



# Estimation of the Prevalence of Candida Species in the Oral Cavity of Diabetic Patients Attending Dental Clinics

Ajrish George S<sup>[1]</sup>, Muralidhran N.P<sup>[2]</sup>

<sup>[1]</sup> II Year Student BDS, Saveetha Dental College, Chennai.

<sup>[2]</sup> Asst.Professor Dept of Microbiology Saveetha Dental College, Chennai.

## Abstract

The aim of the study is to estimate the incidence or prevalence of candidiasis in patients attending dental out patient with type 2 diabetes. Candidiasis is an opportunistic infection. The level in saliva is not detectible in normal healthy person. However in diabetic patients due to the increase carbohydrate level and diminished cell mediated immunity there is an increase in candidal count. Increase in candida in saliva can lead to any type of clinical conditions in mouth commonly known as thrush.

50 diabetic patients were randomly selected for study. Patients with postprandial blood sugar level which is above 200 were included. Salivary samples were collected after assessing the DMFS index and processed in candida differential media and various species of candida are identified

Out of 50 patients studied 15 patients had candida in their saliva samples

## INTRODUCTION

Candidiasis is an opportunistic infection caused by the species belonging to the genus *Candida* and more than fifty percent of the clinical cases are associated with candida albicans. *Candida albicans* is carried in the mouths of about 40 to 50% of the healthy individuals. The load is very minimum compared to the bacterial species or is not detectable. *Candida* is the most common opportunistic infection seen in apparently healthy and immunocompetent individuals also. In general fungal infections will occur in immunocompromised patients especially with compromised cell mediated immunity. Many factors act as predisposition factor for candidiasis, and most common is diabetes because of heightened tissue carbohydrate level. This devitalises the tissue and impairs the immune system to function. Recent studies show that Candidiasis is also common in smoking persons because the N-nitrosobenzylmethylamine which acts as a nutrient for the Candidal growth in the oral cavity. Candidiasis is associated with individuals wearing removable dentures.

Diabetes mellitus type 2 is a pre-disposing factor. Prevalence of oral candidiasis in diabetic patients is about 13.7 to 64% of the apparently healthy individuals. Infections of the mouth are most common among children less than one month old, the elderly, and those with weak immune systems. In this study 50 type 2 diabetes patients were studied for the occurrence of candidiasis.

## MATERIALS AND METHODS

In this study 50 type 2 diabetes patients who had the PP blood glucose level more than 200mg/dl in their blood were selected. All details of the patients were collected including DMFS index. Then the patients were explained about the study and informed consent was taken from the patients. Then saliva samples were collected in a sterile container. Then the container was transferred to the lab and stored in refrigerator till it was processed. The samples were thoroughly mixed to form a uniform suspension. From that

20 microliters of the saliva sample was taken in a micropipette and placed on the candida differential media (Himedia code M1297A). By using loops the saliva sample was spread on the surface of the media. Then the plates were incubated for 48 hours at 37°C aerobically and analysed for Candidal growth. The differential media helps for our study by enabling the different colour growth in the candida species. Light green colonies and purple colonies were seen. Light green indicates the presence of *Candida albicans*.

## RESULTS

Total No. of saliva samples is 50

Candidal growth was seen in 28% samples out of which 10% were with *Candida albicans*

Total no. of patients	Candida growth positive	Candida albicans	Other species
50	28%	10%	18%

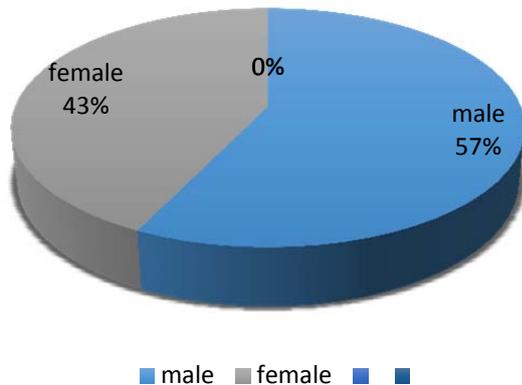
## DISCUSSION

*Candida* is an organism included as the part of normal flora. Many species of *Candida* were isolated from apparently healthy individuals. Through it is present the count will not increase to the detectable level. Though many species of *Candida* were isolated *Candida albicans* is associated with more than 50% of the pathological conditions. They are implicated in many oral lesions including the endodontic infections.

Among the 50 patients screened for presence of *Candida* species 28% of them were positive. Among the 28% positive cases 10% (image 1) of them were positive for *Candida albicans* and remaining 18% (image 2) were carrying other species of *Candida*. The patients included in this study have different complaints in the oral cavity. This group of patients are considered as a susceptible group. *Candida* can be the organism that colonizes any devitalized tissue in the oral cavity. In chronic diabetic patients who have impaired tissue resistance, the opportunistic pathogens

like candida will cause mucosal ulceration or even chronic inflammation. M/F RATIO

**Off the positive patients**



Though this study is conducted in the diabetic patients to know about the susceptibility to candidial infection, the other predisposing factors are all to be considered for their susceptibility. The amount of dietary carbohydrate and the other endocrine functions shall contribute more. Candidial infections are more pronounced in individuals with diminished cell mediated immunity, which is common feature in diabetes. Some time it will be seen as a consequence of alteration in the oral flora during long term antibiotic therapy or with broad spectrum antibiotic. Candidiasis is seen in during pregnancy but many women suffer with recurring episodes of candidiasis.



Image 1

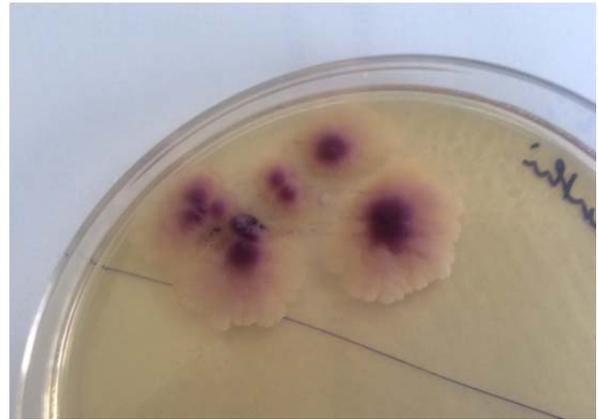


Image 2

**CONCLUSION**

This study is conducted with the aim of assessing the health status of the diabetic patients. Presence of candida is taken as an indicator of the compromised state in diabetic patients. These patients are susceptible to any infections when their immune status is compromised. Candida is known to cause many types of oral lesion in patients attending dental clinics. It predominates in diabetic patients

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