



# Clinical Relationship Between Diabetes Mellitus and Periodontal Disease

## KEYWORDS

Diabetes, Glycemic control, Periodontal disease, Periodontitis,

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## ABSTRACT

*Aim: To clinically evaluate the correlation between Diabetes Mellitus with periodontal disease*

*Objective: To prove that there is a correlation between Diabetes Mellitus and Periodontal disease*

*Background: Periodontal diseases are collectively the most common diseases to mankind. Periodontal diseases include gingivitis and periodontitis. It is highly prevalent and has multiple impacts on quality of life. Researches confirm that diabetes is a major factor for periodontitis.*

*Materials and Methods: 38 patients who had either diabetes or periodontitis or both were examined. Patients were asked to fill a questionnaire. The patients' relevant history was recorded and a thorough oral examination was done.*

*Results: The results pointed out that 72.9% of the diabetic patients had periodontitis.*

*Conclusion: We can conclude that the prevalence and the severity of periodontal disease will be greater if a poor glycaemic control is present.*

## INTRODUCTION

Diabetes Mellitus is a highly prevalent metabolic disease [1], affecting 8.5% of the world's population [2]. It is undiagnosed in many of these people. The prevalence of Diabetes Mellitus has tripled since 1970. This is a significant finding for dental professionals, as there is evidence from clinical research which shows a strong relationship between diabetes and periodontal disease. Prevalence of periodontal disease, tissue destruction and tooth loss increases with age [3]. Diabetes mellitus affects many people, as does periodontitis, and is found with increasing frequency as people get older as is periodontitis [4]. Periodontitis is referred to as the sixth complication of diabetes [5].

### What is Diabetes Mellitus?

Diabetes Mellitus is a metabolic disorder characterized by hyperglycemia due to defective secretion or activity of insulin.

### What is Periodontitis?

Periodontitis is the infection of the structures around the teeth, which includes the gums, periodontal ligament and alveolar bone.

People with Diabetes and periodontal disease are more likely to have problems trying to control their blood sugar than diabetic people with healthy gums. The risk of periodontitis is increased by approximately threefold in diabetic individuals compared with non-diabetic individuals [6].

## OBJECTIVES

The study was carried out in diabetic and non-diabetic patients, with the following objectives.

To determine the prevalence and severity of periodontal disease in diabetic patients.

To find out the influence of age and sex on the prevalence and severity of periodontal disease.

## MATERIALS AND METHODS

The study was carried out in Saveetha Dental College

and Hospital. A total of 38 patients were selected from Out Patient department. Patients with either Diabetes or Periodontitis were selected. These patients were asked to fill a questionnaire, after signing the consent form, to ensure their willingness to participate in the study. The questionnaire consists of the following questions.

1. Diagnosed with Diabetes Mellitus? If so year of diagnosis
2. Diagnosed with Periodontitis? If so year of diagnosis
3. Diabetes well controlled or poorly controlled?
4. Poor, Good or Very Good Oral hygiene?
5. Severity of Periodontitis, if prevalent
6. Medications taken for Diabetes?
7. Insulin injections taken?
8. Family history of Diabetes?
9. Obesity?
10. Daily Exercise?
11. Any adverse habits such as smoking, chewing, alcohol or others?

The questionnaire was filled and a careful oral examination was carried out with the help of a mouth mirror.

## RESULTS

Out of the 38 patients, 63.2% of patients had diabetes. Out of 38 patients 17 (44.8%) were males and 21 (55.2%) were females. The age range of patients was 27 to 72 years [Table 1]

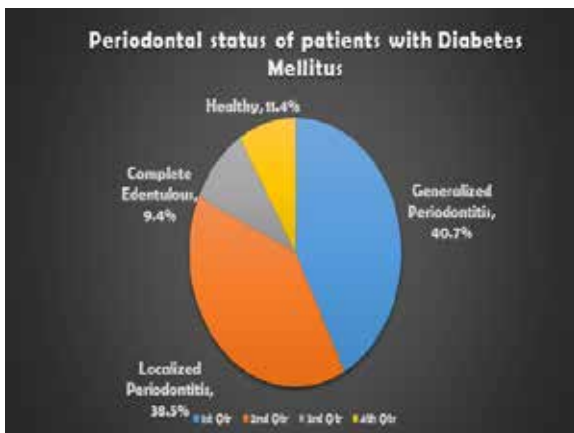
Distribution of patients according to age and sex [Table 1]

	GROUP	AGE GROUP	NO. OF PATIENTS	PERCENTAGE
DIABETIC WITH PERIODONTAL DISEASE	MALES			
	Group 1	30-39	3	7.9%
	Group 2	40-49	4	10.5%
	Group 3	50-59	2	5.3%
	Group 4	60-69	1	2.6%
	Group 5	70-79	2	5.3%
	FEMALES			
	Group 1	30-39	2	5.3%
	Group 2	40-49	6	15.8%
	Group 3	50-59	1	2.6%
	Group 4	60-69	3	7.9%
	NON-DIABETIC WITH PERIODONTAL DISEASE	MALES		
Group 1		30-39	2	5.3%
Group 2		40-49	2	5.3%
Group 3		50-59	1	2.6%
FEMALES				
Group 1		20-29	1	2.6%
Group 2		30-39	1	2.6%
Group 3		40-49	3	7.9%
Group 4		50-59	4	10.5%

**PREVALENCE OF PERIODONTAL DISEASE AND THE EFFECT OF PATIENTS' AGE AND SEX ON IT**

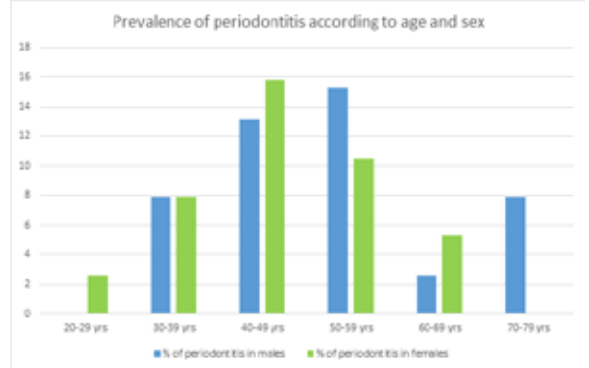
The data was analyzed and it showed that 79.2% of the diabetic patients had periodontal disease and complete edentulous was 9.4%. 11.4% of the remaining patients were periodontally healthy [Table 2].

Periodontal status of patients with diabetes mellitus [Table 2]



The prevalence of periodontal disease was higher in females (44.7%) than in males (39.5%) where there was a difference of 5.2% [Table 3]

Prevalence of periodontitis according to age and sex [Table 3]



**DISCUSSION**

Within the limits of the study we can conclude that certain systemic disorders like diabetes mellitus can be related to periodontitis, which is a highly prevalent infectious disease and poor glycemic control can greatly increase the risk of periodontitis. People with poorly controlled diabetes have an increased risk of being diagnosed with periodontitis and alveolar bone loss [7,8]. Improving glycemic control and controlling diabetes is most likely to reduce the risk and prevalence of periodontitis. Periodontal treatment is effective in patients with diabetes, but we can expect long-term recurrences if diabetes is not well controlled.

The prevalence of periodontal disease in diabetic patients was 79.2% and complete edentulous was 9.4%. Remaining 11.4% were periodontally healthy.

There was an increase in the prevalence of periodontal disease with age but not with sex.

In people with diabetes, oral health should be promoted, as it is an integral component of their overall diabetes management.

There is a potential to significantly improve the quality of life in diabetic patients through any improvements in the control of diabetes or periodontal disease.

**CONCLUSION**

Most often, the systemic disorder of patients modifies the course of periodontal disease. The systemic disorder exerts the effect in a generalized manner, affecting the occurrence and management of the periodontal condition. Diabetes is one of such systemic conditions which plays an important role in the etiology of periodontal disease.

Epidemiological studies confirm that diabetes is a significant risk factor for periodontitis and it also states that the risk is greater if the glycemic control is poor. These people with ill controlled diabetes are at a risk for other macrovascular and microvascular complications and also at a risk of periodontitis and alveolar bone loss, as stated earlier. The prevalence of diabetes is predicted to increase in the next few decades, hence we will probably see a reversal of the previously experienced reduction in the prevalence of periodontitis, associated to less smoking and better oral healthcare behaviors over recent years, which is a result of large increase in the number of people with diabetes [9].

People with poorly controlled diabetes, both type 1 and type 2 diabetes mellitus, in both adults and children, must be considered at a risk for periodontitis, and people with

diabetes should be informed of this risk, which will bring awareness to them about this disease and as well as helps them control it well. The early diagnosis and prevention is of utmost importance as this helps them avoid tissue loss which occurs in periodontitis, as this is largely irreversible. Adults and children with poorly controlled diabetes should be referred to the dental clinicians early for periodontal screening. In addition to this oral health should also be encouraged and promoted in diabetic patients, as it is an integral component of their overall diabetes management. It is better to have a closer collaboration between medical and dental clinic teams as it helps us manage patients with both diabetes and periodontitis, and contact with dentists is important after the diagnosis of diabetes.

Diabetes plays an important role in the initiation and progression of periodontal disease, which involves multiple factors, poor metabolic control in particular and as well as extended duration of diabetes are major risk factors for diabetes when extensive local irritants are present on teeth. The dentist can play a vital role in diabetic patients' overall healthcare through recognizing and treating their periodontal needs, understanding the "Sixth Complication of diabetes mellitus".

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