

# Periodontal Disease Associated with Diabetic Patients

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## Abstract:-

### ➤ Aim:

The aim of this study was to analyse the relationship between periodontal problems and diabetes mellitus patients. India being the diabetic capital of the world, its association with oral infections and other oral problems is increased as well. Not only oral problems, other general problems like wound healing is also affected in diabetic patients.

### ➤ Materials And Methods:

A questionnaire based study was prepared and distributed among the population who are known to be diabetic with an informed consent. About fifty people participated in this survey. Most of them were between the age group of fifty five to sixty years of age.

### ➤ Results:

Out of fifty diabetic patients, most of them belonged to the age group of fifty five to sixty years of age. More than half of the patients were diabetic for more than five years. A female predilection was evident. And almost every one of them was under medication for diabetes mellitus either in the injection form or tablet form or both. Most of them experienced oral swellings with pus discharge and delayed wound healing.

### ➤ Conclusion:

Periodontal problems are one of the main initial manifestations of diabetes mellitus. The article gives an overview of the co relation between periodontal problems and diabetes mellitus.

## I. INTRODUCTION

Diabetes is a risk factor for severe periodontal disease. Severe periodontal disease often coexists with severe diabetes mellitus [4]. Infection mediated up regulation cycle of cytokine synthesis and secretion by chronic stimulus from lipopolysaccharides(LPS) and products of periodontopathic organisms may amplify the magnitude of Advanced Glycation End product(AGE) mediated cytokine response operative in diabetes mellitus[6].Advanced periodontal disease involve oxidant stress in the gingival, induced by effects of AGE[1].AGE'S present in diabetic gingival may be associated with a state of enhanced oxidant stress, a potential mechanism for accelerating tissue injury.[7]

Periodontal disease is a chronic inflammatory disease of periodontium[5].Its advanced form is categorized by periodontal ligament loss and destruction of surrounding alveolar bone[2]. Severe Periodontitis may result in tooth loss. Several forms of Periodontitis such as Aggressive Periodontitis, Chronic Periodontitis are a manifestation of systemic disease [15]. The periodontal diseases are highly prevalent among worldwide population [12]. Gingivitis is caused by bacterial bio film (dental plaque) that accumulates on teeth and gums [9]. Gingivitis is reversible and causes less damage to surrounding tissues [4]. Periodontitis results in loss of connective tissue and bone support and is a major cause of tooth loss in adults. In addition to pathogenic microorganisms in the bio film, genetic and environmental factors, especially tobacco use, contribute to the cause of these diseases. Common forms of periodontal disease have been associated with adverse pregnancy outcomes, cardiovascular disease, stroke, pulmonary disease, and diabetes [10] Stopping the progression of periodontal disease and maintaining a good oral hygiene with routine oral screening with dentist help us to prevent the oral cavity from deleterious effect of periodontal problems[8]. Toxins liberated by bacteria cause gingival inflammation and consequently form periodontal pocket [11].Periodontal disease and diabetes have a bi-directional relationship. Not only people with diabetes are more prone for periodontal disease, but also periodontal diseases have the potential to

affect blood glucose control and contribute to progression of diabetes [14]. Both diabetes and periodontal disease stimulates pro-inflammatory cytokines, such as IL 1, IL 6, TNF  $\alpha$  etc, which creates deleterious effect on periodontal tissues. Mechanical treatment of Periodontitis combined with short term administration of anti-microbial can temporarily improve glycemic control in diabetes patients [13].

**II. MATERIALS AND METHODS**

A consecutive series of patients with periodontal disease were referred to the Department of Periodontics in Thai Moogambigai Dental College among which, most of the individuals were a known diabetic case. The survey was taken among the known diabetic individuals, of which 50 individuals participated in the survey. The survey was taken in the form of questionnaire and the questions were framed on the basis of oral infection associated with diabetes and their knowledge about the two way relationship. Ethical committee approval was obtained from the university. The patient's were briefd about the study and an Informed consent was obtained from them.

**III. RESULTS:**

**SECTION 1:-**

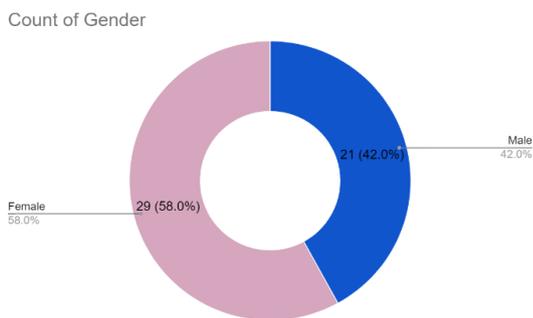


Fig 1:

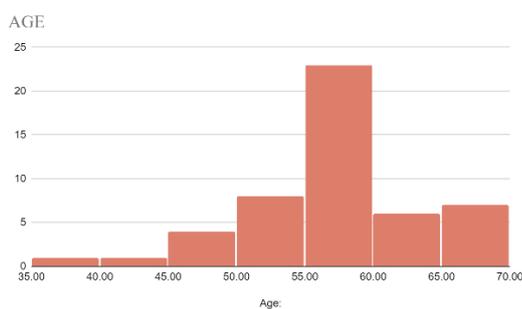


Fig 2:

According to the demographic survey that is shown in table 1 fig 1, the gender that is most commonly affected is the female. About 58% of female have participated and they are known diabetic and the age group that is affected ranges from 55-60 years as shown in fig 2.

**SECTION 2:-**



Fig 3:

Most of the affected group that is about 78% have been to the dentist once in a year for routine dental check up and of only 8% have been to the dentist for once in six months and 14% have never been to the dentist.

**SECTION 3:-**

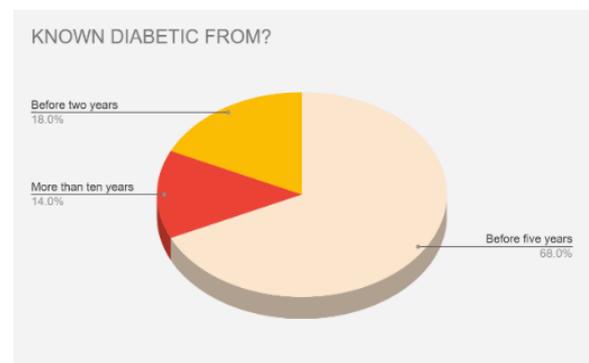


Fig 4:

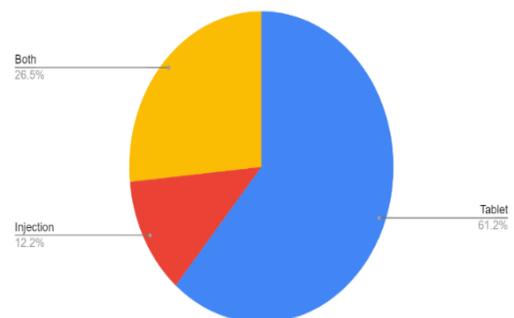


Fig 5:

All of the participants were known diabetic among which most of them are known diabetic before 5 years(68%), almost 18% were diagnosed before 2 years,only few of them were diagnosed before a year. And hence they take medications in the form of tablets and injections and some take both, of which most of them and more significantly of about 61.2% were taking in the form of tablet and of about 12.2% were taking in the form of injection and 26.5% take in the form of tablet and injection.

SECTION 4:-

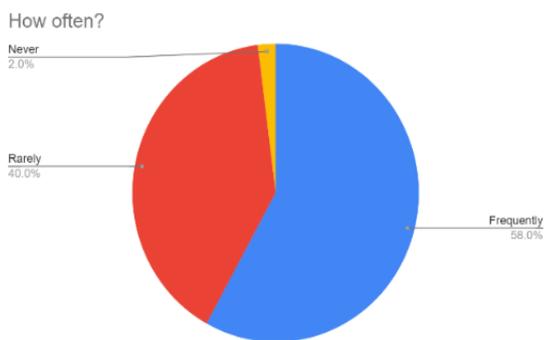


Fig 6:

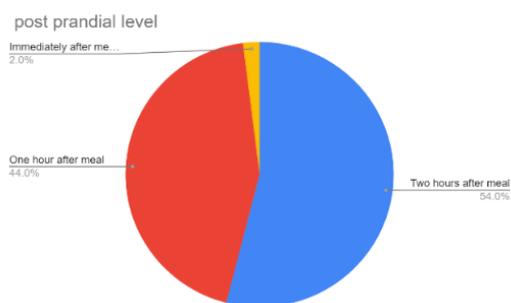


Fig 7:

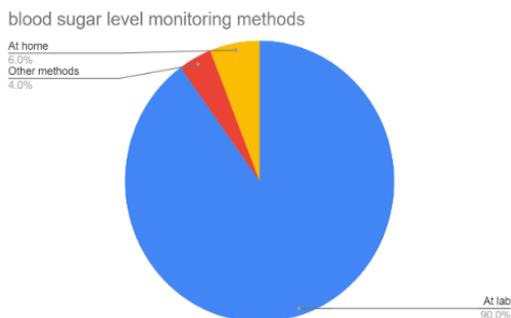


Fig 8:

When it was asked how often do you check your blood sugar level 58% of the participants answered frequently and 40% of them check rarely and only 2% of them check rarely as shown in the fig 6.

As in fig 7 when it was asked when will you check the blood sugar level 54% answered two hours after the meal and 44% answered one hour after the meal. Only 2% said immediately after the meals.

The figure 8 shows that the methods people follow to check their post prandial blood sugar level of which significantly of about 90% answered that they evaluate and most preferred methods is at lab. Of about 6% check at home and 4% by other means like camp,at pharmacy etc.

SECTION 5:-

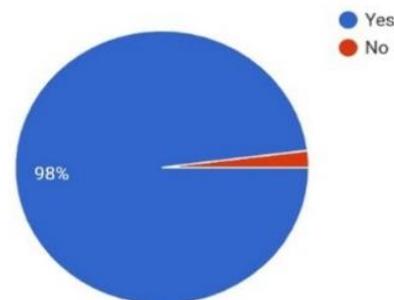


Fig 9:- AWARE OF NATUROPATHY

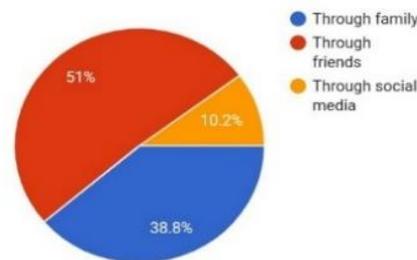


Fig 10:- HOW?

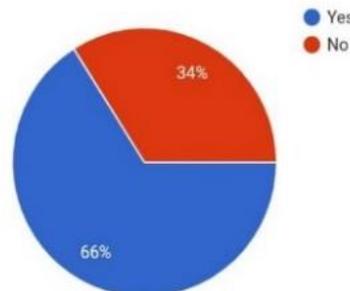


Fig 11:- DO YOU TAKE REMEDIES

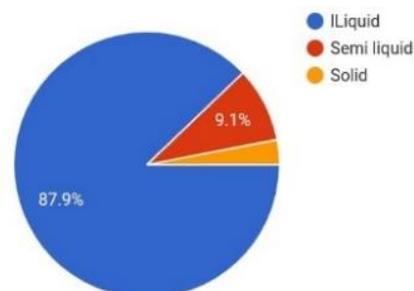


Fig 12:- IN WHICH FORM?

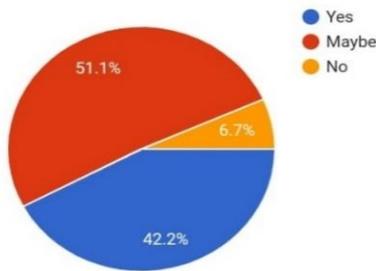


Fig 13:-DOES IT HELP REDUCING BLOOD GLUCOSE LEVEL

About 98% are aware of the naturopathy of which 51% came to know about it through friends and 38.8% through family and 10.2% through social media.

As in figure 11 and 12 about 66% take home remedies for diabetes, of about 87.9%,9.1% and 3% in the form of liquid or semi liquid or solid respectively.

Figure 13 reveals when it was followed these remedies helped in maintaing blood glucose level, majority of them of about 51.1% said may be, 42.2% sais yes it helps in reducing and only 6.7% said no.

SECTION 6:-

Aware that diabetes and oral problems are inter related?

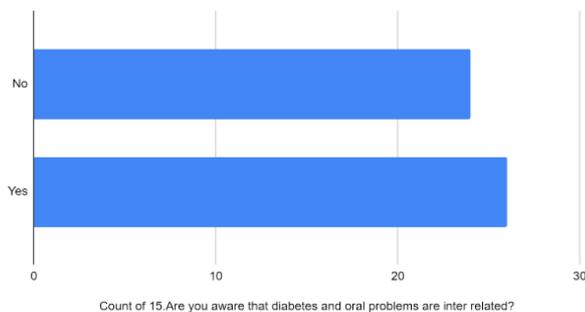


Fig 14:

Almost 52% knew that the oral problems and the diabetes are inter related and 48% said that they don't know about the two way relationship between the oral problems and the diabetes.

SECTION 7:-

Aware of the oral infections in diabetes?

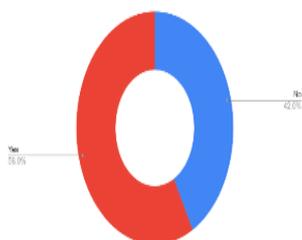


Fig 15:

how?

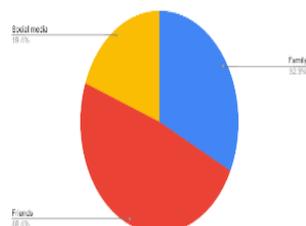


Fig 16:

According to figure 15 ,58% are aware of the oral infections in diabetes whereas 42% are not aware of the oral infections.

58% of the population came to know about the oral infection through friends, family and social media 48.4%, 32.3% and 19.45 respectively as shown in figure 16.

SECTION 8:-

Encountered any oral infection



Fig 17:

Experience any of these oral problems?

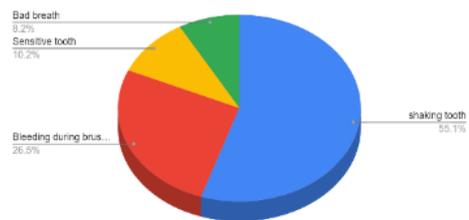


Fig 18:

Experienced shaking teeth during?

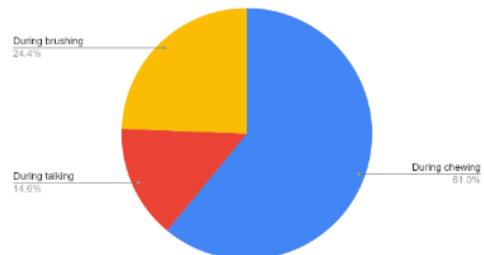


Fig 19:

Figure 17 reveals almost 64% of the surveyed population have encountered oral infection and about 22% have not encountered and 14% have encountered oral infection rarely.

Almost 55.1% of them experience mobility and 26.5% have experienced bleeding during brushingand they are reported to be the most common problem faced by the surveyed population. About 10.2% and 8.2% of them have reported sensitivity and bad breath respectively as shown in fig 18.

The surveyed population who reported to have mobility said they have noticed during chewing (61%),

during brushing (24.4%) and during talking (14.8%) as shown in figure 19.

SECTION 9:-

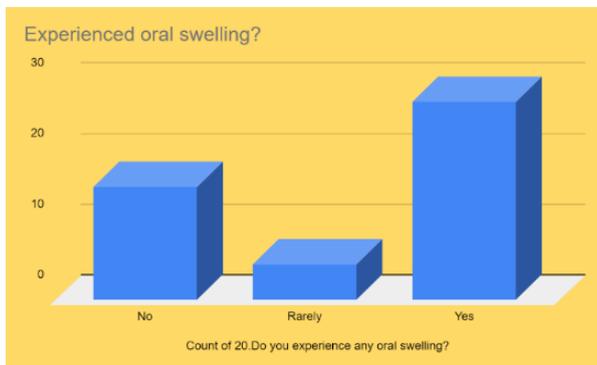


Fig 20:

Almost 57.1% of the surveyed individuals experienced oral swelling. Only 10.2% of them have experienced rarely and 32.7% have not experienced oral swelling.

SECTION 10:-

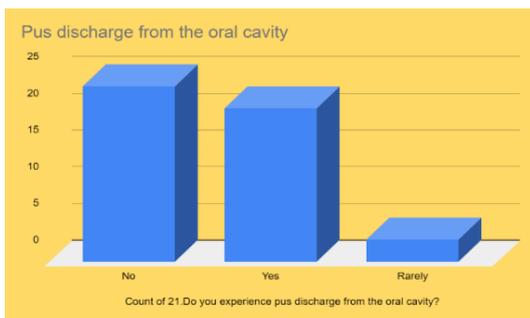


Fig 21:

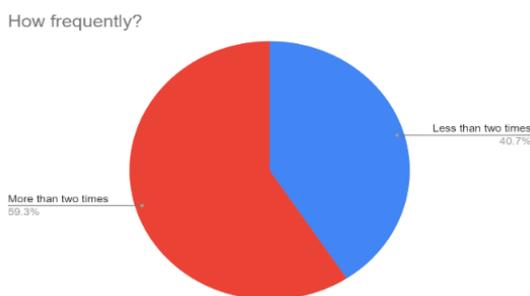


Fig 22:

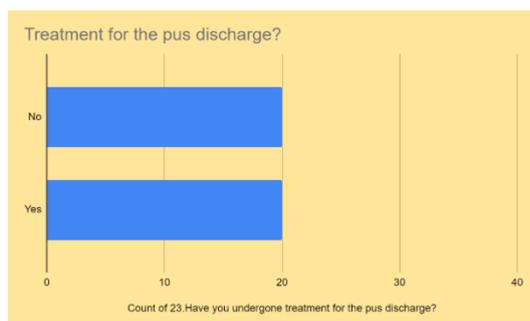


Fig 23:

According to fig 21, among the surveyed population, about 50% have not experienced pus discharge from the oral cavity, more or less equally 43.8% of them have experienced oral swelling and 6.2% experienced it rarely.

About 59.3% have experienced it more than twice and 40.7% experienced less than two times as shown in fig 22. 50% of the surveyed population have undergone treatment for pus discharge.

SECTION 11:-

Delay in the wound healing after the treatment

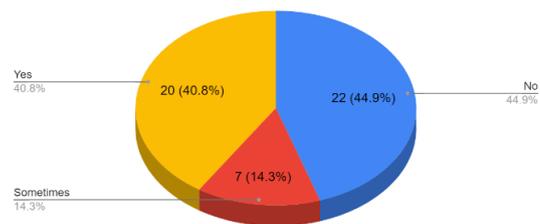


Fig 24:-

Almost 44.9% and 14.3% have not experienced delayed wound healing and have experienced sometimes respectively. Almost 40.8% of them have experienced delayed wound healing.

SECTION 12:-

Does having oral problems make you feel stressed?

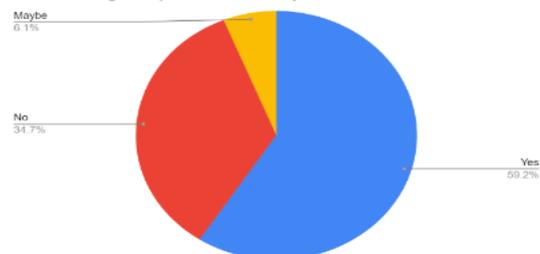


Fig 25:

When it was asked whether having oral problems make you feel stressed, majority of them 59.2% feel stressed and about 34.7% doesn't feel stressed about it and 6.1% said rarely.

IV. DISCUSSION:

Diabetes is a metabolic disorder. Periodontal diseases are chronic inflammatory conditions that have huge impact on systemic well-being [7]. Periodontal inflammation is associated with an elevated systemic inflammatory state and increased risk of oral infections, gum diseases and stress[6]. In the present, the gender that is most commonly affected by diabetes was found to be female, about 58% of the females that have participated are known diabetic[7].

Diabetes is more prevalent among 55-60 years of age group. About 78% of the people with diabetes have been to dental check-up once in a year, only 8% have been to the dentist for once in six months and 14% have never been to dentist[12]. The awareness of being diabetic among the participants was found that about 68% of them are known diabetic before 5 years and 18% of them were diagnosed with diabetes before 2 years[10]. 61.2% were taking medications in the form of tablet, 12.2% of them are taking in injection form and about 26.5% takes in both tablet and injection forms[11].

Regarding the monitoring of blood sugar level among the participants was found that 58% of the population, check frequently, 40% check rarely [13]. The participants were also asked about the time for checking blood sugar level 54% answered two hours after the meal and 44% answered one hour after the meal and only 2% immediately after the meal[11]. There should be an increased awareness about the various laboratory methods for detection of blood sugar. Patient should be educated home detection kit as well, which will enable them to monitor their blood sugar level better. Only 51% of the subjects had knowledge on Naturopathy medicines to control blood sugar. Their knowledge in these aspects should also be increased. The survey was also conducted to evaluate the awareness of naturopathy for treatment of diabetes, 51% of them came to know through friends and 38.8% through family, 10.2% through social media. 51.1% of them reported that it may be useful in reducing blood glucose level, 42.2% said yes it helps and 6.7% said no, 52% knew that oral problems and diabetes are interrelated and 48% said that they don't know[5]. 64% of the people encountered oral infections, 22% have not encountered and 14% have encountered oral infections rarely.

The surveyed population reported that 61% of them have mobility during chewing and 24.4% during brushing and 14.8% during talking[3]. Oral swelling was reported by about 57.1% of the people, out of which 10.2% have experienced rarely and 32.7% have not experienced oral swelling. About 50% of the population undergone treatment for pus discharge [9]. Nearly 40.8% of them experienced delayed wound healing and 44.9% have not experienced delayed wound healing [11]. Majority of the population nearly 59.2% have reported that they feel stressed having oral problems, 34.7% doesn't feel stressed and 6.1% said rarely [15].

Patient should also be educated about the systemic link between Periodontal infections with Diabetes. Diabetic patients should be advised to visit their dentist regularly and they should be informed that this could have a control over their blood sugar level. 60% of the subjects were stressed out about the Oral lesions [7]. Their knowledge about the treatment aspects should be increased. They should be made to understand that their lesions are treatable and not to be related to malignancies [10].

## V. CONCLUSION:

Periodontal problems are one of the initial manifestations of diabetes. This article gives you a brief overview of the co relation between the periodontal problems and diabetes mellitus. It also showed the longevity of the diabetic problem and the various methods to treat it. It even presented the frequency of testing, the time of testing and the place of testing the post prandial values of blood sugar levels. The knowledge of naturopathy and its day to day use was also assessed in this study. Overall the periodontal problems that commonly occurs in older people are much more likely to happen to those with diabetes mellitus like gingival bleeding, pus discharge etc were also acknowledged in this study.

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