



**ORIGINAL RESEARCH PAPER**

**Dental Science**

**PREVALENCE OF ORAL MUCOSAL LESIONS IN NON-ORAL HABIT DIABETIC PATIENTS AND NORMAL SUBJECTS**

**KEY WORDS:** oral mucosal lesions, diabetes, oral lichen planus

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<b>ABSTRACT</b>	<b>BACKGROUND:-</b> The association between diabetic mellitus and oral mucosal lesions, especially oral lichen planus has been the subject of much research but conclusion is controversial .The reported frequency of oral lichen planus in diabetes mellitus varies from 1.6% to 85%
	<b>OBJECTIVE:-</b> prevalence of oral mucosal lesions in non-oral habit diabetic patients and normal subjects
	<b>MATERIALS AND METHOD:-</b> Cross sectional study involving 200 diabetic and 200 non diabetic control subjects without any oral habits. Detailed oral examination was performed based on international criteria.
	<b>RESULTS:-</b> A significantly greater proportion of subjects with DM(46%) had one or more OML in comparison to non-diabetics(30%) patients. Patients with DM showed significantly greater prevalence of oral lichen planus, geographical tongue, denture stomatitis and angular cheilitis (p<0.05).
	<b>CONCLUSIONS:-</b> prevalence of OML was significantly higher in diabetic patients than non-diabetic

**1. Introduction**

246 million are affected by diabetes worldwide and this is going to be increase 380 million by 2025 [1]. In coming decade an 3-fold rise is expected in China and India [2]. Among many complications of Diabetes such as blindness, renal failure, lower limb amputation and deaths due to cardiovascular disease [3],oral health is comprised in diabetes mellitus (DM) patients [4]. And can cause many inflammatory diseases and oral soft tissue pathologies. Inflammatory such as gingivitis, periodontitis, candidiasis, stomatitis, benign migratory glossitis or geographic tongue, median rhomboid glossitis and angular cheilitis [5– 9]. bacterial and fungal infections are more in diabetic people including infections caused by candida species [10]. hyperglycemia seen in diabetic patients leads to periodontal inflammations by exaggerated response by periodontal microflora and vascular changes [11]. DM is a risk factor for oral tumors as reported by some studies which include fissured tongue, irritation fibroma, traumatic ulcers and parotid gland enlargement [12,13]. Mitochondrial dysfunction might be the reason of diabetes-provoked cancer [14]. Results of some studies have shown DM as a risk factor for oral tumors [15] as well as oral pre-malignant lesions such as leukoplakia [16], erythroplakia [17] and lichen planus [18], olp and its association with diabetes has gained much attention in recent past, endocrine dysfunction may cause olp as diabetes cause immunological defect[18]. The purpose of this study was to determine the prevalence of OML in kashmiri patients with DM and non-diabetic control subjects without any oral habits and to investigate the association of DM with oral precancerous lesions

**2. Materials and method**

This was a cross-sectional study consisting of 200 kashmiri patients with DM and 200 kashmiri non-diabetic control subjects. The patients were recruited from the outpatient department of oral medicine and radiology.

**Inclusion criteria**

- 1 fasting blood sugar level was done to confirm diabetic or non diabetic status
- 2 patients who do not have previous history of oral lesion were recruited as controls.

**Exclusion criteria**

Patients with oral habits like smoking, alcohol consumption, tobacco\ or betel nut chewing or any immunologically mediated disorders that have been reported to be associated with oral lichen planus like ulcerative colitis, alopecia areata,vitiligo, chronic active hepatitis, myasthenia gravis, primary biliary cirrhosis and multiple sclerosis

**Examination**

Visual examination of the mouth was carried out by a single examiner who was supervised and assessed by an oral medicine specialist having more than 10 years of experience in the field. Extra and intra-oral examination was performed using electrical overhead light, mouth mirror, tweezers, gauze and wooden tongue depressor. The WHO guide to epidemiology and diagnosis of oral mucosal diseases was used as diagnostic criteria for abnormality of oral mucosa[20]. when considered necessary Incision biopsy and histopathological examination was performed.

**Statistical analysis**

SPSS version 12.0 was used for data entry and analysis.. Logistic regression was used to determine the association between the oral lesions with age, duration, metabolic control and medications used by diabetic subjects. p \_ .05 was considered statistically significant.

**3. Results .**

The demographic characteristics of both the groups are presented in Table 1There were more diabetic subjects on medications (other than antidiabetic medications) (28.5%) than control subjects (19%). A small percentage of subjects reported taking medications like sedatives, corticosteroids etc. and were categorized as others. Diabetes related variables among diabetic subjects have been illustrated in Table 2. Most of the diabetic patients had type II DM (93). Most subjects were on oral hypoglycemic drugs (66%) like gliclazide, glipizide, metformin, glibenclamide, acarbose, rosiglitazone or combination of these drugs. Only 24% subjects were on insulin alone. About 70% of the subjects had good or moderate glycemic control. Diabetic complications like retinopathy, nephropathy, neuropathy, cardiovascular diseases and amputations of the lower limbs\ were seen in 10% of the diabetic subjects.

**Table1**

Socio-demographic profile of diabetics and non-diabetics.				
Variables	Diabetic(200)		Non Diabetic(200)	
	n (%)	Mean (SD)	n (%)	Mean (SD)
Gender				
Women	140(70%)	150(75%)		
Men	60(30%)	50(25%)		
Age		40.8		39.8
No schooling	70(35%)	80(40%)		
Schooling	130(65%)	120(60%)		
Medications*				
Cardiovascular agents	18%	14%		
Nsaid	2%	1.5%		
antihistamine	1.5%	1.5%		
Others	7%	2%		
None	70%	80%		

\*other than antidiabetic medications

**Table 2**

Description of diabetes variable among diabetic subjects	
Variables	n %
Type of diabetes	
Type I	12(6)
Type II	188(93)
Diabetes duration	
<5-years	80(40%)
6-10 years	66(33%)
>10 years	54(27%)
Treatment of DM	
Oral agents	132(66%)
Insulin	24(12%)
Insulin +oral agents	44(22%)
Metabolic control	
Good	80(40%)
Moderate	60(30%)
Poor	60(30%)
Diabetic complications	20(10%)

**Oral mucosal lesions**

OML seen in patients with DM and controls are shown in Table 3. In total, 46% of the diabetic subjects had one or more OML. In comparison, 30% of the control subjects had OML, and this difference was found to be statistically significant ( p < 0.05). The analysis showed that there was a significant association between the presence of one or more mucosal lesions and metabolic controls(p<0.05).

**Table3**

Prevalence and distribution of oral mucosal lesions in diabetic and non diabetics		
Variables	Diabetic n%	Non diabetic n%
Oral lichen planus	60(30%)	30(15%)
Apthous stomatitis	40(20%)	15(8%)
Denture stomatitis	20(10%)	2(1%)
Angular cheilitis	20(10%)	2(1%)
Frictional keratosis	20(10%)	1(0.5)
Geographic tongue	10(5%)	1(0.5)
Traumatic ulcers	8(4%)	1(0.5)
Fibroma	14(7%)	1(0.5)
Fissured tongue	6(3%)	4(2%)
Median rhomboid glossitis	2(1%)	2(1%)
Subjects with one or more lesions	92(46%)	60(30%)

**4. Discussion**

The aim of the study was to detect the prevalence of OML in Kashmiri patients with DM and compare it with healthy non-diabetic subjects. This involved a thorough stomatological examination of both diabetic and non-diabetic subject groups. As various oral habits like smoking, alcohol consumption and tobacco

or betel nut chewing can lead to a variety of oral lesions; only subjects without any of these oral habits were recruited in this study. We found that the prevalence of OML was significantly higher in diabetic patients than non-diabetics (46% vs. 30%). Similar to present results, a another study done on 405 subjects with insulin-dependent diabetes and 268 subjects without diabetes found that nearly twice the number of diabetic subjects (44.7%) had one or more oral soft tissue lesions as compared to non-diabetic controls (25.0%), and the difference was found to be statistically significant ( p < 0.0001) [12]. In another study, Collin et al. investigated the occurrence of diabetic neuropathy in elderly patients with type 2 DM and examined the mucosal diseases, tooth loss and temporomandibular joint dysfunction in 45 long-term DM patients and in 77 control subjects. They found 42% of subjects with DM had 2 or more mucosal lesions as compared to 20% control subjects ( p = 0.008) [21]. It is worth mentioning here that a higher point prevalence rate seen in diabetics may not be due to an increase in the incidence, but rather due to the slower healing rates seen in these subjects, leading to longer duration of a given lesion. It has been suggested that the decreased rate of saliva secretion and low pH value could lead to inflammatory complications of the oral mucosa like stomatitis, cheilitis and glossitis [22]. Collin et al. reported that the patients with fewer than two oral mucosal lesions had a mean HbA1c of 8.3% while those with two or more lesions had a mean HbA1c of 9.5% ( p = 0.08) [21]. Poor glycemic control has been associated with various diabetic complications [24–26] including severe periodontitis [22]. Uncontrolled diabetes may lead to many pathological changes, such as increased glucose level in saliva, decreased saliva secretion, vascular changes, delayed healing, inhibition of phagocytosis and cellular immune response, which can contribute to high susceptibility of the oral tissues to infection and local irritants [27].

Grinspan et al. first described an association between OLP and DM in 1966 [29]. Since then, the relationship between OLP and DM has been extensively studied. Many authors have reported a strong association between lichen planus and DM [18,30–32]. However, this relationship could not always be established [12, 19,28,33,34]. Petrou-Amerikanou et al. suggested that immune system may play a crucial role in the appearance of OLP in type I DM patients [18]. Lichenoid lesions among patients with DM may also be attributed to a number of oral hypoglycemic medications taken particularly by older individuals [35].

**Conflict of interest**

The authors declare that they have no conflict of interest.

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