IJBPAS, April, 2022, 11(4): 1948-1956

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

DISTRIBUTION OF ORAL MUCOSAL LESIONS AMONG TOBACCO USERS

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Received 21st May 2021; Revised 22nd June 2021; Accepted 19th July 2021; Available online 1st April 2022

https://doi.org/10.31032/IJBPAS/2022/11.4.6032

ABSTRACT

The purpose of this study is to assess the distribution of Oral mucosal lesions associated with the habit of using tobacco in the form of smoke, smokeless or both. A selection of 344 patients attending the department of Oral Medicine and Radiology in a private Dental College and Hospital, above 18 years of age and with the history of using tobacco were included in the study. They were divided into three groups depending upon the usage of tobacco as smoking group, chewers group and mixed (both forms) group. Nearly all the patients had some form of oral mucosal lesion which shows that the history of using tobacco causes mucosal lesions. Oral sub mucous fibrosis and leukoplakia were the predominant lesions this shows that the mucosal lesions progresses to potentially premalignant disorders. This study emphasizes the harmful effects of tobacco use on oral mucosa and also serves as a path for future tobacco cessation programme and routine examination of oral mucosa is important to diagnosis at an earlier stage of potentially premalignant disorders and helps to motivate the patients to quit this habit which is harmful to the health.

Keywords: Oral mucosa, Oral sub mucous fibrosis, leukoplakia, Tobacco, Cessation

INTRODUCTION

Tobacco use has become a global epidemic and its use is said to cause various systemic diseases for which sufficient literature is available **[1]**. In India the habit of chewing tobacco as made the situation worst due to the prevalence of chewing tobacco covers a wide socioeconomic group and is spread across both urban and rural areas **[2]**. Tobacco in either forms when used causes oral cancer, oral mucosal lesions, periodontal diseases and dental caries. Understanding the etiological factors and distribution of oral mucosal pathologies it is more important to prevent the lesions at the initial level of its occurrence **[3]**.

Tobacco contains different chemicals in the smoking form and about 50 are known carcinogens. Nearly about 28 carcinogens are found in smokeless tobacco. Nicotine content is lower in smokeless tobacco than in the smoking form **[4]**. It was first suggested by Alder in 1912 that inhalation of cigarette smoke might be a cause of lung cancer **[5]**. Since then, knowledge about the adverse effects of tobacco has accumulated. Oral health plays a important role in overall well-being and quality of life. All humans are affected by oral diseases in the course of their lifetime **[6]**. Oral mucosal lesions are caused by multiple etiological factors such as infections, local trauma, habit of using tobacco products, systemic diseases and consumption of alcohol **[7]**. Using tobacco is one of the most important risk factor causing oral mucosal changes leading to oral pre-cancer and cancer **[8]**. In this study distribution of various oral mucosal lesions associated with the use of tobacco in the form of smoke and smokeless is determined.

MATERIALS AND METHOD

A selection of 344 patients attending the Department of Oral Medicine and Radiology in a private Dental College and Hospital were included in the study. Those with the habit of using tobacco as smoke, smokeless and both the forms and above 18years of age were included in the study. The demographic data was collected.

The study participants were divided into three groups smokers, chewers and mixed habit. Frequency, duration and type of tobacco products details were collected. Informed consent was obtained from the patients who participated in the study. The data thus obtained was subjected to statistical analysis. All the participants with history of tobacco habit were made aware of the harmful effects of tobacco and were motivated to quit the habit.

RESULTS

Among the participants 19.0% were in the age group of <25 years using smokeless tobacco and about 12.8% smoking and 15.9% using both the types. In the age group of between 25 to 50 years 13.3%

were using smokeless, 60% smoking and 70.5% using both. Likewise in the age group of above 50 years 13.3% used smokeless, 27.2% where smoking and 13.6% used both smoke and smokeless **(Table 1)**.

On comparing the gender in smokeless group 74.3% were male and 25.7% female. In smoking group 100% were male and no female was reported with smoking habit and hence no female reported in mixed habit as well **(Table 1)**.

The duration of the habits were divided into two groups more than 10 years and less than 10 years .About 68.6 % had the habit of using smokeless tobacco and 31.4% less than 10 years.

In smoking group 54.9% were smoking for more than 10 years and 45. 1% less than 10 years and those with habits of using both the types in which 63.6% had the habit of using the tobacco products for more than 10 years and 36.4% less than 10 years. In frequency of using smokeless tobacco per day of <5 times it was 72.4% and less than 5 times 27.6% .Likewise in smoking group the frequency of more than 5 time per day was 70.3 % and less than 5 times per day was 29.7% .In the mixed group frequency per day of more than 5 times was 57.5% and less than 5 times was 45.5% **(Table 2)**.

Over all distribution of different types of Oral mucosal lesions among the smokeless and smoking 3.8% were without any lesion in the smokeless group, 1.0% without any lesion in the smoking group.

Among the most prevalent tobacco product in smoking group 92.3% was cigarette and in the smokeless form 48.6% was pan. In the mixed habit group cigarette was 90.9% and pan 38.6% **(Figure 1)**.

Among the oral potentially malignant disorders the predominant lesion was oral sub mucous fibrosis (59.0%) in smokeless group and leukoplakia (39.5%) predominant in smoking group as well as in mixed group (43.2%) **(Figure 2)**. There was a statistically significant value in comparing the duration and frequency of the habit.

Table 1: Chi-Square test for proportions

		Habits								p-value
		Smokeless		Smoke		Both		Total		
		N	%	N	%	N	%	N	%	
Age group	< 25 yrs	20	19.0%	25	12.8%	7	15.9%	52	15.1%	0.036
	25 - 50 yrs	71	67.6%	117	60.0%	31	70.5%	219	63.7%	
	> 50 yrs	14	13.3%	53	27.2%	6	13.6%	73	21.2%	
	Total	105	100.0%	195	100.0%	44	100.0%	344	100.0%	
Gender	Male	78	74.3%	195	100.0%	44	100.0%	317	92.2%	<0.001
	Female	27	25.7%	0	0.0%	0	0.0%	27	7.8%	
	Total	105	100.0%	195	100.0%	44	100.0%	344	100.0%	
Duration	< 10 yrs	72	68.6%	107	54.9%	28	63.6%	207	60.2%	0.061
	> 10 yrs	33	31.4%	88	45.1%	16	36.4%	137	39.8%	
	Total	105	100.0%	195	100.0%	44	100.0%	344	100.0%	

Frequency	< 5	76	72.4%	137	70.3%	24	54.5%	237	68.9%	0.082
	> 5	29	27.6%	58	29.7%	20	45.5%	107	31.1%	
	Total	105	100.0%	195	100.0%	44	100.0%	344	100.0%	
Lesion	Present	100	95.2%	192	98.5%	44	100.0%	336	97.7%	0.115
	Absent	5	4.8%	3	1.5%	0	0.0%	8	2.3%	
	Total	105	100.0%	195	100.0%	44	100.0%	344	100.0%	

Table 2: Chi-Square test to compare proportions

		Lesion						p-value
		Present		Absent		Total		
		N	%	N	%	N	%	
Habits	Smokeless	100	95.2%	5	4.8%	105	100.0%	0.115
	Smoke	192	98.5%	3	1.5%	195	100.0%	
	Both	44	100.0%	0	0.0%	44	100.0%	
	Total	336	97.7%	8	2.3%	344	100.0%	
Duration	< 10 yrs	204	98.6%	3	1.4%	207	100.0%	0.185
	> 10 yrs	132	96.4%	5	3.6%	137	100.0%	
	Total	336	97.7%	8	2.3%	344	100.0%	
Frequency	< 5	233	98.3%	4	1.7%	237	100.0%	0.243
	> 5	103	96.3%	4	3.7%	107	100.0%	
	Total	336	97.7%	8	2.3%	344	100.0%	

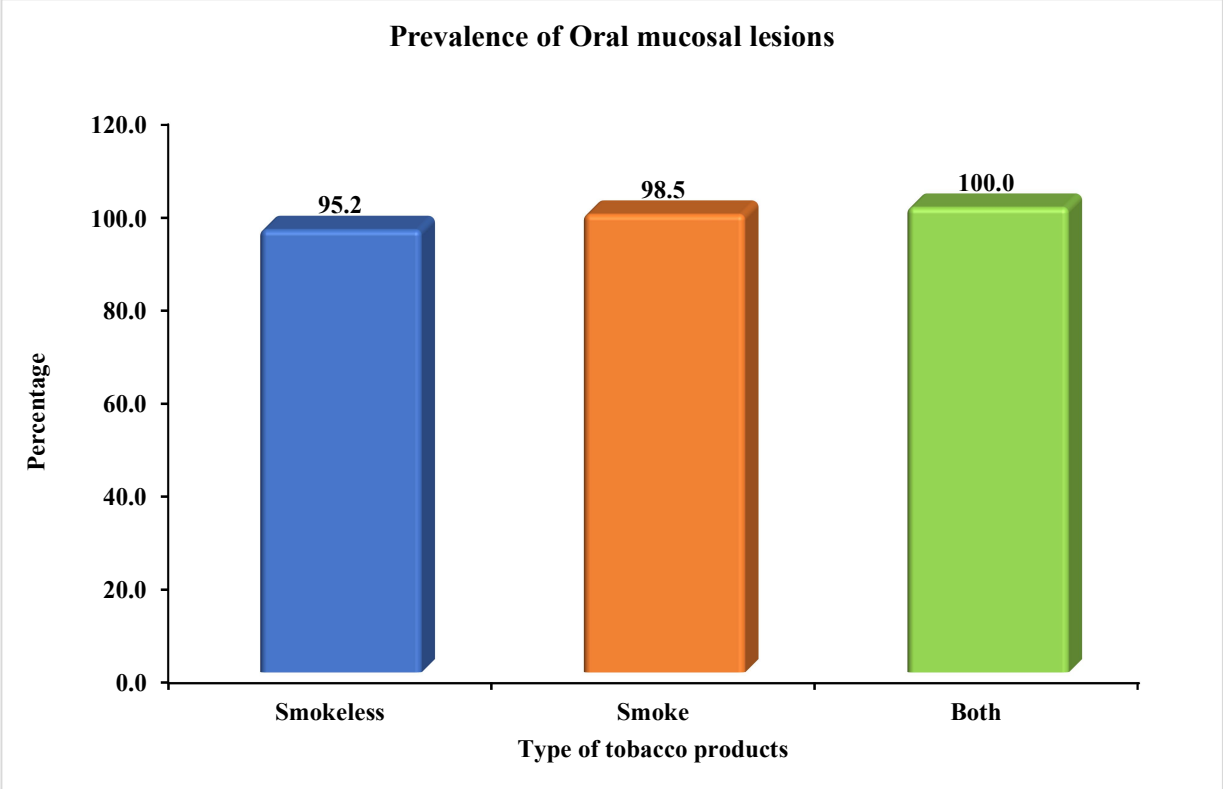

Figure 1: Prevalence of oral mucosal lesions

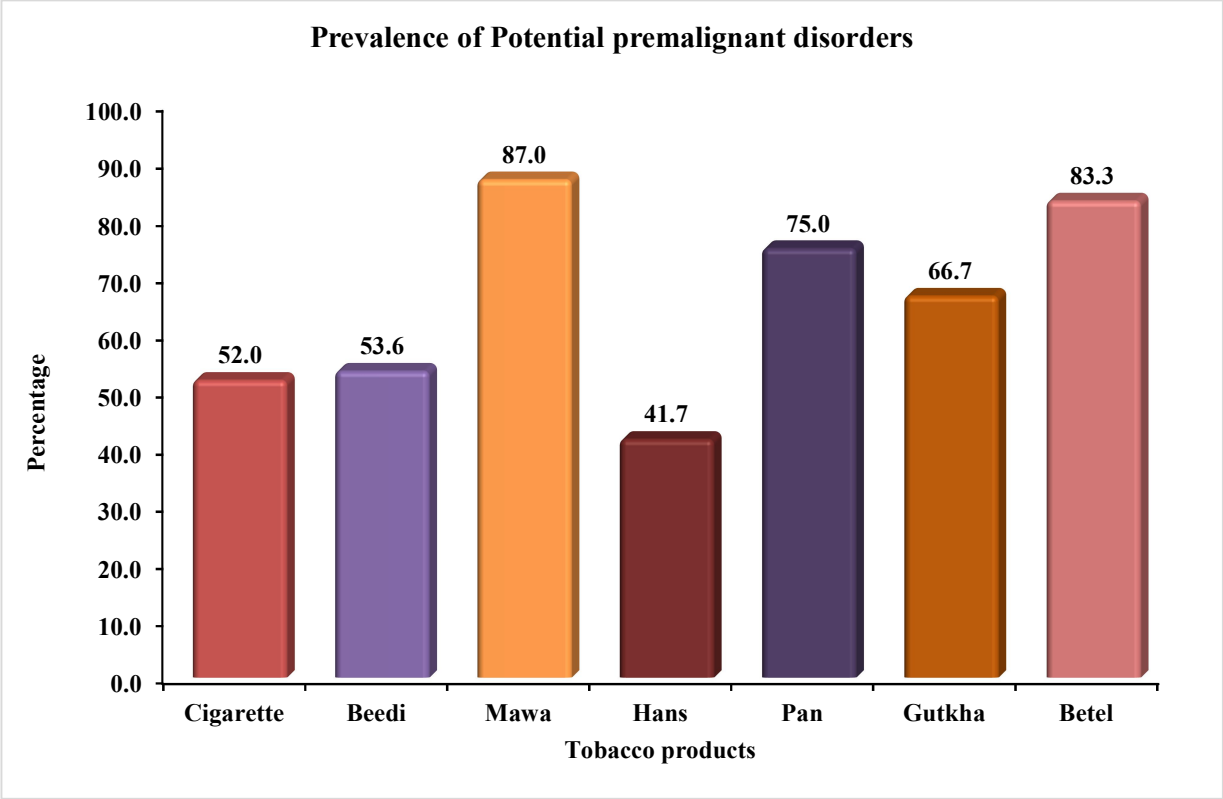

Figure 2: Prevalence of potentially premalignant disorders

DISCUSSION

Oral mucous membrane is the mirror of oral and general health **[9]** .Oral mucosal lesions (OMLs) act as predecessors to oral cancer which is globally the sixth most common cancer. These OMLs may be a bacterial and viral interaction in the oral cavity, alteration in the metabolic or immunological system leading to systemic diseases, or even due to habits of using tobacco and alcohol **[9,10]**.

Oral mucosal lesions such as oral leukoplakia, erythroplakia and oral submucous fibrosis have been proposed to progress to oral cancer **[11]** Hence knowing the prevalence of these precursor lesions and treating them before they progress to malignancy should be the goal of oral health care workers **[12]**. These OMLs causes pain xerostomia, halitosis and also interferes with speech and mastication **[9]**. An oral premalignant lesion is compared with a volcano in a suppressed state which when not detected earlier leads to adverse effects **[13, 14, 15]**.

In the present study among the gender distribution with oral habits men were higher than female and this is in accordance with other studies **[16]**. In our study among the study population those with dual habit of using smokeless and smoking tobacco were high in percentage when compared

with single habit. Using both the forms of tobacco was more prevalent in the age group between 25 to 50 years. Likewise smoking habit was observed to be more in the age group above 50years.Female participant none was noted in the smoking group and it was only seen in the smokeless group. More than half of the study participants reported the habit of using tobacco for more than 10 years. The duration and frequency of habits has a significant effect on the development of oral lesions which can be noted in the findings of the present study as well as in another previous study **[17, 18]**. Patients with the habit frequency of 5 to 10 times in a day had the maximum number of lesions. Study population with a combination of habits had fewer lesions, the possible reason being reduced time of contact or exposure to each individual habit. Likewise frequency of using smokeless or smoking tobacco for more than 5 times per day showed a statistical significance which is similar to other studies **[17, 18]** . Almost all of the study participants had some form of oral mucosal lesion.

As this study population included only those patients with habits and not all the patients attending the department the prevalence of oral lesions is much higher than those recorded by most prevalence studies. In smokeless group oral sub mucous fibrosis was predominantly seen and the next lesion was leukoplakia which was contrast to the smoking group in which leukoplakia was the predominant lesion followed by smoker's palate, smoker's melanosis and OSMF. In both the groups there was a equal distribution of leukoedema in mixed group habit leukoplakia was predominant and followed by OSMF and generalised periodontitis. This is in contrast with the previous studies conducted by **[19-21]** and in which leukoedema was highly prevalent in smokers. The pathogenesis of leukoedema is due to multiple factors and smoking is one of the major cause **[21]**. Other factors include betel nut chewing **[19]**. In the present study, smokers melanosis was more prevalent among smokers (4%). Similar result was recorded in a study conducted in Texas, USA on a sduty population of 500 Thai patients **[22, 17]**. Melanosis was also found in chewers (0.8%), it can be due to the mechanical and chemical irritation from smokeless tobacco inducing melanin pigmentation. Oral pre malignant lesion associated with both forms of tobacco, had an overall prevalence of 3.5% and was more prevalent among men. The reason for high prevalence in men is that men used both smoking and smokeless forms of tobacco while women used only smokeless tobacco. Studies observing the effects of cessation of oral habits are sparse **[23]**. Hence there is need

for studies to be performed in this regard. The results of such studies can be a great tool in educating patients regarding the adverse effects of tobacco, alcohol and betel quid habits.

CONCLUSION

This study highlights the distribution of oral mucosal lesions among those with the habit of using tobacco products. It emphasizes the ill effects of tobacco habit and also evokes the need for implementation of tobacco cessation programs. Diagnosing potentially premalignant disorders at an earlier stage will help the patient to avoid the future consequences leading to oral cancer. Hence screening programs for OMLs in future should be encouraged among oral physicians. Counselling combined with routine oral examination for those with habit of using tobacco will motivate them to quit the habit.

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