

# Prevalence of Oral Mucosal Lesions among Vidharbian Population: A Cross-Sectional Study

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## ABSTRACT

**Introduction:** Oral cavity is the mirror of health, therefore it can be affected by a wide variety of lesions and conditions, some of which are harmless, while others may have serious complications. The incidence of oral mucosal lesion is increasing significantly due to excessive use of tobacco.

**Aim:** To evaluate the prevalence of oral mucosal lesions among Vidharbian population.

**Material and methods:** Study group consisting of 1200 patients was selected. Patient categorized in 4 groups as tobacco chewers, tobacco smokers, mixed habits and no habits were diagnosed for presence of oral mucosal lesions.

**Result:** The prevalence of oral mucosal lesion in Vidharbian population was found to be 39.25%. Oral submucous fibrosis was the most prevalent oral mucosal lesion in patients having tobacco chewing and mixed habits while smoker's melanosis and recurrent minor aphthous ulcer was more prevalent in patients with tobacco smokers and patients with no habits.

**Conclusion:** Early identification and treatment of these mucosal lesions is an important part of oral health care.

**Keywords:** Prevalence, mucosal lesion, Vidharbian.

## INTRODUCTION

The oral mucosa serves as a protective barrier against trauma, pathogens, and carcinogenic agents. It can be affected by a wide variety of lesions and conditions, some of which are harmless, while others may have serious complications. Identification and treatment of these mucosal lesions are an important part of total oral health care. Hence, oral soft tissue examination is crucial, and it should be done in a systematic manner to include all parts of the oral cavity. <sup>[1]</sup>

In growing years, health care professionals have become more aware of the importance of oral mucosal lesions

(OML). Apart from evaluation of oral health for dental caries and periodontal diseases, the need for epidemiologic study of oral cancer and other oral mucosal conditions especially related to human immunodeficiency virus or hepatitis-B virus infections is also being emphasized. <sup>[2]</sup>

Tobacco use is one of the most important risk factors for the development of oral mucosal lesions including oral pre-cancer and cancer. In recent years, various commercial preparations known as *pan masala* and *gutkha* have become available in India and in many parts of Asia. Many brands of these products contain areca nut and tobacco, both of which have been

implicated in occurrence of oral cancer. The investigators have also observed that smoking and chewing of tobacco and betel quid act synergistically in oral carcinogenesis and that persons with mixed habits form a substantially high-risk population. [3,4]

Tobacco use causes an array of changes in the oral cavity, from mucosal pigmentation to thickening/ulceration of the epithelium. Oral cancer (OC) and other oral mucosal lesions are strongly associated with tobacco consumption. In comparison to Western populations, in which OC represents about 3% of malignancies, it accounts for over 30% of all cancers in India; this difference can be attributed to regional variation in the prevalence and pattern of tobacco habits, especially chewing tobacco. The duration of tobacco exposure plays a vital role in mucosal irritation and possibility of malignant transformation. Though chewing tobacco associated oral disorders are widespread in India, epidemiological data from various geographical areas is scarce. [5]

Early diagnosis is the most important single factor in combating oral cancer and improving survival rate. The purpose of this study is to investigate the prevalence of oral mucosal changes in individuals with smoking, chewing, and mixed habits.

## **MATERIALS AND METHODS**

The study groups consisting of 1200 patients were selected. Patients were selected among the out patients attending the Department of Oral Medicine and Radiology, Swargiya Dadasaheb Kalmegh Smruti Dental College, Nagpur, Maharashtra. All the patients included in the study were explained in detail about the study pattern and approval from the Ethical Committee was obtained. Patients were given proper instructions about the goals of the research and experimental procedures and signed an informed consent form was taken from each patient participating in the study.

## **Patient selection**

Patients aged between 15 -75years and who currently smoked, chewed tobacco, consumed alcohol, or had a combination of these habits for a minimum of 12 months were included in the study. Patients in whom an intraoral examination will not be possible due to inadequate mouth opening and patients with recent history of maxillofacial trauma, postsurgical cases, or patients who will be undergoing orofacial radiation therapy, or intermaxillary fixation treatment, or revisiting the OPD were excluded from the study.

## **Methodology**

A group of 1200 patients included in the study were divided into 4 groups.

Group I: 300 patients who were frequent tobacco chewers were diagnosed for oral mucosal lesions.

Group II: 300 patients who currently smoked tobacco were diagnosed for oral mucosal lesions.

Group III: 300 patients who had combination of habits (currently smoked, chewed tobacco, consumed alcohol) were diagnosed for oral mucosal lesions.

Group IV: 300 patients with no habits were diagnosed for oral mucosal lesions.

A detailed case history was taken from all the individuals and through clinical examination was performed. Patient's demographic details, information regarding the type of habit, duration, frequency were recorded. The diagnosis was made based on history, clinical features, and investigations, according to standard guidelines. The oral mucosal lesions included were oral carcinoma, leukoplakia, erythroplakia, lichen planus, smoker's palate, oral submucous fibrosis (OSF), and quid-induced lichenoid lesion will grouped as cancer and precancerous group. Frictional white lesion, oral candidiasis, smoker's melanosis, chewer's mucosa and recurrent aphthous ulcer, traumatic ulcer will be grouped under other lesions.

### STATISTICAL ANALYSIS:

Statistical analysis was done by using descriptive and inferential statistics using Chi square test and software used in the analysis were SPSS 22.0 version and GraphPad Prism 6.0 version and  $p < 0.05$  is considered as level of significance.

### RESULT

In the present study out of 1200 patients, 955 were males 245 were females. Gender distribution according to different habits (smoking, chewing, mixed & no habits) is given in table 1. Following statistics in table 1 clearly suggest that, habits are more prevalent in male as compared to women. Also out of 1200 patients, 362 patients belong to age group of 25-34 yrs of age. This shows that habits are more prevalent between age group of 25-34yrs of age. Age distribution according to different habits is given in Table 2.

**Table 1 : Gender distribution.**

Habit	Males	Females	Total
Habits chewers(n = 300)	241(80.33%)	59(19.67%)	300
Habit smokers(n = 300)	285(95%)	15(5%)	300
Mixed habits(n = 300)	252(84%)	48(16%)	300
No habits(n = 300)	177(59%)	123(41%)	300
$\chi^2$ -value	125.80,p-value=0.0001, Significant		

**Table 2: Age distribution**

Age groups	Group I	Group II	Group III	Group IV
15-24	48(16%)	26(8.67%)	46(15.33%)	68(22.67%)
25-34	103(34.33%)	89(29.67%)	76(25.33%)	94(31.33%)
35-44	70(23.33%)	87(29%)	84(28%)	91(30.33%)
45-54	56(18.67%)	63(21%)	58(19.33%)	32(10.67%)
55 and above	23(7.67%)	35(11.67%)	36(12%)	15(5%)
Total	300(100%)	300(100%)	300(100%)	300(100%)
$\chi^2$ -value	48.18,p-value=0.0001,Significant			

Among the total of 1200 patients 471 patients had lesions and 729 did not show any mucosal abnormality therefore the

prevalence of oral mucosal lesion in Vidharbian population was found to be 39.25%.

Among habit chewers oral submucous fibrosis (26.6%) was the most prevalent lesion and second most common was oral leukoplakia with a prevalence of 9.67% (Table 3). Among habit smokers, smokers melanosis (11.67%) was the most prevalent oral mucosal lesion followed by oral leukoplakia accounting for 7% (Table 4).In mixed habit group, oral submucous fibrosis was the most prevalent lesion with a prevalence of 20.66% and second most prevalent was smokers melanosis with prevalence of 13.33% (Table 5).

Among no habits group, aphthous ulcer was the most prevalent lesion with a prevalence of 10% and second most prevalent was frictional keratosis with prevalence of 5%. (Table 6).

**Table 3: Prevalence of mucosal lesion among habit chewers.**

Lesion	Male	Female	Total
Submucous fibrosis	63(75.9%)	20(24.09%)	83(26.6%)
Leukoplakia	24(82.76%)	5(17.24%)	29(9.67%)
Lichen planus	5(83.33%)	1(16.67%)	6(2%)
Lichenoid reaction	1(100%)	0(0%)	1(0.33%)
Frictional keratosis	11(100%)	0(0%)	11(3.67%)
Tobacco pouch keratosis	17(80.95%)	4(19.05%)	21(7%)
Chewers mucosa	4(80%)	1(20%)	5(1.67%)
Smokers melanosis	0(0%)	0(0%)	0(0%)
Smokers Palate	0(0%)	0(0%)	0(0%)
Aphthous ulcer	1(100%)	0(0%)	1(0.33%)
Traumatic ulcer	0(0%)	0(0%)	0(0%)
Candidiasis	0(0%)	0(0%)	0(0%)
Carcinoma	1(100%)	0(0%)	1(0.33%)
No lesion	114(80.28%)	28(19.71%)	142(47.33%)
$\chi^2$ -value	7.87,p-value=0.005, Significant		

**Table 4: Prevalence of mucosal lesion among habit smokers.**

Lesion	Male	Female	Total
Submucous fibrosis	4(66.67%)	2(33.33%)	6(2%)
Leukoplakia	18(85.71%)	3(14.29%)	21(7%)
Lichen planus	2(66.67%)	1(33.33%)	3(1%)
Lichenoid reaction	1(100%)	0(0%)	1(0.33%)
Frictional keratosis	7(100%)	0(0%)	7(2.33%)
Tobacco pouch keratosis	0(0%)	0(0%)	0(0%)
Chewers mucosa	0(0%)	0(0%)	0(0%)
Smokers Melanosis	33(94.29%)	2(5.71%)	35(11.67%)
Smokers Palate	0(0%)	0(0%)	0(0%)
Aphthous ulcer	0(0%)	0(0%)	0(0%)
Traumatic ulcer	0(0%)	1(100%)	1(0.33%)
Candidiasis	0(0%)	0(0%)	0(0%)
Carcinoma	0(0%)	0(0%)	0(0%)
No Lesion	220(97.35%)	6(2.65%)	226(75.33%)
$\chi^2$ -value	41.09,p-value=0.0001, Significant		

**Table 5: Prevalence of mucosal lesions among mixed habits.**

Lesion	Male	Female	Total
Submucous fibrosis	44(70.96%)	18(29.03%)	62(20.66%)
Leukoplakia	17(70.83%)	7(29.17%)	24(8%)
Lichen planus	6(100%)	0(0%)	6(2%)
Lichenoid reaction	2(100%)	0(0%)	2(0.67%)
Fricitional keratosis	7(87.50%)	1(12.50%)	8(2.67%)
Tobacco pouch keratosis	7(77.78%)	2(22.22%)	9(3%)
Chewers mucosa	14(93.33%)	1(6.67%)	15(5%)
Smokers melanosis	21(100%)	19(47.5%)	40(13.33%)
Smokers palate	0(0%)	0(0%)	0(0%)
Aphthous ulcer	1(33.33%)	2(66.67%)	3(1%)
Traumatic ulcer	2(100%)	0(0%)	2(0.67%)
Candidiasis	0(0%)	0(0%)	0(0%)
Carcinoma	3(100%)	0(0%)	3(1%)
No Lesion	109(86.51%)	17(13.49%)	126(42%)
$\chi^2$ -value	13.40,p-value=0.202, Not Significant		

**Table 6: Prevalence of mucosal lesions among no habits.**

Lesion	Male	Female	Total
Submucous fibrosis	0(0%)	0(0%)	0(0%)
Leukoplakia	0(0%)	0(0%)	0(0%)
Lichen planus	4(33.33%)	8(66.67%)	12(4%)
Lichenoid reaction	2(100%)	0(0%)	2(0.67%)
Fricitional keratosis	11(73.33%)	4(26.67%)	15(5%)
Tobacco pouch keratosis	0(0%)	0(0%)	0(0%)
Chewers mucosa	2(50%)	2(50%)	4(1.33%)
Smokers melanosis	0(0%)	0(0%)	0(0%)
Smokers palate	0(0%)	0(0%)	0(0%)
Aphthous ulcer	25(48.08%)	27(51.92%)	52(17.33%)
Traumatic ulcer	1(50%)	1(50%)	2(0.67%)
Candidiasis	0(0%)	0(0%)	0(0%)
Carcinoma	0(0%)	0(0%)	0(0%)
No Lesion	132(62.26%)	80(37.74%)	212(70.67%)
$\chi^2$ -value	9.64,p-value=0.141, Not Significant		

## DISCUSSION

The cause for occurrence of oral mucosal lesions is thought to be varied. Oral mucosal lesion may occur due to certain infections (bacterial, viral, fungal), local trauma and or irritation (traumatic keratosis, chemical burns), systemic disease (metabolic or immunological), or related to lifestyle factors such as the usage of tobacco, areca nut, betel quid, or alcohol. Assessment of oral mucosal condition is necessary for detection of premalignancy or an early cancer. [4]

Oral lesions can lead to interference of daily activities due to discomfort or pain that interferes with mastication, swallowing, and speech, producing additional symptoms such as halitosis, xerostomia, or oral dysesthesia, which hampers an individual's daily social activities.

Previous studies show the prevalence of oral mucosal lesions in general population as 9.7% in Malaysia, 15.5% in Turkey, 25% in Italy and 61.6% in Slovenia. These lesions have been found in 15% of Saudi Arabian and 41.2% of Indian dental patients. [4]

Tobacco was introduced in India by the Portuguese nearly 400 years ago and since then it rapidly became a part of socio-cultural milieu in various communities. India is the second largest producer and consumer of tobacco next to China. India accounts for one-fifth of World's tobacco consuming population with 240 million tobacco users out of which one-third of women and two-third of men use tobacco in one or the other form. [4] Tobacco consumption also remains the most important avoidable risk factor for oral cancer. Tobacco related cancers account for nearly 50% of all cancers in men and 25% in women. Knowing these facts the present cross-sectional study was constructed to analyze the prevalence of lesions in Vidharbian population.

In the present cross-sectional study, the prevalence of oral mucosal lesion was found to be 39.25%. Mathew AL et al conducted a study in Karnataka, India on 1190 subjects and the results showed the presence of one or more mucosal lesions in 41.2% of the population [6] while in a study conducted by Patil PB et al in South India found prevalence of oral mucosal lesions to be 26.8%. [3]

The present study showed that prevalence of habit smoking and chewing were more common in 25-34yrs of age which was found to similar to study conducted by Saraswati TR et al among the population in South India. [7] Mixed habits were found to be common among 35-44 yrs of age. In a study conducted by Patil PB et al prevalence of oral mucosal lesions was most common among the age group of 55-64 yrs of age. [3] Also the habits (chewing, smoking and mixed) were more prevalent in male as compared to women. Similar finding were found in study conducted by

Hegde MN et al and Gambhir RS et al in their studies. [2,8]

In present study among tobacco chewers, submucous fibrosis was found to be more prevalent (26.6%) lesion followed by oral leukoplakia (9.67%) and frictional keratosis (3.67%). This was found in correlation with study conducted by Patil PB et al where most prevalent lesion was submucous fibrosis among areca nut and gutka chewers. [3] But similar studies conducted by Reddy SS et al in Karnataka found that chewers mucositis (59.5%) was more prevalent among tobacco chewers. [5]

Among habits smokers, smokers' melanosis (11.6%) was most prevalent lesion followed by oral leukoplakia (7%) while among mixed habits group submucous fibrosis (20.66%) was more prevalent in our study followed by smokers' melanosis (13.33%). This was similarly seen by a study conducted by where smokers' melanosis was the most prevalent lesion [9] while study conducted by Patil PB et al found that leukoplakia was the most prevalent lesion with prevalence of 8.2% and 13.8% respectively among smokers and mixed habit group. [3]

Among all the groups only 4 patients of carcinoma were noted, Out of which one belonged to tobacco chewers group while three patients belong to mixed habit group.

Among no habits group, aphthous ulcer was the most prevalent lesion with a prevalence of 10% and second most prevalent was frictional keratosis with prevalence of 5% in contrast to other studies conducted by Patil PB et al where oral lichen planus was found to be more prevalent in no habit group. Similarly, study conducted by Mathew et al and Vijayabala GS et al found the prevalence of frictional keratosis in no habit group population. [6,10]

## CONCLUSION

Prompt intervention at appropriate levels may aid in prevention and better control of tobacco induced lesions. Keeping in view the major risk factors for oral mucosal lesions and its associated effects, a

range of preventive measures could be implemented at primary, secondary or tertiary levels. The present study was based on the information given by patients regarding their habits, frequency and duration etc. so there is a possibility of information bias. As limited sample size was considered further studies using a large sample size is required.

## REFERENCES

1. Ali M, Joseph B, Sundaram D. Prevalence of oral mucosal lesions in patients of the Kuwait University Dental Center. The Saudi dental journal. 2013 Jul 1;25(3):111-8.
2. Hegde MN, Jain R, Punja A. Prevalence of oral mucosal lesions and their correlation to habits in patients visiting a dental school of South Karnataka: a cross sectional survey-2012. Nitte University Journal of Health Science. 2014 Dec 1;4(4):69.
3. Patil PB, Bathi R, Chaudhari S. Prevalence of oral mucosal lesions in dental patients with tobacco smoking, chewing, and mixed habits: A cross-sectional study in South India. Journal of family & community medicine. 2013 May; 20(2):130.
4. Ain TS, Gowhar O, Sultan S, Tangade P. Prevalence of oral mucosal lesions and associated habits in Kashmir, India. International Journal of Research in Medical Sciences. 2017 Jan 4; 4(8):3525-30.
5. Reddy SS, Prashanth R, Devi BY, Chugh N, Kaur A, Thomas N. Prevalence of oral mucosal lesions among chewing tobacco users: A cross-sectional study. Indian Journal of Dental Research. 2015 Sep 1;26(5):537.
6. Mathew AL, Pai KM, Sholapurkar AA, Vengal M. The prevalence of oral mucosal lesions in patients visiting a dental school in Southern India. Indian Journal of Dental Research. 2008 Apr 1;19(2):99.
7. Saraswathi TR, Ranganathan K, Shanmugam S, Sowmya R, Narasimhan

- PD, Gunaseelan R. Prevalence of oral lesions in relation to habits: Cross-sectional study in South India. *Indian Journal of Dental Research*. 2006 Jul 1;17(3):121.
8. Gambhir RS, Veerasha KL, Sohi R, Kakkar H, Aggarwal A, Gupta D. The prevalence of oral mucosal lesions in the patients visiting a dental school in Northern India in relation to sex, site and distribution: A retrospective study. *J Clin Exp Dent*. 2011;3(1):e10-7
9. Bakshi PS, Singla V, Roy S, Khanna KS. Prevalence of Oral Mucosal Changes in Areas of Northern Haryana- An Institutional Study.
10. Vijayabala GS, Mohanavalli S, Gunasekar C, Janagarathinam VA, Kumar SS, Kumar UR. Prevalence of Oral Mucosal Abnormalities in Dental Patients in Tamil Nadu. *World J Dent* 2016;7(4):186-188.

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