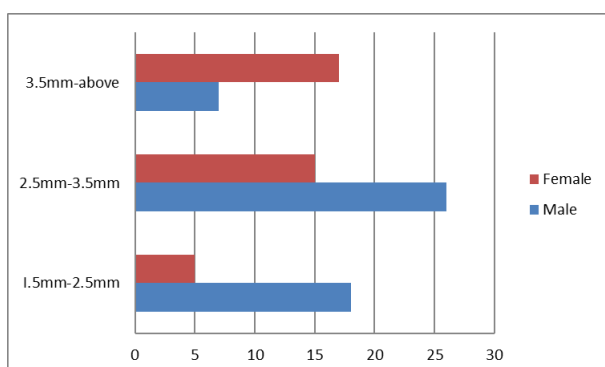
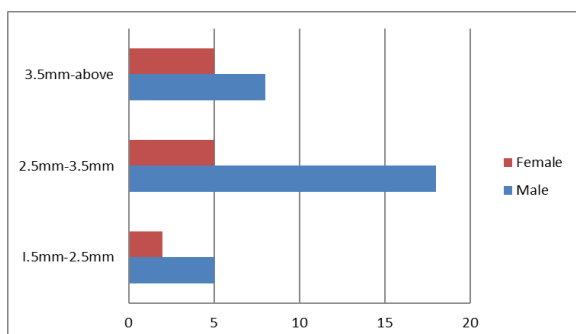
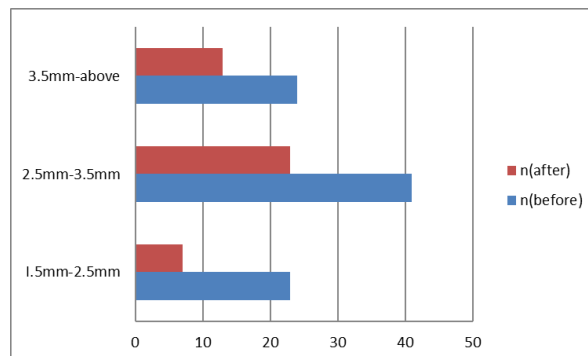


Table 2: Probing depth after treatment

Probing Depth After Intervention	n	Male	Female
1.5mm-2.5mm	7	5	2
2.5mm-3.5mm	23	18	5
3.5mm-above	4	3	1
TOTAL	34	26	8



Graph 3: Probing depth after intervention amongst different genders



Graph 4: Comparison of periodontal status before and after treatment.

DISCUSSION

Our study has successfully suggested that diabetes is associated with an increased risk of periodontal problems. The majority of research focused on type 2 diabetes, although type 1 diabetes happens to have an identical effect on risk for periodontal conditions. Type 1 diabetes also referred to as insulin-dependent diabetes, or juvenile diabetes which describes a condition in which there is a failure to produce the insulin as a result of autoimmune loss of the insulin-producing β -cells in the pancreas. The type 2 diabetes also referred to as the non-insulin-dependent diabetes, is a result of insulin resistance. Thus, there is a decreased response of the cells in the body to utilise and consume insulin. This leads to a decreased capacity to transfer glucose out of the circulation and into body cells. Gestational diabetes is the type of diabetes which occurs in pregnant women without a previous history of diabetes and develops hyperglycaemia during their pregnancy. It is characterised by decreased insulin secretion as well as insulin resistance. It usually improves after 2-3 months after delivery. The extent of the increased risk of periodontitis is known to be dependent on the level of glycaemic control, as it is with the risk of all complications seen in diabetic patients. So, in well controlled diabetes with HbA1c levels of around 7% (53mmol/mol) or less, a little effect of diabetes on risk for periodontal problems is observed. The risk increases many folds as glycaemic control falls. Overall, the increased risk of periodontal problems in patients suffering from diabetes happens to be between 2-3 times. (10) Diabetes increases the chances of periodontal problems, the extent and the severity of the disease. It has been observed that patients with diabetes

may present to the dentists with multiple and recurring periodontal abscesses, and also this may sometimes be the case, it is not typical. Now considering the effect of periodontal treatment on diabetes, a number of studies have been carried out to investigate the effects of treating periodontal problems on glycaemic control in people suffering from diabetes. Some of the studies have been performed as random control trials, in which periodontal treatment was compared to no periodontal treatment or let's say delayed periodontal treatment in people with diabetes and periodontal problems. A consistent finding has been observed that the periodontal treatment is associated with reductions in HbA1c levels of the order of 0.4%.¹¹⁻¹⁵ This would involve patient education and empowerment, oral hygiene instructions, oral prophylaxis, and regular follow-up. An effective periodontal treatment is particularly important in individuals with diabetes, because periodontal problems have severe negative impacts on glycaemic control and diabetes complications also. The correct periodontal treatment has been associated with improvements in HbA1c levels. In majority of cases, conventional periodontal treatment is very effective in diabetic patients, which include optimisation of plaque control to control the inflammation ultimately leading to periodontal destruction along with a major emphasis on self-management and patient education. There is hardly any evidence suggesting that diabetic patients require any antibiotics as part of periodontal therapy.

CONCLUSION

Chances of diabetes increase the risk for periodontal issues and studies suggest that advanced periodontitis also compromises glycaemic control. Periodontal health status assessment is as important aspect in people with diabetes as it is in people not having diabetes, and people with diabetes should be made aware of their increased chances of getting a periodontal disease. An important role for the dental professional is established, by the use of relatively simple screening tools which will help to identify patients at high risk of diabetes.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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