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# Bacteriological Profile of Periodontitis in Diabetic Patients Attending Dental OPD.

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**ABSTRACT**

Among the dental health problems, periodontitis is one of the frequently encountered infection. There are various factors which pave way for the growth of a number of micro organisms in the oral cavity and finally leading to periodontitis followed by its destructive sequale. Poor oral hygiene, immune deficiency, irrational use of antibiotics are some among them[1,2]. Apart from these factors, chronic systemic illnesses especially diabetes mellitus also enhances the rate of infection by changing the periodontal tissue response to local factors[3]. Studies have showed that the rate of dental infections are higher in relation to diabetes[4]. This study was done to understand the relation between periodontal disease and diabetes and to study and compare its bacteriological profile among non diabetics and diabetics. A total of 50 patients were taken in this study which includes 32 diabetics and 18 non diabetics. Samples were taken in the form of swabs from the oral cavity, at the site of lesion. They are transported immediately to our central laboratory and plated on appropriate medias. Finally 45 strains were isolated from diabetic patients and 34 strains were isolated from non diabetic patients. Thereby the number of isolated strains was higher in case of diabetic patients when compared to non diabetic patients. Thus this study confirms and reemphasizes that the incidence of periodontitis is higher in diabetics.

**Keywords:** periodontitis, diabetes, bacteria, complications

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## INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterised by hyperglycemia which may be due to decreased secretion or reduced activity of insulin [5]. It leads to a number of long term complications which involves all the systems of human body.

Oral health is very important, as it helps in determining the general health status of an individual. But unfortunately this task seems to be tedious in diabetic patients, as they are prone for various infections easily. Periodontitis is the infection and lesion of the attachment element of the tooth that results in destruction or loss of those tissues which supports the tooth. It can be classified into 3 types, chronic, aggressive and necrotising periodontitis.

**Table 1: Oral complications of diabetes mellitus [6, 7]**

| Long term-diabetic complication | Oral implications |
|---|---|
| Microvascular disease | Xerostomia |
| | Greater susceptibility of oral tissues to trauma |
| | Increased opportunistic infections like candidiasis |
| | Greater risk of caries |
| | Greater accumulation of plaque |
| | Greater susceptibility to periodontal disease |
| | Greater risk of periodontal abscess when periodontitis is present |
| | Delayed healing |
| Peripheral neuropathy | Oral parasthesia including burning mouth or tongus |
| | Altered taste sensation |

## MATERIALS AND METHODS

The study includes both non diabetic and diabetic patients attending periodontic OPD during July 2013 in Balaji dental college and hospital, Chennai.

**Inclusion criteria**

- Patients clinically diagnosed as periodontitis
- Both diabetics and non-diabetic patients
- >20 years of age

**Exclusion criteria**

- Patients on antibiotic therapy
- Any other co-existing disease like malignancies
- Denture wearers

The patients included in this study were clearly explained about the nature and purpose of our study. Samples were collected with the help of sterile swabs from the site of lesion after obtaining an informed consent from each subject.

A brief history was obtained from the patients including duration of the diabetes, any other co-existing systemic illness, long term intake of antibiotics, steroids or any other immunosuppressant drugs.

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**Sample collection and plating**

A total of 50 patients including 32 diabetics and 18 non-diabetics were taken in this study. Sterile cotton swabs were used to collect the samples from the site of lesion in the oral cavity. The samples thus collected are thus immediately transported to the central microbiology laboratory and processed. Direct microscopic examination was done. Then the swabs were inoculated on to Nutrient agar, MaConkey agar and Blood agar plates.

Aerobic incubation of all the cultures at 37$^{o}$c was done. After 24 hours, those plates were examined for the presence of growth. The colonies were then subjected to gram stain, hanging drop, oxidase, catalase and coagulase tests.

## RESULTS AND DISCUSSION

The study shows that the incidence of periodontitis was higher in diabetics than in non-diabetics.

**Figure 1: Prevalance of periodontitis among diabetics and non-diabetics**

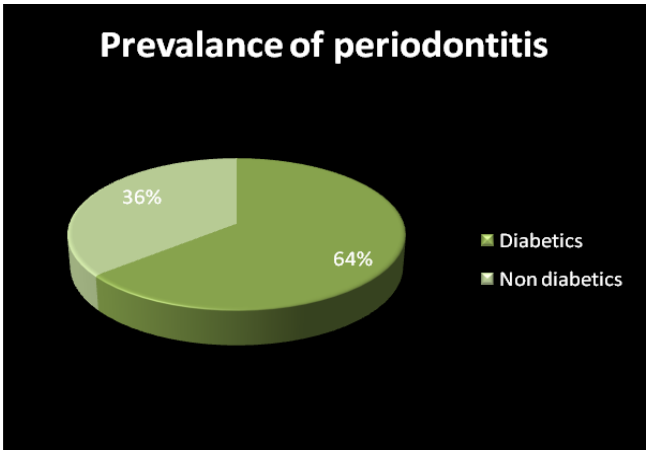


Figure 1 shows that among 50 periodontitis patients 32 (64%) were diabetic and 18 (36%) were non-diabetic.

**Table 2: According to Age – in diabetics and non-diabetics**

| Age group | Diabetics | Non-diabetics |
|---|---|---|
| 21-30 | 1 | - |
| 31-40 | 3 | 1 |
| 41-50 | 5 | 1 |
| 51-60 | 15 | 4 |
| 61-70 | 8 | 12 |
| **Total** | **32** | **18** |

**Table 2:** describes that more number of patients were found in the age group of 51-60 in diabetic patients. Whereas the highest number of occurrence in non diabetic group was observed in 61-70 years of age group. Hence diabetes makes an individual of any age to be at increased risk of acquiring periodontitis.

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**Figure 2: Number of strains in diabetics and non-diabetics**

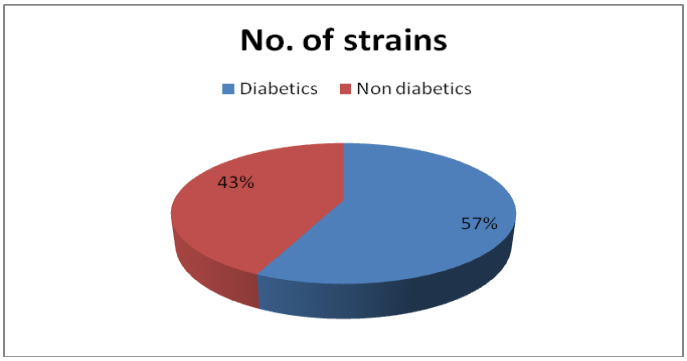
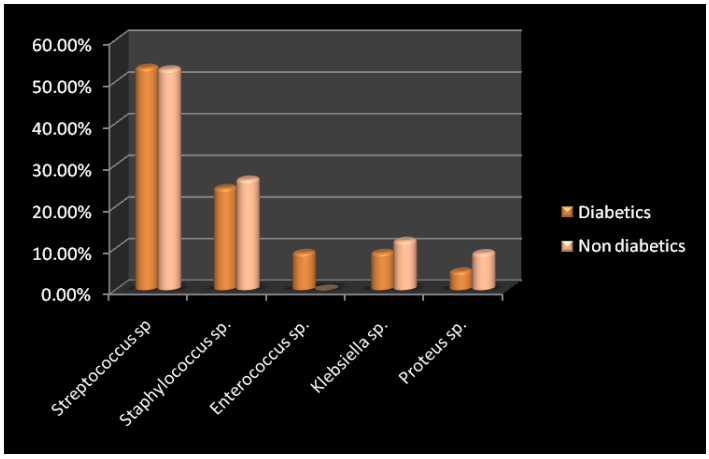



**Figure 3: Order of occurrence of strains isolated form diabetics and non-diabetics**




A total of 79 strains were isolated in this study. Figure 2 shows that higher number of isolates i.e. 45 (57%) strains were from Diabetic patients and 34 (43%) strains were from Non Diabetic patients. This finding was similar to that of Murray P *et al* and Mustard JF *et al* [9,10].

A comparative study of Diabetic and Non-Diabetic patients has showed that the bacterial flora frequency is higher in Diabetic patients as compared to Non Diabetic patients [8]. Hence this study also reemphasizes that periodontitis is more common in diabetics than in non-diabetics.

## CONCLUSION

The main aim of the dental health care is to help people in maintaining a good dentition, as it is directly related with the quality of our life. But periodontitis is one of the common, chronic and progressive problem of dental health which finally results in loss of tooth and disability. Hence maintaining a good oral hygiene and also proper and regular dental checkups even in healthy individuals are necessary to avoid these issues.

As diabetes have already reached an epidemic status throughout the word due to life style modifications and various other reasons, it is also necessary to have an eye on our dietary habits. Diabetic patients are more prone for various oral and systemic complications. Therefore to prevent oral complications, it is essential that all diabetic patients should have a proper control over their blood sugar levels and regular dental checkups are also mandatory.

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