

# Oral manifestations in Diabetic patients under treatment for Cardiomyopathy

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## ABSTRACT

**Background:** Many chronic macrovascular and microvascular complications of diabetes have been noticed in cardiac patients. Oral manifestations are commonly observed in diabetic patients, particularly admitted for cardiomyopathy.

**Aim:** To determine the frequency of oral manifestations in diabetic patients under treatment for cardiomyopathy

**Study design:** Cross sectional study.

**Setting and duration:** Mayo Hospital Lahore six months duration

**Methods:** Diabetic patients who were admitted in the hospital for treatment of cardiomyopathy were included. Patients were evaluated for oral manifestations.

**Results:** The mean age of patients was 57.03±9.06years. There were 103(71%) males and 42(29%) females in the study. Out of 145 patients, 57(39%) develop oral manifestations. Out of 57patients with oral manifestations, taste dysfunction was complaint by 34(23.4%) patients, fungal infection was noted in 29(20%) cases, salivary dysfunction in 23(15.9%) cases, bacterial infection in 21(14.5%) cases, soft tissue lesions in 13(9%) cases, oral mucosal disease in 11(7.6%), periodontitis in 5(3.4%), dental caries in 4(2.8%), non-candidal oral manifestation in 3(2.1%) while 2(1.4%) had tooth loss during treatment of cardiomyopathy.

**Conclusions:** The oral manifestations are common in diabetic patients due to low immunity level.

**Keywords:** oral manifestations, diabetes mellitus, cardiomyopathy, treatment

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## INTRODUCTION

Diabetes mellitus has significant impact on increasing the incidence of cardiac failure even in absence of coronary artery disease and hypertension. So, as diabetic cardiomyopathy is increasingly well-known problem recognized by clinicians, a better understanding of its pathophysiology is mandatory to detect it earlier and improving treatment plans for diabetes-related cardiovascular complications.<sup>1</sup> Diabetic cardiomyopathy affects nearly 12% of diabetics, leading to overt cardiac failure and mortality. But, there is not an efficient and particular way to detect diabetic cardiomyopathy, possibly because molecular mechanisms are not fully explained, and it remains asymptomatic for many years<sup>2</sup>.

The concept of diabetic cardiomyopathy was first introduced by Rubler et al, and has subsequently been widely used by epidemiologists and clinicians<sup>3</sup>. Diabetic cardiomyopathy describes diabetes-associated changes in the structure and function of the myocardium that is not directly attributable to

other confounding factors such as coronary artery disease or hypertension<sup>4</sup>. Circumstantial evidence to date indicates that diabetic cardiomyopathy is a common but frequently unrecognized pathological process in asymptomatic diabetic patients<sup>5</sup>.

Many chronic macrovascular and microvascular complications of diabetes have been reported with few reports about oral complications<sup>6</sup>. Various inflammatory diseases and soft tissue pathologies in oral cavities are associated with diabetes mellitus; however, awareness of these complications is lacking worldwide<sup>7-9</sup>. Thus, oral complications in patients of diabetic cardiomyopathy were need to be identified. So we conducted this study.

The objective of the study was to determine the frequency of oral manifestations in diabetic patients under treatment for cardiomyopathy

## MATERIAL AND METHODS

This cross sectional study was conducted in Mayo Hospital, Lahore for a period of six months from January 2017 to June 2017. Sample size of 165 patients is estimated using 95% confidence level, 5% margin of error and taking expected frequency of cardiomyopathy i.e. 12% among diabetics. Simple random sampling technique was used.

**Inclusion Criteria:**

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1. Patients aged between 40-60years, both genders
2. Diabetes mellitus (BSR>186mg/dl and taking anti-glycemic medicines)

**Exclusion Criteria:**

1. Patient took gutka, pan, tobacco before cardiomyopathy and develop oral disease before cardiomyopathy (medical record)
2. Patients who have been treated for any oral manifestations before admission

**Data Collection Procedure:** 165 patients presenting in the Department of Medicine and cardiology, Lahore, fulfilling the inclusion criteria was included in the study. Informed consent was obtained. Demographic details of patients (name, age, sex, BMI, duration of diabetes) were obtained. Patients already diagnosed with cardiomyopathy were included and were treated as per hospital protocol. Then patients were evaluated for oral manifestations. If oral manifestations were present then type of oral manifestations were noted including periodontitis, salivary dysfunction, taste dysfunction, fungal infections, bacterial infections, non-candidal oral soft tissue lesion, oral mucosal disease, dental caries and tooth loss. All the data was recorded in proforma.

**Data Analysis:** SPSS version 21.0 was used to enter and analyzed the data. Presence of oral manifestations and its type including periodontitis, salivary dysfunction, taste dysfunction, fungal infections, bacterial infections, non-candidal oral soft tissue lesion, oral mucosal disease, dental caries and tooth loss were presented as frequency and percentage.

**RESULTS**

In this study, we included 165 diabetic patients of cardiomyopathy. The mean age of patients was 57.03±9.06years. There were 123(74.5%) males and 42(25.4%) females in the study. The male-to-female ratio was 2.9:1. The mean duration of diabetes was 10.06±3.47 years. The mean HbA1c of patients was 8.63±2.11%. History of taking anti-glycemic was taken, 77(46.7%) patients were taking medicine regularly, 62 (37.6%) were taking medicine irregularly while 26(15.8%) were not taking antiglycemic medicines (Table 1). Out of 165 patients, 57(39%) develop oral manifestations (Fig 1).

Out of 57 patients with oral manifestations, fungal infection was noted in 18(31.6%) cases, taste dysfunction was complaint by 10(17.5%) patients, bacterial infection was present in 10(17.5%) cases, soft tissue lesions in 5(8.8%) cases, salivary dysfunction in 4(7%) cases, oral mucosal disease in 4(7%), periodontitis in 2(3.5%), dental caries in 2 (3.5%), non-candidal oral manifestation in 1(1.8%)

and 1(1.8%) had tooth loss during treatment of cardiomyopathy (Table 2).

Table 1: Demographic characteristics of patients

n	145
Age (years)	57.03±9.06
Male	103 (71.0%)
Female	42 (29.0%)
Duration of T2DM (years)	10.06±3.47
HbA1c (%)	8.63±2.11
Taking anti-glycemic	
Regularly	77 (46.7%)
Irregularly	62 (37.6%)
Not taking	26 (15.8%)

Fig 1: Presence of oral manifestations

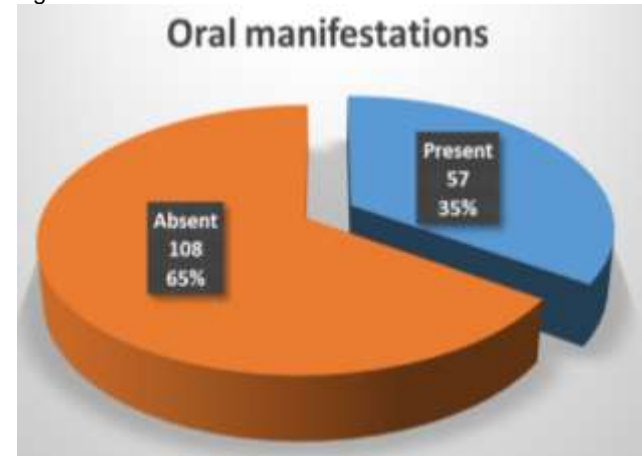


Table 2: type of oral manifestations present

Type	Frequency	%age
Fungal infections	18	31.6%
Taste dysfunction	10	17.5%
Bacterial infections	10	17.5%
Soft tissue lesion	5	8.8%
Salivary dysfunction	4	7.0%
Oral mucosal disease	4	7.0%
Periodontitis	2	3.5%
Dental caries	2	3.5%
Non-candidal oral	1	1.8%
Tooth loss	1	1.8%

**DISCUSSION**

Oral manifestations and complications in patients with diabetes mellitus have been recognized and reported recently as a major complication of diabetes mellitus. There is increasing evidence that chronic oral complications in patients with diabetes adversely affect blood glucose control<sup>6</sup>.

In our study, we included 165 patients of diabetic cardiomyopathy. The mean age of patients was 57.03±9.06 years. There were 123(74.5%) males and 42(25.4%) females in the study. The male-to-female ratio was 2.9:1. The mean duration of

diabetes was  $10.06 \pm 3.47$  years. The mean HbA1c of patients was  $8.63 \pm 2.11\%$ . In our study, 57(39%) develop oral manifestations. Out of these 57 patients with oral manifestations, fungal infection was noted in 18 (31.6%) cases, taste dysfunction was complaint by 10(17.5%) patients, bacterial infection was present in 10(17.5%) cases, soft tissue lesions in 5(8.8%) cases, salivary dysfunction in 4(7%) cases, oral mucosal disease in 4(7%), periodontitis in 2(3.5%), dental caries in 2(3.5%), non-candidal oral manifestation in 1(1.8%) and 1(1.8%) had tooth loss during treatment of cardiomyopathy.

According to previous literature, periodontal diseases have been proposed as the sixth most prevalent complication of diabetes mellitus following the other diabetic complications<sup>10,11</sup>. It has been reported as a more frequent oral complication of diabetes compared to other oral manifestations such as dry mouth and caries<sup>12</sup>.

The prevalence and the chance of developing oral mucosal lesions were found to be higher in patients with diabetes<sup>13</sup>. Several soft tissue abnormalities have been reported to be associated with diabetes mellitus in the oral cavity. These complications include periodontal diseases (periodontitis and gingivitis); salivary dysfunction leading to a reduction in salivary flow and changes in saliva composition, and taste dysfunction. Oral fungal and bacterial infections have also been reported in patients with diabetes. There are also reports of oral mucosa lesions in the form of stomatitis, geographic tongue, benign migratory glossitis, fissured tongue, traumatic ulcer, lichen planus, lichenoid reaction and angular cheilitis<sup>14-17</sup>.

It is well known that patients with diabetes are susceptible to oral infections that lead to tooth decay and loss. Salivary secretion dysfunction, periodontal and sensory disorders could increase the likelihood of developing new and recurrent dental caries and tooth loss<sup>6</sup>. Antibiotic use is often to blame for yeast infections, as the antibiotics kill beneficial microorganisms that usually prevent thrush outbreaks. In diabetic cardiomyopathy patients, several internal infections develop, which needs antibiotic treatment<sup>18</sup>.

## CONCLUSION

The oral manifestations are common in diabetic patients due to low immunity level. So diabetic patients, who undergo treatment for cardiomyopathy should be regularly screened for oral manifestations to prevent the complications of oral manifestations of these patients.

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