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PREVALENCE AND ASSOCIATION OF ORAL MUCOSAL LESIONS WITH TOBACCO RELATED HABITS AMONG PATIENTS REPORTING TO DENTAL INSTITUTION IN GHAZIABAD

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ABSTRACT

Aim: The aim of this study is to find out, through a questionnaire, the prevalence and association of oral mucosal lesions among patients with different types of tobacco related habits reporting to a dental institution in Ghaziabad, UP and to find out its association with the consumed tobacco products. **Materials and Methods:** A descriptive prospective study was conducted in Inderprastha Dental College and Hospital, comprising of all patients who attended the outpatient department of Oral Medicine and Radiology, from November 2019 to January 2020. Diagnosis was exclusively based on the history, clinical findings, and the characteristic location of the lesions. All the patients were examined by one oral medicine and radiology specialist and the details of them were recorded in a specially designed proforma which included demographic data, and personal history regarding various tobacco related habits and the lesion present. Chi-square test and T test were used to find significance of study parameters using S.P.S.S software version 21. **Results:** Our study revealed an increase in the prevalence of oral mucosal lesions among young and middle aged people having tobacco related habits, more commonly in males than females. These people are mostly the ones with primary education employed in unskilled occupation followed by highly educated people with post graduate degree. Married people comprised of a major section of patients with the habits and lesions than the unmarried ones. Among the ones who use smokeless form of tobacco, gutkha chewing was found to be more prevalent with lesions

like chemical reaction, angular cheilitis, smoker's palate more prevalent unlike other studies which show increased prevalence of OSMF with gutkha chewing. In patients habitual to smoking form of tobacco, bidi smoking was found to be more prevalent causing lesions like chemical reaction, angular chielitis, smoker's palate. Lichen planus was found to be more prevelant among cigarette smokers. The most common site for the lesions observed was buccal mucosa followed by hard palate and commissures. **Conclusion:** The study showed that the risk of the development of oral lesions associated with tobacco smoking, chewing, or both is quite high. Majority of individuals with tobacco related habits were married males belonging to the young and middle age group employed in unskilled occupation with primary education. Gutkha chewing was seen to be more prevelant in individuals habitual with smokeless form of tobacco and bidi smoking was seen to be more prevelant in patients with smoking form of tobacco. Lesions like chemical reaction, angular cheilitis, smoker's palate were found to be more prevalent with both gutkha chewing and bidi smoking. The most common site for the lesions was buccal mucosa. The study data can serve as a useful tool in educating the patients with deleterious habit of chewing form of tobacco. Early screening of these lesions can play a vital role for early intervention and prevention of oral cancer.

INTRODUCTION

Oral cancer is one of the most common cancers in India today and also stands among the ten most common cancers in the world. Tobacco, alcohol and betel usage are the main risk factors with tobacco being the most important cause of both addiction and development of pre malignancies and malignancies. India is next to China in both tobacco production and consumption in the world. Tobacco use in India differs from the globe. The documented form of tobacco used globally is the cigarette; however, in India, only 20% of tobacco is consumed as cigarette, 40% is consumed as bidi, and rest in the form of smokeless tobacco. The different ways in which tobacco is used, its frequency and duration of exposure, absorption of toxic and carcinogenic chemicals in it and other ingredients added to various products lead to considerable variation in appearance, site and frequency of the lesions associated with the tobacco habit. Early screening of these lesions can play a vital role for early intervention and prevention of oral cancer.

MATERIALS AND METHODS

A descriptive prospective study was conducted in Inderprastha Dental College and Hospital, comprising of all patients who attended the outpatient department of Oral Medicine and

Radiology, from November 2019 to January 2020. The inclusion criterion included all the patients in outpatient department having oral mucosal lesions who are currently consuming tobacco in either smoked or smokeless form. The exclusion criterion included patients without any deleterious tobacco related oral habits and not having any oral mucosal lesion, who had left tobacco related habit and had oral mucosal lesions, who were not able not open their mouths adequately for intraoral clinical examination, for example - patients with pericoronitis, pericoronal abscess etc, who will gave history of chronic debilitating diseases such as asthma, tuberculosis, anemia, and jaundice, who revisited the outpatient department of oral medicine, diagnosis and radiology for follow-up and evaluation for any of the above treatments or previously going treatment of oral mucosal conditions during that period and patients with recurrent cases such as recurrent aphthous ulcer, autoimmune disorders such as lichen planus, pemphigus, and systemic lupus erythematosus.

Permission from the institution and informed consent from each study subject was obtained. A proforma was prepared to record the detailed information concerning the socio-demographic characteristics of the subject, oral hygiene methods employed to maintain the oral hygiene and personal history regarding various tobacco related habits and the lesion present. Diagnosis was exclusively based on the history, clinical findings, and the characteristic location of the lesions. All the patients were examined by one oral medicine and radiology specialist and the details of them were recorded in the designed proforma. Lesions like chemical reaction, angular cheilitis, smoker's palate were grouped under other lesions.

Chi-square test and T test were used to find significance of study parameters using S.P.S.S software version 21.

RESULTS

Table 1: Agewise prevalence and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	15-25yrs	26-35 yrs	36-45 yrs	46-55 yrs	>56 yrs	p-value	S/NS
OSMF	16(6.8%)	7(3%)	5(2.1%)	0(0%)	0(0%)		
Leukoplakia	5(2.1%)	23(9.7%)	23(9.7%)	17(7.2%)	2(0.8%)		
Lichen Planus	2(0.8%)	2(0.8%)	0(0%)	0(0%)	0(0%)	**0.001**	**S**
Ulceration	0(0%)	0(0%)	1(0.4%)	0(0%)	0(0%)		
Others	38(16%)	34(14.3%)	33(13.9%)	19(8%)	8(3.4%)		

Other: Chemical Reaction, Angular Cheilitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

This table (Table 1) revealed the prevalence of oral mucosal lesions among dental patients with mixed tobacco related habits. It was found that OSMF was more prevalent among patients having 15-45 years of age as compared to other groups (6.8%). Leukoplakia was widely present among age groups of 15 to more than 56 years but had highest and equal prevalence in the age group of 26 - 35 years and 36-45 years (9.7%). Lichen Planus was present equally among two age groups of 15-25 years and 26-35 years (0.8%) with no prevalence in the older age groups. Ulceration was present among the age group of 36-45 years (0.4 %) as compared to other age groups. Other lesions like Chemical Reaction, Angular Cheilitis, Smoker's Palate were most prevalent among the age group of 15-25 years (16%). And these results were found to be statistically highly significant with p value = 0.001.

Table 2: Gender wise prevalence and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	Male	Female	p-value	S/NS
OSMF	27(11.4%)	1(0.4%)	0.141	NS
Leukoplakia	67(28.3%)	3 (1.3%)		
Lichen Planus	3(1.3%)	1(0.4%)		
Ulceration	1(0.4%)	0(0%)		
Others	130(54.9%)	2(0.8%)		

Other: Chemical Reaction, Angular Chelitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

Among males, the highly prevalant lesions were other lesions like Chemical reaction, Angular chelitis, Smoker's palate etc (54.9%) followed by Leukoplakia (28.3%), OSMF (11.4%), Lichen Planus (1.3%) and ulceration (0.4%) Among females, the highly prevalent lesion was Leukoplakia (1.3%) followed by OSMF and Lichen Planus (0.4%). Other lesions noted were chemical reactions, Angular Cheilitis and Smoker's Palate (0.8%). But these results were found to be non significant statistically with p value = 0.141, NS.

Table 3: Educationwise prevalence and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	Uneducated	Primary	Secondary	Graduate	Post graduate	p-value	S/NS
OSMF	4(1.7%)	16(6.8%)	1(0.4%)	3(1.3%)	4(1.7%)	**0.003**	**S**
Leukoplakia	7(3%)	42(17.7%)	3(1.3%)	2(0.8%)	16(6.8%)		
Lichen Planus	1(0.4%)	1(0.4%)	0(0%)	0(0%)	2(0.8%)		
Ulceration	0(0%)	0(0%)	0(0%)	0(0%)	1(0.4%)		
Others	17(7.2%)	77(32.5%)	13(5.5%)	2(0.8%)	23(9.7%)		

Other: Chemical Reaction, Angular Cheilitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

This table showed the education wise distribution of oral mucosal lesions among dental patients with mixed tobacco related habits. The lesions which were most prevalent among the patients were Other lesions like Chemical Reaction, Angular cheilitis, Smokers's palate followed by Leukoplakia and OSMF with higher frequency in people with primary education and then those who were having post graduation. These results were found to be statistically significant with p value = 0.003,S.

Table 4: Marital status and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	Married	Unmarried	p-value	S/NS
OSMF	21(8.9%)	7(3%)	0.767	NS
Leukoplakia	66(27.8%)	4 (1.7%)		
Lichen Planus	3(1.3%)	1(0.4%)		
Ulceration	1(0.4%)	0(0%)		
Others	106(44.7%)	25(10.5%)		

Other: Chemical Reaction, Angular Chelitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

The prevalence of oral mucosal lesions was higher among married patients as compared to the unmarried ones with Other lesions like chemical reaction, Angular Cheilitis and Smoker's Palate being present in 44.7% cases, Leukoplakia in 27.8% cases, OSMF present in 8.9% cases, Lichen Planus in 1.3% cases and Ulceration in 0.4% cases. These results were found to be statistically non significant with p value = 0.767.

Table 5: Association between smokeless form of tobacco and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	Supari	Gutkha	Pan	Tobacco+lime /zarda	p-value	S/NS
OSMF	8(3.4%)	13(5.5%)	1(0.4%)	6(2.6%)	0.114	NS
Leukoplakia	16(6.8%)	19(8.1%)	1(0.4%)	17(7.2%)		
Lichen Planus	2(0.9%)	2(0.9%)	0(0%)	0(0%)		
Ulceration	0(0%)	1(0.4%)	0(0%)	0(0%)		
Others	40(17%)	27(11.5%)	2(0.9%)	45(19.1%)		

Other: Chemical Reaction, Angular Chelitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

There was no significant association seen between smokeless form of tobacco and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits. An interesting finding was found from the table that the prevalence of oral mucosal lesions was marked among gutkha chewers than other forms of smokeless tobacco like supari, pan, tobacco+lime/zarda. And also these gutkha chewers were having more prevalently Other lesions like Chemical Reaction, Angular Cheilitis, Smoker's Palate in 11.5% cases, Leukoplakia in 8.1% cases, OSMF in 5.5% of cases, Lichen Planus in 0.9% cases and Ulceration in 0.4% cases.

Table 6: Association between smoking form of tobacco and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	Beedi	Cigarette	p-value	S/NS
OSMF	9(3.8%)	4(1.7%)	**0.006**	**S**
Leukoplakia	33(13.9%)	12(8.51%)		
Lichen Planus	0(0%)	1(0.4%)		
Ulceration	1(0.4%)	0(0%)		
Others	27(11.4%)	21(8.9%)		

Other: Chemical Reaction, Angular Cheilitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

This table showed highly significant association between smokeless form of tobacco and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits. Among the people using smoking form of tobacco, beedi smoking was associated more with oral mucosal lesions than cigarette smoking. Among beedi smokers, Leukoplakia was found in 13.9% cases, Other lesions like Chemical Reaction, Angular cheilitis, Smoker's Palate in 11.4% cases, OSMF is found in 3.8% cases, and Ulceration in 0.4% cases. On the contrary,

Lichen Planus was found to be more prevalent in cigarette smokers with a prevalence of 0.4%.

Table 7: Association between location of oral cavity and distribution of oral mucosal lesions among dental patients with mixed tobacco related habits.

Types of oral mucosal lesions	Comissures	Buccal Mucosa	Hard/Soft Palate	p-value	S/NS
OSMF	1(0.4%)	21(8.9%)	**0**(0%)	**0.000**	**S**
Leukoplakia	0(0%)	52(21.9%)	13(5.5%)		
Lichen Planus	0(0%)	3(1.3%)	0(0%)		
Ulceration	0(0%)	0(0%)	1(0.4%)		
Others	6(2.5%)	98(41.4%)	22(9.3%)		

Other: Chemical Reaction, Angular Chelitis, Smokers Palate

($p \leq 0.05$ – Significant, CI = 95 %)

According to the location of the oral mucosal lesions in oral cavity, the association was found to be statistically highly significant. The most common site for oral mucosal lesions was found to be Buccal mucosa followed by Hard palate and Comissures.

DISCUSSION

Occurrence of tobacco associated oral mucosal lesions varies with the form of tobacco usage. Hence there was a need for a study to know the diversity in tobacco usage and their associated oral mucosal lesions. With this background a hospital based observational cross sectional study was conducted to identify the prevalence and association of various oral mucosal lesions among tobacco related habits in patients who visited Inderprastha Dental College and Hospital (Ghaziabad, UP).

In our present study, we found that there was an increase in the prevalence of oral mucosal lesions among young and middle aged people having tobacco related habits. These findings were multifactorial, might be owing to peer influence, curiosity, perception of these habits as fashionable, easy availability and variety of products on cheap rates, various advertisement etc. Similar results were also confirmed by other authors named Prerna P et al[1], Kaveri H et al[2], Mehrotra R et al[3] who also stated that the probable cause behind their finding which includes easy availability of products, peer pressure and various advertisements.

In the current study we compared the prevalence of oral mucosal lesions among genders and we found an increased prevalence of oral mucosal lesions among males as compared to

females. In males the most prevalent oral mucosal lesions found were chemical reaction, angular cheilitis, smoker's palate followed by leukoplakia, OSMF, lichen planus and ulceration. On the other hand in females, leukoplakia was found to be more prevalent. The reason might be due to the higher rate of consumption of tobacco in males as compared to females and our results got confirmed by Prerna P et al[1], Kaveri H et al[2], Sujata SR et al[4] and others.

Further, the study also investigated the relation between oral mucosal lesion with education and occupation. It was revealed that there was higher prevalence of oral mucosal lesions among people with primary education employed in unskilled occupation. Due to low income, increased requirement of energy to do work, peer pressure and lack of awareness, the habit becomes more prominent in this group. Interestingly the second group with increased prevalence of oral mucosal lesions were highly educated people with post graduate degree indicating the perception of these habits as a status symbol combined with peer influence despite of awareness associated with its ill effects. The most common lesions observed in patients were early lesions like chemical reaction, smoker's palate and other similar results were also confirmed by Kaveri H et al[2], Sujata SR et al[4] and Choudhary K.[5]

In our study we found higher prevalence of oral mucosal lesions among married patients as compared to the unmarried patients. Oral mucosal lesions present in highest percentage were chemical reaction, angular cheilitis and smoker's palate. This finding might be due to the lack of awareness of harmful effects of tobacco. Also married patients are relatively more stressed because of their family responsibilities due to which they ignore their own health. No such study was done previously.

In present study it was found that there was increased prevalence of oral mucosal lesions among gutkha chewers than other forms of smokeless tobacco like supari, pan, tobacco + lime / zarda. Similar findings were also reported by Patil PB et al.[6] When we talk about the oral mucosal lesions, we found that the prevalence of other lesions like chemical reaction, angular cheilitis, smoker's palate was more common with increased gutkha chewing and the most probable reason in such finding may be due to the chemical composition of gutkha consumed. Contrastingly, other authors as like Kaveri H et al[2] and others show increased prevalence of OSMF with gutkha chewing.

Among the patients who have smoking habit showed higher prevalence of leukoplakia among bidi smokers (13.9%) followed by lesions like chemical reaction, angular chielitis, smoker's palate (11.4%). Also lichen planus was prevalant (0.4%) among cigarette smokers. The reason might be due to the chemical composition of the product, easy availablity, cost effectiveness, high temperature and heat generated during smoking. Similar findings were also reported by Prerna P et al[1] and Naveen Kumar B et al.[7]

Along with all these findings, the most common site of occurrence of oral mucosal lesions was found to be buccal mucosa followed by hard palate and commissures. These results were due to higher concentrations of tobacco-specific nitrosamines and hence high carcinogenicity in this region was more common. Tobacco use cause an array of changes in the oral cavity, from mucosal pigmentation to thickening/ulceration of the epithelium. Similar study was done by Sujatha SR et al[4] and similar results were found with betel quid chewers most commonly on buccal mucosa and lateral borders of the tongue.

CONCLUSION

The study showed that the risk of the development of oral lesions associated with tobacco smoking, chewing, or both is quite high. Majority of individuals with tobacco related habits were married males belonging to the young and middle age group employed in unskilled occupation with primary education. Gutkha chewing was seen to be more prevelant in individuals habitual with smokeless form of tobacco and bidi smoking was seen to be more prevelant in patients with smoking form of tobacco. Lesions like chemical reaction, angular cheilitis, smoker's palate were found to be more prevalent with both gutkha chewing and bidi smoking. The most common site for the lesions was buccal mucosa.

The study data can serve as a useful tool in educating the patients with deleterious habit of chewing form of tobacco. The complex association of poverty, low education levels, low prioritization of the disease are responsible for increased incidence of oral lesions among this population of tobacco chewers. Though the sale of commercial tobacco products is banned, people still continue to use them, hence creating awareness about its ill‑effects is essential, to eliminate the use of these preparations. Early screening of these lesions can play a vital role for early intervention and prevention of oral cancer.

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REFERENCES

1. Prerna P, Vela DD conducted a study to assess the prevalence of habits and oral mucosal lesions in Jaipur, Rajasthan, 2015.
2. Kaveri H, Venktesh N, Kruthika G, Mangalore S, Niranjan KC (2018) aimed a study to investigate the prevalence and distribution of oral mucosal lesions (OMLs) among smokeless tobacco users.
3. Mehrotra R, Thomas S, Nair P, Pandya S, Singh M, Nigam M. prevalence of oral soft tissue lesions in Vidhisha. BMC Res Notes, 2010; 3: 23.
4. Sujatha SR, Radha P, Yashodha D B K, Nidhi C, Aninditya K, Nithin T. conducted a research to determine the frequency of oral mucosal lesions and to correlate the dose response relationship among CT users of Bengaluru North province, 2015.
5. Choudary K. Tobacco control in India. In 50 years of cancer control in India, Director General Health Services. New Delhi: Government of India, 2001; 196-211.
6. Patil PB, Bathi R, Chaudhary S, prevalence of oral mucosal lesions in dental patients with tobacco smoking, chewing and mixed habits. A cross-sectional study in South India. J Fam Community Med., 2013; 20: 130-5.
7. Naveen-Kumar B, Tatapudi R, Sudhakara-Reddy R, Alapati S, Pavani K, Sai-Praveen KN. Various forms of tobacco usage and its associated oral mucosal lesions.