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## Research Article

### PREVALENCE OF ORAL MUCOSAL LESIONS IN PATIENTS CONSUMING VARIOUS FORMS OF TOBACCO REPORTING TO A DENTAL COLLEGE IN PUNE, MAHARASHTRA- A CROSS-SECTIONAL STUDY

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#### ABSTRACT

**Aims and Objectives:** The aim of the study was to assess the prevalence of Oral mucosal Lesions (OMLs) in patients consuming tobacco in smoking, smokeless or both forms and to associate their occurrence with the frequency and duration of tobacco consumption.

**Material and Methodology:** A cross-sectional study was conducted among 215 patients reporting to a dental college in Pune over a period of 3 months, out of which 163 were males and 52 were females. The patients who gave a history of tobacco use were used as the sample for the study. World Health Organization (WHO) Oral Health Assessment Form for Adults, 2013 and WHO Oral Health Questionnaire for Adults, 2013 and a pre-validated, pre-tested, interviewer-administered recording form along with type 3 clinical examination was employed to gather the required data.

**Results:** Prevalence of Oral mucosal lesions in patients with tobacco-related habits was found to be 53.5%. The study showed leukoplakia (36.7%) to be the most frequently associated oral mucosal lesions with tobacco use followed by ulcers (7.9%), oral submucous fibrosis (OSMF) (3.3%), lichen planus (2.8%), malignant condition (1.4%), abscesses (0.9%), and tobacco-induced melanosis (0.5%). Buccal mucosa was observed to be the most commonly associated in the oral cavity for these lesions.

**Conclusion:** The study reinforced the association between tobacco-related habits and prevalence of OMLs this inciting the need for creating awareness among the masses regarding the health hazards caused by this detrimental habit. Efforts should be taken to provide proper counselling, alternate measures, and pharmacological management as a step towards curbing this habit.

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## INTRODUCTION

Tobacco is known to mankind since ages. Despite the widespread awareness about tobacco-related health hazard and vigorous efforts to regulate its use in the various form of strict tobacco control legislation; its use is increasing at an alarming rate. Tobacco use carries a high risk of major health-related illness and several forms of cancers.

The epidemic of tobacco use in India is inflicting a huge damage on the human health and the associated health care costs are creating a huge financial burden on the government. (Mishra A *et al.*, 2015). The oral cavity is prone for a myriad of changes with advancing age as well as a result of environmental and lifestyle-related factors. Oral mucosal lesions can occur as a result of infection, local trauma, systemic diseases, consumption of tobacco (smoking and smokeless), betel quid and alcohol. (Sreedharan G, 2014). The increasing

demand for tobacco over the years has been a matter of concern for a long time, hence necessitating the need for detailed studies regarding its role in human health.

Tobacco is the most significant risk factor for causing leukoplakia. A large number of the population consumes tobacco in various forms like cigarettes, mishri etc. Tobacco habit is one of the biggest curses that modern society has come across. It is not confined to any one country or region alone but has widely afflicted the globe by addiction, ill-health, loss of man hours and premature death leading to various social problems (Gupta T *et al.*, 2015).

The increasing use of tobacco abuse in the last few years has led to an increased incidence of potentially malignant oral disorders and frank oral malignancies. Consumption of tobacco in various forms is a commonly found habit in adults within 20-50 years age group making them more susceptible to develop oral mucosal lesions associated with such habits. Of

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the 400 million individuals aged 15 years and above in India, 47% use tobacco for smoking while 16% use it in smokeless form. (Mishra SS et al., 2014)

This study has been carried out to estimate and to assess the prevalence of oral mucosal lesions and its relation with duration of habit and its form of consumption (smoking /smokeless) in patients visiting a dental college in Pune city. This may help to intercept lesions in their early stages and after proper counseling might help in preventing further exacerbations and complications. It may also help to gain an understanding of the ill effects of chronic tobacco use on oral mucosa.

## MATERIALS AND METHODS

Prior to the start of our study, relevant permissions were obtained from the Scientific Advisory Committee (SAC) of the institute, and training and calibration of the principal investigators were done by study experts in the department. A total of 215 out-patients between 18 to 75 years of age seeking dental treatment at the Department of Public Health Dentistry in a dental college in Pune, from 1<sup>st</sup> May 2016 to 31<sup>st</sup> July 2016 were included in the study, following convenience sampling method. A pre-validated, pre-tested interviewer-administered recording form along with WHO Oral Health Assessment Form for Adults, 2013 and WHO Oral Health Questionnaire for Adults, 2013 was used to collect and record data after receiving appropriate consent from the patients.

The patients were divided into seven groups based on age: 15 to 24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years, 65-74 years and more than 75 years old. All the subjects were examined clinically and questioned regarding any habits like smoking, pan chewing, and alcohol intake, and the frequency and duration of the habit. Patients visiting a dental college in Pune, giving a history of alcohol consumption along with tobacco-related habits, patients with systemic disease and patients undergoing orthodontic treatment or radiotherapy was excluded from the study.

The oral examination of the patients were carried out by making the patient to sit in a dental chair and the findings were recorded in the form with the assistance of recording clerk sitting next to the examiner at a comfortable position. Instruments used were mouth mirror, World Health Organization (WHO) probe, and available light.

The results obtained were entered in MS Excel worksheet and were interpreted using the program Statistical Package for Social Sciences (SPSS) version 21.0.

## RESULTS

This study was conducted to assess the prevalence of Oral mucosal lesions (OML) in patients with tobacco-related habits reporting to a dental college in Pune and to correlate its occurrence with the duration and frequency of habit.

115 (53.5%) out of 215 people who participated in the study, having a history of consuming any form of tobacco were suffering from OMLs. Out of 215 people who participated in this study 163 were males and 52 were females.

The maximum number of individuals were in an age group of 25-34 years (Fig.1). Leukoplakia (37%) was found to be the most prevalent oral mucosal lesion which was followed by ulcers (7.9%), oral submucous fibrosis (OSMF) (3.3%), lichen planus (2.8%), malignant condition (1.4%), abscesses (0.9%) and tobacco-induced melanosis (0.5%). (Fig. 2)

Our study revealed that, out of all forms of tobacco consumption, chewing was the most common (61%), whereas smoking was at 17%. (Fig. 3)

Buccal mucosa was found to be the most affected site while alveolar ridges were the least affected (Fig. 4).

Maximum of the study population was having habits for at least 5 to 10 years and least were for more than 20 years. (Table 1) Almost 167 of the study population either smoked or chewed some form of tobacco every day. (Table 2)

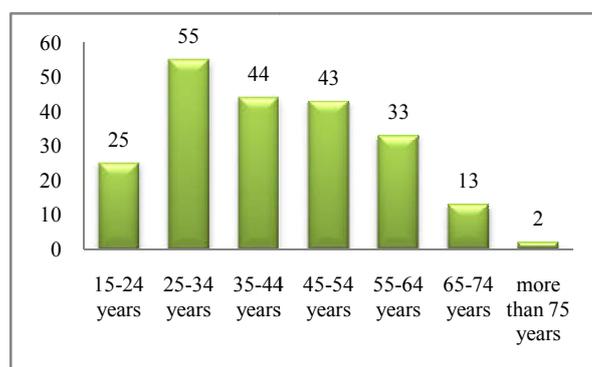


Figure 1 Distribution of study population by age

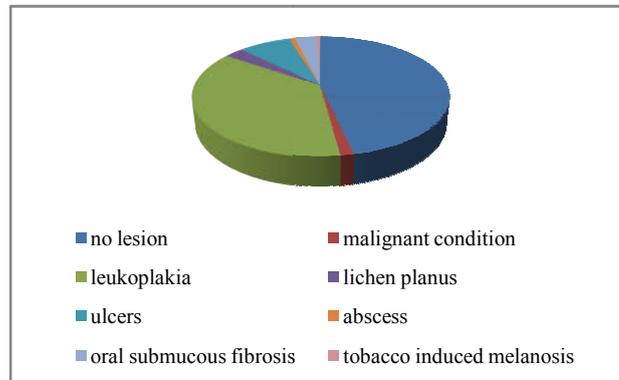


Figure 2 Prevalence of types of oral mucosal lesions

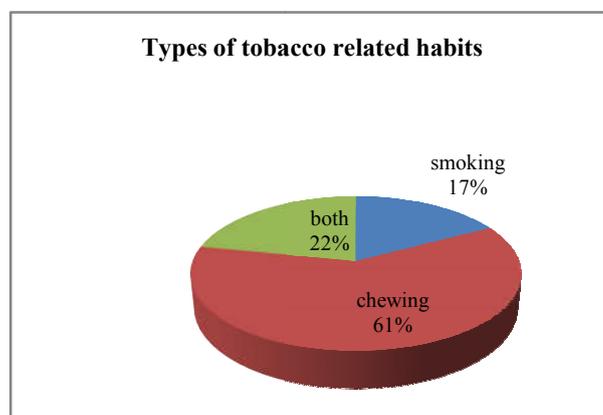


Figure 3 Types of tobacco related habits

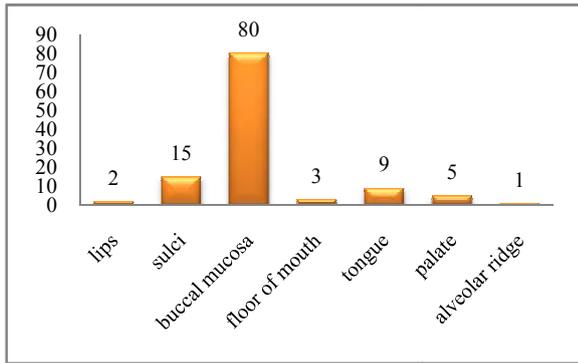


Figure 4 Distribution of location of lesions

Table 1 Duration of habit

Duration of habit	Number of patients
less than 5 years	33
5-10 years	72
11-15 years	56
16-20 years	30
More than 20 years	24
Total	215

Table 2 Frequency of tobacco related habit

Frequency of habit	Number of patients
Every day	167
Once a week	42
Seldom	6
Total	215

Table 3 Correlation of duration of habit and age group with oral mucosal lesion

Duration of habit	Oral mucosal lesions							
	No lesion	Malignant condition	leukoplakia	Lichen planus	ulcers	abcsess	Oral submucous fibrosis	Tobacco induced melanosis
< 5 years	13	0	12	0	8	0	0	0
5-10 years	29	0	34	2	5	0	2	0
11-15 years	32	3	13	3	2	1	2	0
16-20 years	16	0	10	0	1	1	2	0
> 20 years	10	0	10	1	1	0	1	1
Total	100	3	79	6	17	2	7	1
<b>Age group</b>								
15-24 years	10	0	13	0	2	0	0	0
25-34 years	24	0	22	3	5	0	1	0
35-44 years	2	0	0	0	0	0	0	0
45-54 years	21	0	16	1	5	0	1	0
55-64 years	18	1	16	0	4	2	1	1
65-74 years	21	1	7	1	1	0	2	0
>75 years	4	1	5	1	0	0	2	0
Total	100	3	79	6	17	2	7	1

## DISCUSSION

This study was conducted on patients reporting to the department of Public health Dentistry in a dental college in Pune, who gave a history of having tobacco related habits. The aim of the study was to find the prevalence of Oral Mucosal Lesions (OMLs) in these patients.

Amongst the 215 people who participated in the study, 163 (75.8%) were male and 52 were female (24.2%). Studies offer mixed evidence of neighbourhood and community effects on smoking. (Ross, 2000) finds that neighbourhood disadvantage increases the smoking of men but not of women. The probable reasons behind this observation might be because men are exposed to such deleterious habits at their workplace compared to females who are generally less exposed compared

to males. This is in consensus with the results of a study conducted by (Behura et al;2015) where the prevalence of tobacco-related habits in males was almost thrice that of the females. This was in consensus with the findings of our study.

The study population was divided into 7 age groups depending on their age- 15 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, 55 to 64 years, 65 to 74 years, and 75 years and above. The maximum number of people belonged to the age group between 25 and 34 while least were seen in the above 75 years age group. This might be because the majority of the population reporting to the dental college belonged to the working class with easy access to commute. Also, the geriatric population probably had to depend on others for the mode of conveyance.

It was found that 115 (53.5%) out of 215 patients participating in the study had Oral mucosal lesions. Confounding factors such as alcohol, history of orthodontic treatment, systemic diseases, use of dentures were eliminated so as to remove any factors that could affect the results. The results obtained from the study, showing that 53.5% of the patients consuming tobacco in various forms had OMLs, reinforced the association between tobacco-related habits and prevalence of OMLs which was in contrast with the results reported by (Patil et al; 2013) in which the prevalence was only 26.8%.

This was presumed to be because the majority of the patients reporting to the dental college belonged to low socio-economic status group and lacked awareness about dental hygiene and the derogatory effects of tobacco on the oral mucosa. In our study, 87 (53.37%) out of 163 males had OMLs.

Tobacco-related habits were segregated on the basis of their forms of consumption –smoking, chewing, and both smoking as well as chewing. 131 out of 215 people gave a history of consuming tobacco in chewing form, 37 in smoking and 47 had mixed habits. The OMLs seemed more commonly associated with chewing form as compared to smoking form. This may be because the population belonged to a lower socio-economic group; most of them engaged in hard labour work where chewing tobacco is more convenient than smoking. In general, cigarettes account

for only 20% of all tobacco consumed, while gutkha and chewing tobacco each account for about 40% of tobacco consumption. (WHO report:1997). Another study conducted by (Vikneshan, M.,2015) confirmed the fact that tobacco chewing is the strongest risk for cancer and precancerous lesions.

(Sadeq A. Al-Maweri,2014) conducted a study in 2014 where the most common lesions were fissured tongue (37.2%), hairy tongue (15.9%), tumors and tumor-like lesions (9.8%), qat-induced white lesions (9.3%) and racial pigmentation (5.9%). However in our study, out of all the OMLs, Leukoplakia (36.7%) was found to be the most common lesion in both males and females. It was followed by ulcers(7.9%), Oral submucous fibrosis (OSMF) (3.3%), Lichen Planus (2.8%), Malignant condition (1.4%), abscesses (0.9%) and tobacco-induced melanosis(0.5%) , which was in concordance with the results obtained by (Patil et al ;2013) where oral leukoplakia (8.2%) and oral submucous fibrosis (OSF) (7.1%) were the prevalent oral mucosal lesions found in subjects who had those habits, while the other lesions (1.7%) namely; oral candidiasis, median rhomboid glossitis, recurrent aphthous ulcer, frictional keratosis, and oral lichen planus (0.9%) were frequently reported among individuals without those habits.

In a study conducted by (Gambhir, R.S, 2011) regarding the distribution of lesions in the oral cavity, the buccal mucosa was the common site for the presence of potentially malignant disorders in 16.8 % of the subjects and it was also the most common site for all the lesions.

In concordance with that, our study revealed similar findings wherein, the buccal mucosa was observed to be the most commonly affected site in the oral cavity, probably because most of the patients observed were tobacco chewers and the buccal mucosa is a common site for them to place the tobacco. Also, histopathologically, the buccal mucosa is the least keratinized structure in th oral cavity that makes it more susceptible to the detrimental changes caused by tobacco consumption. In our study, we found that 80 out of 115 lesions were located on the buccal mucosa followed by the sulci (15), tongue (9), palate (5), the floor of mouth (3), lips (2) and alveolar ridge (1). This was in contrast to the findings reported by (Gupta et al ;2015) where hard palate was the most frequently affected site.

According to our study, people who had tobacco-related habit for 5-10 years had a higher prevalence of OMLs followed by people giving habit histories of 11-15 years, less than 5 years, 16-20 years and more than 20 years respectively.

Our study was conducted over a period of 3 months among patients reporting to a dental college. This could be a potential limitation of the study. Probably a larger population with a better sampling technique could be employed in addition to a more detailed study conducted over a longer period of time with histo-pathological examination, nutrition, and socioeconomic status will prove to be more succinct in giving a better outlook of these lesions.

## CONCLUSION

Nearly half of the study population having tobacco-related habits showed the presence of OMLs thus instigating the need to create awareness amongst the masses regarding the injurious effects of tobacco. Most of the lesions recognised in this study are pre-cancerous in nature thus giving us the opportunity to intercept them at an early stage. And with proper counselling, we may assist in eradicating this substance abuse to some extent.

### Some of the methods that could be employed are

1. Education- One of the easiest lines of defence is to educate the people about the dangers and the long-term effects of tobacco. Posters, pamphlets, and regular reminders may offer help and increase awareness.
2. Encouraging quitting by proper counselling about tobacco-related habit, elaborately explaining their derogatory effects on the overall health and offering support whenever required.
3. Titration- Decreasing the amount of tobacco consumed per day by mixing it with mint snuff and gradually increasing the concentration of mint snuff until tobacco is eliminated completely. (Alternative chews to tobacco-mint snuff)
4. Increasing awareness about nicotine patches, gums, and other commercially available resources, under adequate guidance and supervision.
5. Dental colleges can set up special counselling cells/units in colleges wherein the staff, Post-graduate students and interns can be made available at all times to guide people towards the cessation of habit.
6. Governing bodies can incorporate tobacco counselling modules in the curriculum so as to train the clinician for effective and efficient counselling.

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