

Prevalence and distribution of oral mucosal lesions associated with tobacco use in patients visiting a dental school in Ajman

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SUMMARY Background: Several studies have linked the habit of smoking and chewing smokeless tobacco to a variety of oral mucosal lesions that are more likely to develop oral cancer. The purpose of the current study is to assess the prevalence and distribution of various oral lesions accompanied by the use of tobacco or betel nut consumption

Materials and methods: The medical records of patients visiting the department of oral medicine in the college of dentistry of Ajman University were retrospectively analyzed between January 2014 and October 2014. Inclusion criteria were currently smoking patients who are smoking, chewing or using smokeless tobacco for a minimum of 12 months and had no systemic disease. From 250 medical records retrieved between January 2014 and October 2014, fifty-four files were selected based on the suggested inclusion criteria. All the obtained data were analyzed statistically by using a Statistical Package for Social Sciences version 20.

Results: During the intraoral examination, different oral lesions were noted. The most common oral lesion was oral sub mucous fibrosis affecting 12.2% of the subjects, followed by smoker's palate (10.8%), leukoedema (9.5%) and leukoplakia (8.1), smoker's melanosis, lichenoid reaction (4.1%) and hairy tongue (1.4%). The gender disruption of the oral mucosal lesions in the revised records showed a greater ratio of the oral lesions among male patients (73%) versus female patients (2%). The oral lesions were more common among patients older than 50 years (37.8%) than those aged between 20 to 35 years (32.4). However, there was no significant difference in the prevalence of oral mucosal lesions based on gender and age distribution. The most common affected site by the intraoral lesion was the buccal mucosa (40.5%) followed by dorsum of the tongue (27%), palate (10.8%), and gingival area (9.5%).

Conclusion: The results of the current study indicated the high prevalence of premalignant oral lesions like leukoplakia, smoker's palate and oral submucous fibrosis among tobacco users and acknowledge the importance of having regular screening preventive protocols to increase the community awareness regarding the adverse effects of smoking.

Key words: oral mucosal lesions, leukoplakia, pre-cancer, smoking, oral sub-mucous fibrosis, smokeless tobacco

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INTRODUCTION

Smoking and chewing smokeless tobacco are considered to be significant risk factors for the development of oral cancer, premalignant lesions such as leukoplakia, and other lesions that include smoker's melanosis, nicotinic stomatitis and white patches [1].

The initiation and the advancement of the periodontal diseases are commonly related to smoking as it can increase the rate of the buildup of the calculus, which can extend the rate of the plaque deposition accelerating the gingival recession and deep pocket formations [1]. Based on systematic reviews, smoking during pregnancy should be avoided because it can increase the risk of cleft lip and palate in the fetus [2, 3]. Smokers are at increased risk for oral cancer, which is at least six times higher than for nonsmokers. Smokeless tobacco predisposes to the risk of the cheek and gingival cancer; this bad habit can increase the risk of oral cancer up to 50 times. Amongst cigar smokers, there is a seven to tenfold increase in the risk of oral cancer, while for pipe smokers the risk is two to three times greater [4, 5]. The causal link between smoking and oral cancer can be attributed to the significant rate of oral epithelial dysplasia that can follow the heavy rate of smoking and which can contribute to the carcinoma in situ [1].

Oral leukoplakia, a potentially malignant lesion, can be correlated to pipe smoking [6]. The oral leukoplakia is linked primarily to the use of smokeless tobacco where the frequency and duration of their application can significantly influence the incidence of the leukoplakia. They are commonly presented just adjacent to the site of the tobacco quid [7].

Although the majority of oral mucosal lesions are innocent and require conservative treatments, some oral lesion can potentially progress into malignancy particularly if the health care provider fails to make the diagnosis or have actively delayed the referral. Oral mucosal lesions can interfere with normal oral physiological activities including swallowing, mastication, and speech due to pain, burning, and irritation associated with oral lesions [8].

Understanding the distribution of the oral mucosal lesions, epidemiology, and risk factors are essential to promote primary prevention, early diagnosis, and treatment with appropriate

management and to prevent the malignant transformation of the potentially malignant lesions [9].

MATERIAL AND METHODS

The medical records of patients attending the department of oral medicine in the college of dentistry of Ajman University were retrospectively analyzed between January 2014 and October 2014. The ethical approval was obtained by the ethical committee at Ajman University.

The medical records including the case report of the patients were filled by an undergraduate student and then verified and assessed by oral diagnosis and oral medicine Instructors. The dental students in the oral medicine department received adequate training and orientation to standardize their ability in conducting adequate observation and clinical examination during various clinical scissions.

Inclusion criteria were currently smoking patients who are smoking, chewing or using smokeless tobacco for a minimum of 12 months and had no systemic disease (cardiovascular, endocrine, gastrointestinal, oral, or respiratory disease)

Exclusion criteria were lack of adequate and detailed written information in the records or incomplete clinical case report or charts in the medical records by the assigned doctors, in addition to that, the patients who consumed alcohol, or who were under drug treatment were also included in the exclusion criteria. From 250 medical records retrieved between January 2014 and October 2014, fifty-four files were selected based on the suggested inclusion criteria. Each medical record reports the patient age, gender, address, a chief complaint, and the presence of any lesions or abnormalities on the oral mucosa along with their anatomical location.

All the obtained data were analyzed statistically by using a Statistical Package for Social Sciences version 20 (SPSS). Kruskal Wallis test was used to determine the correlation between the oral mucosal lesions and the other factors including age, gender, anatomical location, the severity of pain and habit. P value set to be less than 0.05.

RESULTS

From 250 medical records retrieved between January 2014 and October 2014, fifty-four files were selected based on specified inclusion criteria.

During the intraoral examination, different oral lesions were noted (Table 1). The most common lesion was oral sub-mucous fibrosis affecting 12.2% of the subjects, followed by smoker's palate (10.8%), leukoedema and aphthous ulcer with the same frequency (9.5%), leukoplakia (8.1), traumatic ulcer and geographic tongue with the same frequency (5.4%), smoker's melanosis, melanotic macule frictional keratosis, linea alba, lichenoid reaction with the same frequency (4.1%), hairy tongue and fissured tongue with the same frequency (1.4%) (Figure 1).

The gender disruption of the oral lesions in the revised records showed a high prevalence of the oral mucosal lesions among the male patients (73%) versus female patients (27%) (Table 2) and in the current study, 63% of the selected records based on the inclusion criteria presented with one lesion while the remaining records presented with more than one oral lesion (37%). This could be attributed to the high number of the males (39 patients) versus the female patient (15 patients) in the revised records (Figure 2). However, the statistical analysis did not show a significant statistical difference between males versus females ($p>0.05$) (Table 3)

The oral lesions were more common among patients older than 50 years (37.8%) than those aged between 20 to 35 years (32.4%) (Table 2). However, there was no significant difference in the prevalence of oral mucosal lesions based on age distribution ($p>0.05$) (Table 3).

The most common affected site by the intraoral lesion was the buccal mucosa (40.5%) followed by dorsum of the tongue (27%), palate (10.8%), and gingival area (9.5%) (Table 2).

Significant statistical difference present between different intraoral locations ($p<0.05$) (Table 3).

The most prevalent habit among our patients was smoking tobacco (81%) followed by the consumption of betel nuts (15%) (Figure 3). A significant difference presents between the two habits ($p<0.05$) (Table 3).

Tab. 1. Oral lesions present in the study along with the most prevalent oral lesions

Oral lesion	Frequency	Percent
Traumatic ulcer	4	5.4
Leukoplakia	6	8.1
Fissured tongue	1	1.4
Oral submucous fibrosis	9	12.2
Linea alba	3	4.1
Frictional keratosis	3	4.1
Smoker palate	8	10.8
Melanotic macule	3	4.1
Fordyce granules	4	5.4
Aphthous ulcer	7	9.5
Acute marginal gingivitis	2	2.7
Hairy tongue	1	1.4
Geographic tongue	4	5.4
Leukoedema	7	9.5
Smoker's melanosis	3	4.1
Lichenoid reaction	3	4.1
Total	74	100

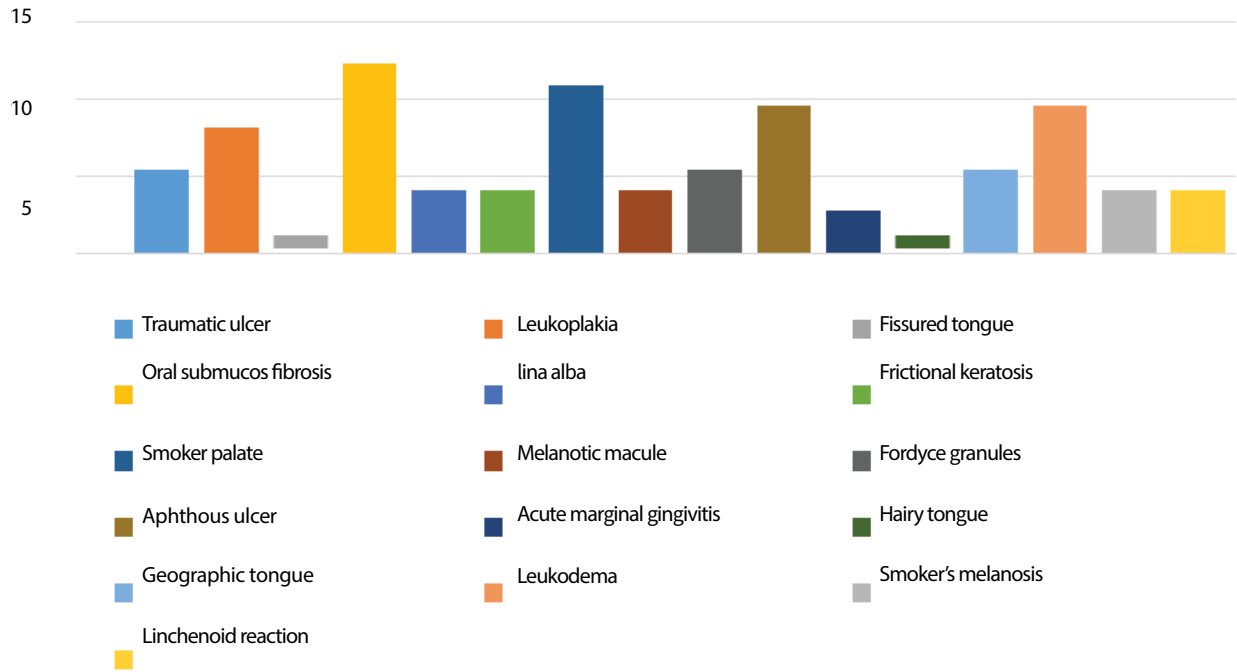


Fig. 1. Oral lesions present in the study along with the most prevalent oral lesion

Tab. 2. Incidence of the oral lesions based on age, gender and anatomical location

Gender	Frequency	Percent
Male	54	73
Female	20	27
Total	74	100
Location of lesion	Frequency	Percent
Dorsal surface of the tongue	20	27
Buccal mucosa	30	40.5
Palate	8	10.8
Gingival area	7	9.5
Upper lip	2	2.7
Lower lip	4	5.4
Oral mucosa	1	1.4
Cheek	1	1.4
Gingiva and Cheek	1	1.4
Total	74	100
Age	Frequency	Percent
20-35 years old	24	32.4
36-50 years old	22	29.7
>50 years old	28	37.8
Total	74	100

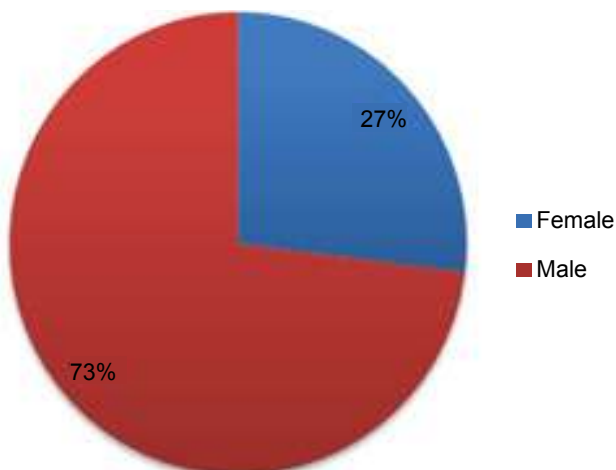


Fig. 2. Incidence of the oral lesions based on Gender

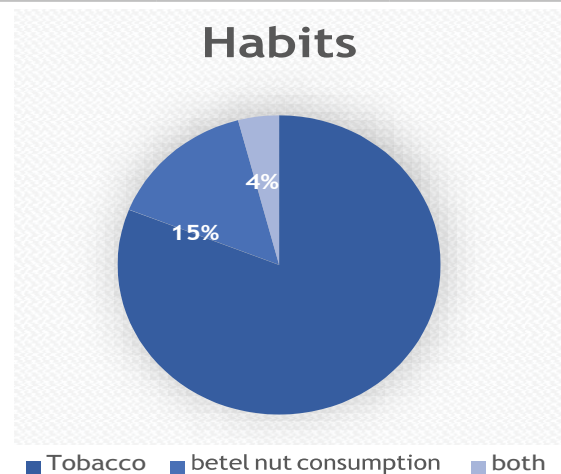


Fig. 3. Incidence of oral lesions based on Habits

Tab. 3. Correlation between oral lesions and age, gender, anatomical location, Severity of pain and habits

Hypothesis Test Summary			
Null Hypothesis	Test	sig.	Decision
The distribution of gender is the same across categories of diagnosis	Independent samples. Kruskal-Wallis Test	0.358	Retain the null hypothesis
The distribution of Habits (Tobacco Betel nut) is the same across categorize of Diagnosis	Independent samples. Kruskal-Wallis Test	0.079	Retain the null hypothesis
The distribution of Location of the lesion is the same across categorize of diagnosis	Independent samples. Kruskal-Wallis Test	0	Reject the null hypothesis
The distribution of pain is the same across categories of diagnosis	Independent samples. Kruskal-Wallis Test	0	Reject the null hypothesis
The distribution of Age is the same across categorize of diagnosis	Independent samples. Kruskal-Wallis Test	0.534	Retain the null hypothesis
Asymptotic significances are displayed. The significance level is 0.05			

DISCUSSION

In the current study, the distribution of oral mucosal lesions was more common in male patients (73%) versus female patients (27%) and this probably because the number of male patients was more than female patients. Tobacco smoking was more predominant among males than females. This finding corresponds to previous studies have been done in India to assesses the prevalence of oral lesions among tobacco users that showed a greater number of males when compared with females [10, 11]. However, these results were opposite to Chilean study, where females represented the majority of the sample [12].

In the present study, 81% were smokers while 15% were betel nut chewers. This finding is similar to a study done by Gambhir et al. where a high prevalence of smoking (71.2%) was seen [13].

Oral submucous was the most common oral lesion affecting 12.2% of the patients. This Finding was similar to Krishna et al. study that represented oral submucous fibrosis as one of the most common finding in his study population (14.55) [14]. However, this result was opposite to a study in the Sicilian population where the most common oral lesion was coated tongue [15]. Oral submucous fibrosis is a premalignant lesion of the oral mucosa commonly seen in the Southeast Asian population and is usually related to betel chewing habit among this population [16].

White lesions such as leukoplakia, leukoedema, and smoker’s palate were significantly seen in our study. Nicotinic stomatitis, also often called smoker’s palate, is a reaction seen in the roof of the mouth caused by the high temperature rather than the chemical composition of the smoke, although there is a synergistic effect of the two factors [16]. The prevalence

of smoker’s palate (10.8%) was similar to the previous study done in north of India [17], however studies done in Western populations showed that the prevalence of smoker’s palate was much lower than in our study and this could be because pipe smoking is used more frequently used in Western countries than in India [18].

The leukoplakia, a pre-malignant lesion, was found in 8.1% of the current study population. This corresponds to a study conducted by Bathi R et al. where leukoplakia was reported by 8.2% of the participants and found in subjects with smoking habit and in those who chewed betel quid with tobacco [19].

The buccal mucosa was the most commonly affected site by the intraoral lesions particularly the leukoplakia and the oral submucous fibrosis similar to a previous study done in the Indian population where the most common prevalent site of occurrence of leukoplakia and oral submucous fibrosis was the buccal mucosa [14].

Intraoral lesions were more frequent among those aged more than 50 years (37.8%) than those aged between 20 to 35 years (32.4). The physiological changes that follow the aging process at different tissue levels and the diminished ability of the tissue cells to repair its self with the aging process can contribute to the higher incidence of oral lesions in the elder population [20].

CONCLUSION

The results of the current study indicated the high prevalence of premalignant oral lesions like leukoplakia, smoker’s palate and oral submucous fibrosis among tobacco users and acknowledge the importance of having regular screening preventive protocols to increase the community awareness regarding the adverse effects of smoking. Further community-based trials should be conducted to estimate the adverse effects of tobacco chewing and smoking in relation to the oral cavity and its structures.

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