

Prevalence of oral mucosal lesions in type 2 diabetic patients in Chennai, India

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ABSTRACT

Aim: The present study is aimed to evaluate the prevalence of oral mucosal lesions among type 2 diabetic patients in Chennai, India. **Methods:** The study group comprised of 100 type 2 diabetic patients ($n = 100$), aged between 21 and 80 years attending the outpatient department of Sree Balaji Dental College and Hospital, Chennai, during a 6-month period. This was a cross-sectional observational study that comprised of a thorough clinical evaluation and diagnostic tests followed by recording of the oral mucosal lesions that were commonly observed in the above population. **Results:** Of the 100 patients, 56 (56%) were females and 34 (34%) were males. All the patients were among 21–80 years of age. 86 (86%) type 2 diabetic patients were found with associated oral mucosal lesions. The most common oral lesions being denture stomatitis (34%), angular cheilitis (21%), and gingival hyperplasia (20%) followed by other oral mucosal lesions. **Conclusion:** The above study concludes that patients with type 2 diabetes present with higher prevalence of oral lesions when compared with non-diabetics which implies the need for the dental surgeon to have a knowledge of the common oral mucosal lesions that may help to diagnose diabetes mellitus in patients who are unaware of their diabetic status and provide early treatment.

KEY WORDS: Angular cheilitis, Denture stomatitis, Early diagnosis, Gingival hyperplasia, Oral mucosal lesions, Type 2 diabetes mellitus

INTRODUCTION

Diabetes mellitus (DM) is an endocrine disorder characterized by the deficiency in the production of insulin, which may be due to the pancreatic beta cell destruction (type 1) or due to an increased resistance of the tissues to insulin (type 2) with alteration in the blood glucose levels.^[1,2] Diabetes is one of the most prevalent diseases in the world, and it has been dramatically increasing over the past decades.^[3] There are two types of diabetes. Type 1 results from the underproduction of insulin that occurs by beta-cell destruction in the pancreas.^[4] Type 2 DM is the most common form of the disease, accounting for about

90% of all cases.^[5,6] Diabetic complications account for most of the socioeconomic burden of the disease.^[7]

The main symptoms of the patient with DM are polydipsia, polyuria - nocturia, polydipsia associated with xerostomia, polyphagia, vulvar pruritus, and rapid weight loss, even with a balanced diet. Few other symptoms of Diabetes mellitus includes visual changes (such as blurred vision), somnolence, pain, cramps, fatigue, tingling and numbness of lower limbs, asthenia, organ deficiency, indisposition to work, discouragement, generalized physical and mental tiredness, ketoacidosis and fruit breath.^[8] A number of oral health complications are frequently associated with Type 2 DM.^[9] These include various inflammatory diseases, reduced saliva secretion, and oral mucosal pathologies. Further, inflammatory diseases such as gingivitis, periodontitis, candidiasis, stomatitis, benign migratory glossitis or geographic tongue, median rhomboid glossitis, and

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angular cheilitis have been reported.^[10] DM predisposes an individual to bacterial and fungal infections as well, including those caused by *Candida* species.^[11] In 1993, the WHO included the periodontal disease as a classic complication of diabetes.^[12] DM is believed to promote periodontitis through an exaggerated inflammatory response to the periodontal microflora and hyperglycemia-induced vascular changes.^[13] The production of glycated end products changes the structure and metabolism of collagen, changes the immunological response and interleukin activation and these are the most common mechanism of actions in decompensated diabetic patients, effectively contributing to the progression of periodontal disease.^[14]

Hence, the purpose of this study was to find the prevalence of the oral mucosal lesions in a group of patients with DM as it is critical to have a thorough knowledge on the oral manifestations of DM for early diagnosis and prompt intervention.

METHODS

This study was conducted in the Outpatient Department of Oral Medicine and Radiology, Sree Balaji Dental College and Hospital, Chennai. This was a cross-sectional study comprising 100 patients. The study group included patients who were already proven type 2 diabetes according to the diagnostic criteria proposed by WHO and whose random blood glucose levels were above 200 mg/dL and HbA1c above 6.0. Inclusion criteria of the study were patients between 21 and 80 years of age group who were already proven diabetic. Exclusion criteria included patients with severe periodontal disease, ill-fitting dentures, pregnant patients, and severe immunocompromised patients. All the patients were clinically examined in the outpatient department for associated oral mucosal lesions based on the WHO codes. After a thorough history, intraoral examination was conducted using mouth mirrors, periodontal probe, gauze, and spatula. The oral mucosa was examined that included lips, labial mucosa, buccal mucosa, tongue, gingival, palate, and floor of mouth, and findings were recorded accordingly. The diagnosis of the oral mucosal lesions was based on clinical examination, chairside clinical investigations, and biopsy if needed to confirm the clinical diagnosis.

Ethical Clearance

Ethical approval for this study was provided by the Institutional Ethical Committee, Sree Balaji Dental College and Hospital, Bharath Institute of Higher Education and Research, Chennai.

RESULTS

A total of 100 patients aged between 21 and 80 years were included in the study [Table 1 and Figure 1]. 46

were older than 50 and 54 were <50 years of age. 46 females and 54 males were included for examination [Table 2 and Figure 2]. All the 100 patients in our study had type 2 diabetes. A total of 166 lesions were observed among 78 patients, and 22 had no lesions. The most common lesion observed was denture stomatitis (34%), followed by angular cheilitis (21%), gingival hyperplasia (20%), and periodontal abscess

Table 1: Age distribution in study group

Age	Frequency (%)	Valid percentage
Valid		
21-30	4 (4.0)	4.0
31-40	23 (23.0)	23.0
41-50	27 (27.0)	27.0
51-60	25 (25.0)	25.0
61-70	16 (16.0)	16.0
71-80	5 (5.0)	5.0
Total	100 (100.0)	100.0

Table 2: Sex distribution in study group

Sex	Frequency (%)	Valid percentage
Valid		
Male	54 (54.0)	54.0
Female	46 (46.0)	46.0
Total	100 (100.0)	100.0

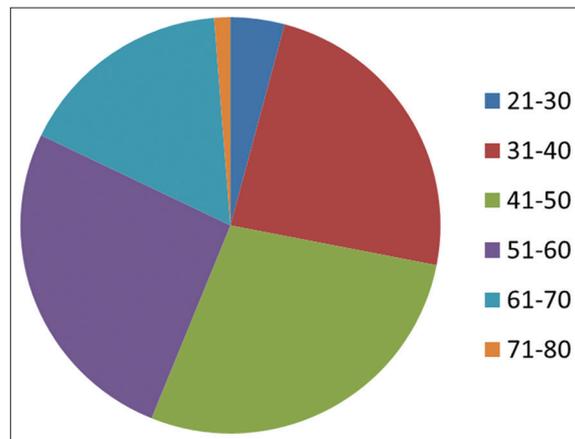


Figure 1: Age distribution in study group

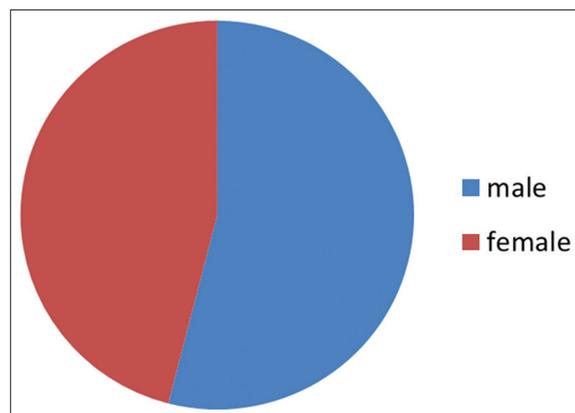


Figure 2: Sex distribution in study group

(19%), followed by other oral lesions [Table 3 and Figure 3].

DISCUSSION

DM has a worldwide distribution, occurring in about 1–2% of the world population, mostly due to high calorie diet. This is more prevalent 85% among individuals above the age of 40 years. Only 5% of the patients develop the disease before the age of 20.^[15] The study of oral mucosal abnormalities in diabetic patients is important due to the need of greater knowledge about the oral abnormalities in these individuals.^[16] It is known that diabetic patients have a higher risk of opportunistic infections since there are changes in oral microbiota and

the immunological system. Such increased risk may also be due to the presence of xerostomia or immunosuppression.^[17] The primary cause is related to reduced salivary flow, which leads to the reduction of immunoglobulin levels in saliva, decreasing the immunological defense mechanism mediated by the humoral factor for controlling *Candida* infection.^[18] Certain lesions occurred with significantly greater frequency in our study such as denture stomatitis and angular cheilitis. This was similar to a study where the association between denture stomatitis and DM was suggested by linking an increased prevalence of tissue type HLA-B15.^[19] Gingival hyperplasia was present in 20% of the patients in our study. These findings are similar to the studies which concluded that gingival hyperplasia and gingivitis are some

Table 3: Oral mucosal lesion distribution in study group

S. No	Lesion	Gender	Age				Total%
			21–30	31–40	41–60	61–80	
1.	Denture stomatitis	Female	0	4	6	9	34
		Male	0	2	8	5	
2.	Angular cheilitis	Female	2	3	2	6	21
		Male	1	1	1	5	
3.	Pseudomembranous candidiasis	Female	0	0	3	4	13
		Male	0	2	2	2	
4.	Gingival hyperplasia	Female	2	5	3	2	20
		Male	0	4	4	0	
5.	Fissured tongue	Female	0	1	2	4	11
		Male	0	0	1	3	
6.	Traumatic ulcer	Female	2	3	2	3	15
		Male	1	2	1	1	
7.	Lingual varicosity	Female	0	0	3	3	10
		Male	0	0	2	1	
8.	Periodontal abscess	Female	0	3	5	3	19
		Male	0	3	3	2	
9.	Oral lichen planus	Female	1	3	3	1	11
		Male	0	0	2	1	
10.	Xerostomia	Female	0	0	4	5	12
		Male	0	0	1	2	

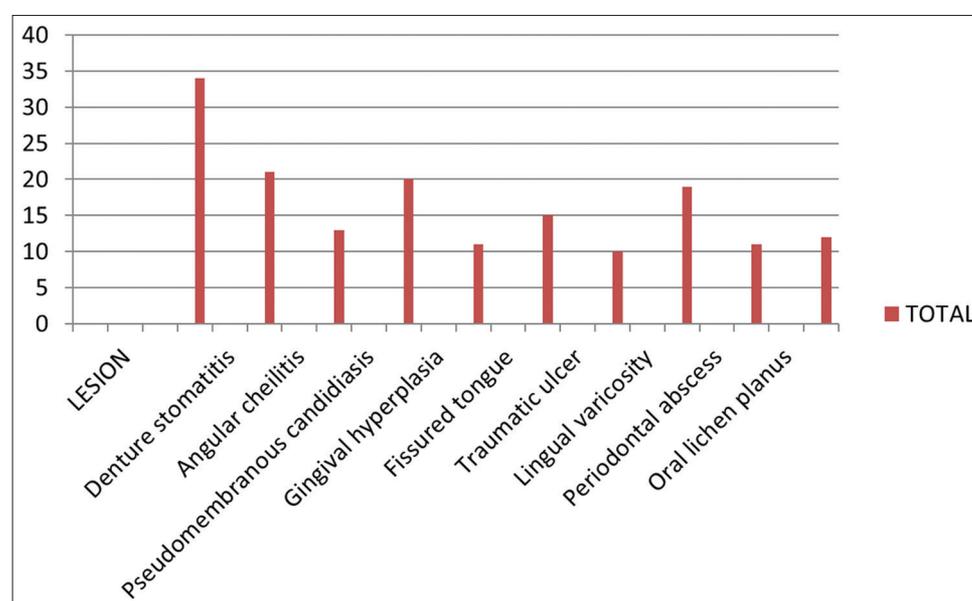


Figure 3: Frequency distribution of oral mucosal lesions in study group

common oral manifestations observed in diabetic patients.^[17,20] Few authors noticed a high prevalence of patients with fissured tongue and linked this condition with xerostomia.^[21] In our study also, of 12 patients who presented with xerostomia, 11 patients had coexistence of fissured tongue. Of the 100 patients evaluated, 15 (15%) presented traumatic ulcers. Few authors link the advanced age and the poor conditions of total prostheses with the presence of traumatic ulcers.^[21,22] Lingual varicosities were observed in 10 (10%) subjects, as it is seen as a common finding in the elderly. It is a usual finding in elderly patients which may be related to circulatory abnormalities associated with diabetic patients.^[15] A periodontal abscess can be considered as possible oral clinical diagnostic criteria for the diagnosis of DM. Elderly individuals visiting dental clinics need to be given due attention to find the possibility of having this systemic condition.^[23] In our study, periodontal abscess was observed in 19 (19%) population, and most of them were elderly patients. Oral lichen planus was seen in 11 (11%) patients in this study. According to a study carried out, it was present in approximately 5% of patients with type 2 diabetes.^[24] Of the 11 patients evaluated, 12 (12%) reported dry mouth (xerostomia), which was consistent with a study which showed that this abnormality was predominant in diabetic patients examined by them.^[22] The high levels of blood glucose increase the prevalence of oral mucosal lesions in diabetics than the non-diabetics.

CONCLUSION

DM is a chronic metabolic disorder and India has nearly 33 million diabetic subjects today with an overall prevalence rate of 4.3%. Most of the undiagnosed population may go into complications. Oral manifestations are important findings when screening patients who are not aware of their diabetic status. Most of the patients may have one or many of these oral conditions mentioned in this study. Hence, every dental health-care professional must possess a vast knowledge of identifying such oral conditions. Hence, every dental health-care professional must possess a vast knowledge of identifying such oral conditions that can lead to early diagnosis and prompt intervention to such patients and also will minimize the late complications of DM.

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