

ISRG JOURNAL OF CLINICAL MEDICINE AND MEDICAL RESEARCH [ISRGJCMR]



OPEN ACCESS



ISRG PUBLISHERS

Abbreviated Key Title: ISRG J Clinic.Medici.Medica.Res.

ISSN: 3048-8850 (Online)

Journal homepage: <https://isrgpublishers.com/cmmr/>

Volume – II, Issue -I (January- February) 2025

Frequency: Bimonthly



“A STUDY ON ORAL MUCOSAL LESIONS ASSOCIATED WITH TOBACCO USE IN PATIENTS WITH ORAL CANCER”

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| Received: 23.01.2025 | Accepted: 27.01.2025 | Published: 30.01.2025

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Abstract

Background: One of the most common habits is tobacco use, which is linked to the emergence of potentially cancerous conditions. A significant public health issue, mouth cancer is increasingly affecting both young men and women. Usually, aberrant changes in the oral mucosa's colour, texture, or integrity are the first signs of oral mucosal lesions. Because they have the potential to develop into cancer, oral potentially malignant illnesses are very significant.

Aim: The aim of the present study was to investigate the prevalence and distribution of oral mucosal lesions (OMLs) among smoke and smokeless tobacco users and the relative risk of developing oral lesions associated with these habits.

Materials And Methods: A retrospective study of all cases of oral mucosal lesions observed from 2019 to 2021. Data on tobacco use, clinical information, and demographics were obtained from Fathima dental hospital at Vellore. Various examination techniques of the mouth and topography of the oral mucosa and brush biopsy technique was carried out for data collection with around 80 oral cancer patients visiting the clinic Statistical analysis was performed using SPSS version 20, and the mean, frequency, and percentage were calculated.

Results: Among 80 outpatients who reported to the dental hospital, 61(76.2%) patients were diagnosed with oral mucosal lesions. Out of all the oral mucosal lesions, tobacco associated lesions were 23 (28.75%) and were most common in males. The most common tobacco related oral lesions in males were leukoplakia 31 (38.75%) followed by oral submucous fibrosis 44 (55%). The most common tobacco associated oral lichen planus were 05 (6.25%).

Conclusion: The study comes to the conclusion that a dentist should be sufficiently informed of and knowledgeable about the diagnosis and treatment of oral lesions. Along with the assessment process, it is advised in daily practice and absolutely for examiners undertaking a study to record lesions in a standardised manner based on clearly defined topographical land markings.

Keywords: Leukoplakia, Lichen Planus, Oral Potentially Malignant Disorders, Oral Submucous Fibrosis, Precancerous lesion, Tobacco use, 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 for Oral cancer development. Tobacco is one of the most important causes of both addiction and development of Oral cancer. ⁽¹⁾ Thousands of chemical compounds are noticed in both smoked as well as un-burnt form of tobacco. They act not only as irritants and toxins, but also are deadly carcinogens. Nicotine which is an alkaloid is mainly responsible for addiction, whereas tobacco-specific nitrosamines, polycyclic aromatic hydrocarbons, and many others are most potent carcinogens. Habitual betel quid chewing, varying patterns of tobacco use, and alcohol consumption are pivotal risk factors that predispose the population to oral cancer. Furthermore, most rural Asians rely on agriculture, which makes them prone to extended durations of sun exposure, especially when working in the fields that may lead to lip and skin cancers. ⁽²⁾

Tobacco is addictive; the prevalence of oral lesions after consumption of tobacco products ranges from 9.5 to 58.9%. Both smoked and smokeless tobacco contain the alkaloid, nicotine, which is the main addictive agent. The most potent carcinogens in tobacco are the tobacco-specific nitrosamines, polycyclic aromatic hydrocarbons, and many others. Smoking, drinking, chewing tobacco, and areca nut have been positively associated with oral lesions, such as OSMF and leukoplakia that has the potential for malignant transformation. The prevalence of OSMF in India varies between 0.03 and 3.2% according to various studies. The prevalence of leukoplakia in India varies from 0.2 to 5.2%. Most authorities regard leukoplakia to be a dynamic rather than a static process, but this is usually in terms of its progression and development of malignancy. There is a wide range in the malignant transformation rate of leukoplakia varying from 0.13 to 2.2%. Tobacco use can cause a variety of changes to the oral mucosa, ranging from early mucosal alterations to advanced oral cancer. These changes are mostly depending on the kind of tobacco use. ⁽³⁾

NEED FOR THE STUDY:

Tobacco use is one of the most important risk factors for the development of oral mucosal lesions including oral pre-cancer and cancer. The type and location of the lesion varies with the type of tobacco used, the way it is used, and the frequency and duration of use. Hence, the present study aimed to determine the effect of frequency and duration of tobacco use on oral mucosal lesions among tobacco users. It is one of the most common cancers. Tobacco use is a risk factor for oral cancer. There appears to be some preponderance for cancer to occur in the mouth. Most of the

oral cancers arise either from submucous Fibrosis and Leukoplakia Detection of small lesions in Early stage is possible by a simple methodical examination of the mouth. The earlier detection is better the treatment result. ⁽⁴⁾

Finally, surgery is the current first choice for oral cancer treatment. Intensity-modulated radiation therapy, molecular targeted drugs, and immune checkpoint inhibitors are still used as adjuvant therapy for advanced cancer. In addition, postoperative rehabilitation and multidisciplinary treatment have also been developed in recent years. Multidisciplinary team approaches and supportive care in oral cancer treatment reportedly shorten the time to treatment and improve outcomes. Although there is enough evidence confirming the role of oral and maxillofacial surgeons, dentists, and dental hygienists in supportive care in oral cancer treatment, there are very few systematic studies. In particular, oral health management is a concept that encompasses oral function management, oral hygiene management, and oral care during oral cancer treatment. ⁽⁴⁾

Tobacco is used in two forms: **Smoke** - Preparation of bidis, Cigar / cheroot / chutta, Reverse Chutta Smoking, Chilums, Hookah, Hookli smoker **Smokeless** - Pan (betel quid) with tobacco, Pan Masala, Mawa, Mainpuri tobacco, Khaini **Application over the teeth and the gingiva** - Gudhaku, Bajjar, Creamy, Snuff. Smokeless Tobacco induced Keratosis. We provide a narrative review focusing on oral health management from a multidisciplinary and supportive care perspective, applicable in oral cancer treatment. a search of literature revealed scarcity of studies to assess the dose-response relationship in terms of duration and frequency of habits associated with oral mucosal lesions. Henceforth, the present study is an attempt to assess a study on tobacco-related oral mucosal lesions among oral cancer patients in Vellore city, TamilNadu. The understanding that a premalignancy does not invariably progress to malignancy is one of the significant developments in this discipline. Only cardiovascular illnesses cause more deaths worldwide than cancer, which ranks as the second most common cause. Ninety percent of oral cancers are thought to be caused by tobacco smoking. An extensive review of tobacco-related lesions is provided in this article. Screening for oral cancer and potentially malignant disorders in selected group of subjects with high risk for oral cancer has shown effectiveness towards early detection of cancer; moreover, attaining a definitive histopathological diagnosis and understanding the associated risk factors are equally important. ⁽⁵⁾

AIM: The study was aimed to Examine the effects of tobacco use on oral mucosal lesions in patients with oral cancer in selected hospitals.

OBJECTIVES:

1. To examine oral cancer patients and tobacco-related oral mucosal lesions.
2. To determine the impact of tobacco, use frequency and duration on tobacco user's oral mucosal lesions.
3. To observe the diverse mucosal lesions associated with the patients' differing tobacco habit consumption.

MATERIALS AND METHODS:

A cross-sectional study was carried out to determine the on tobacco-related oral mucosal lesions among oral cancer patients in Vellore city, Tamil Nadu. Every patient was made informed about the study, and written consent was acquired in the local language. Respondents were kept anonymous and confidential, and participation was entirely voluntary. Subjects aged 20 years or more with smoking and/ or chewing habits attending the Out Patient Department Fathima dental hospital and tobacco users' rehabilitation centre at Vellore were included in the study. Patients who are not willing to participate, those with the habit of alcohol and those with infections, local trauma/irritation or systemic diseases that cause oral lesions were excluded from the study.

A visual oral soft tissue examination and a questionnaire-based interview were part of the study methodology. The questionnaire included demographic details like age, gender, educational status and monthly income. Details of the habits such as duration in years and frequency were recorded. Clinical Oral Examination and topography of the oral mucosa A single examiner with training from the Department of Oral Medicine conducted a clinical examination on each patient. For individuals that needed further diagnosis in order to establish a conclusive histological diagnosis, brush biopsies were also conducted. A total of 80 subjects constituted the study population as obtained by convenience sampling. Statistical analysis was done utilizing Statistical Package for Social Sciences Software (SPSS Version 20.0).

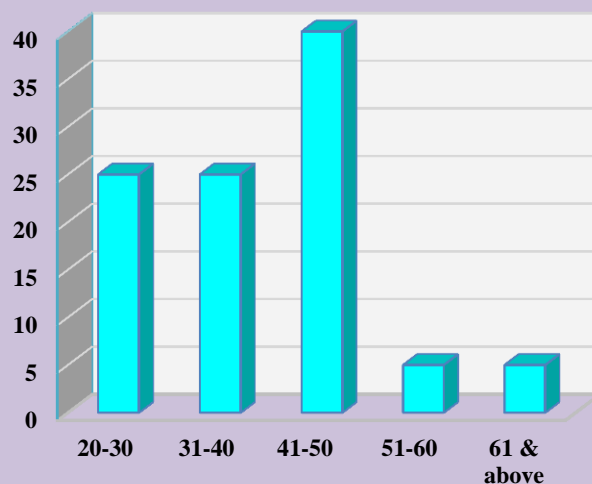
DATA COLLECTION METHOD: Brush Biopsy Technique



RESULTS:

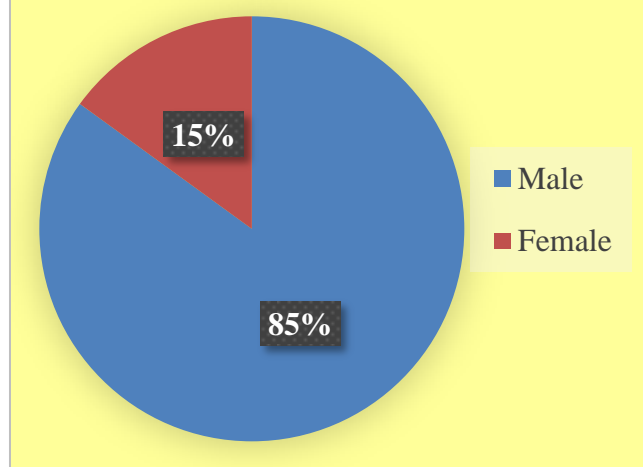
- ❖ Among 80 outpatients who reported to the dental hospital, 61(76.2%) patients were diagnosed with oral mucosal lesions. Out of all the oral mucosal lesions, tobacco associated lesions were 23 (28.75%) Study participants were of the age group between 20 and 60 years and above with an average age of 46 years. (Figure-1)

Percentage Distribution of Age



- ❖ In regard to gender majority was found to be males 68 (85.0%) whereas females were 12(15.0%). prevalence of oral mucosal lesions among patients with tobacco association or without tobacco association of the patients, (38.13%) consumed tobacco in one or another form of tobacco and (38.0%) of these clinically presented with oral mucosal lesions. Since the usage of tobacco and mode of usage is increased in males the probability of occurrence of lesions is more than females. (Figure-2)

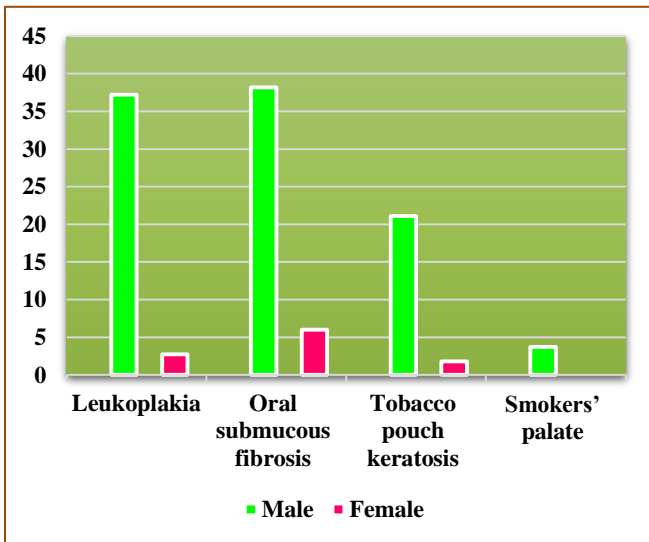
Distribution of Gender among Oral Cancer Patients



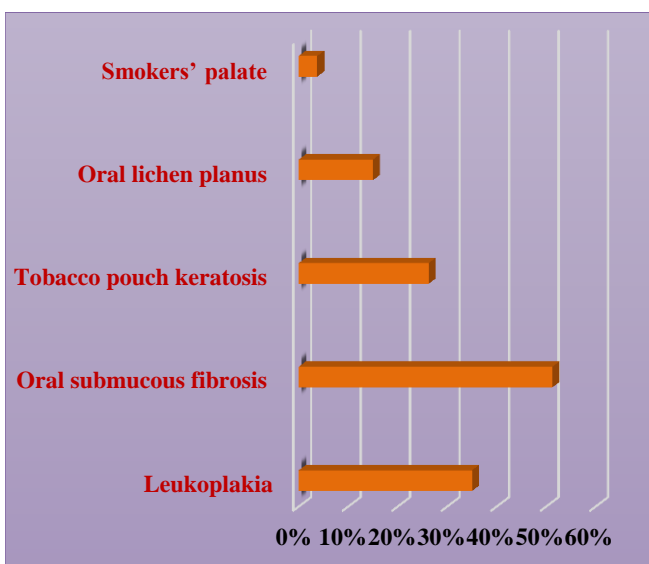
- ❖ The most prevalent form of tobacco used was smoking 56 (70%), followed by chewing 36(45%) and mixed tobacco consumption 72(90%) Most of the females were chewers (65.16%). The most common tobacco habit practiced among males was smoking followed by chewing. (Table-1)

Sl.no	Tobacco habits	Frequency(f)	Percentage (%)
1	Smoking	56	70%
2	Chewing	36	45%
3	Mixed tobacco consumption	72	90%

❖ The duration and frequency of tobacco usage were directly correlated with the incidence and severity of oral mucosal bleeding ulcers. The most common tobacco associated lesions were Leukoplakia 28(35%), Oral submucous fibrosis 41(51.25%), Tobacco pouch keratosis 21(26.25%), Oral lichen planus 12(15%) and Smokers' palate 03(3.75%). Genetical factors and environmental factors may also be the reason for the occurrence of the lesions in some patients. Interestingly, there was no discernible correlation between the length of time spent smoking, abstinence from smoking, and mixed behaviours and the existence of oral mucosal lesions. (Figure-3)



❖ The most prevalent tobacco-related lesions in men were smoker's palate (3.75%), tobacco pouch keratosis (21.17%), oral submucous fibrosis (38.18%), and leukoplakia (37.29%). In females, tobacco pouch keratosis (1.79%), leukoplakia (2.75%), and oral submucous fibrosis (6.01%) were the most prevalent tobacco-associated lesions. (Figure-4)



DISCUSSION:

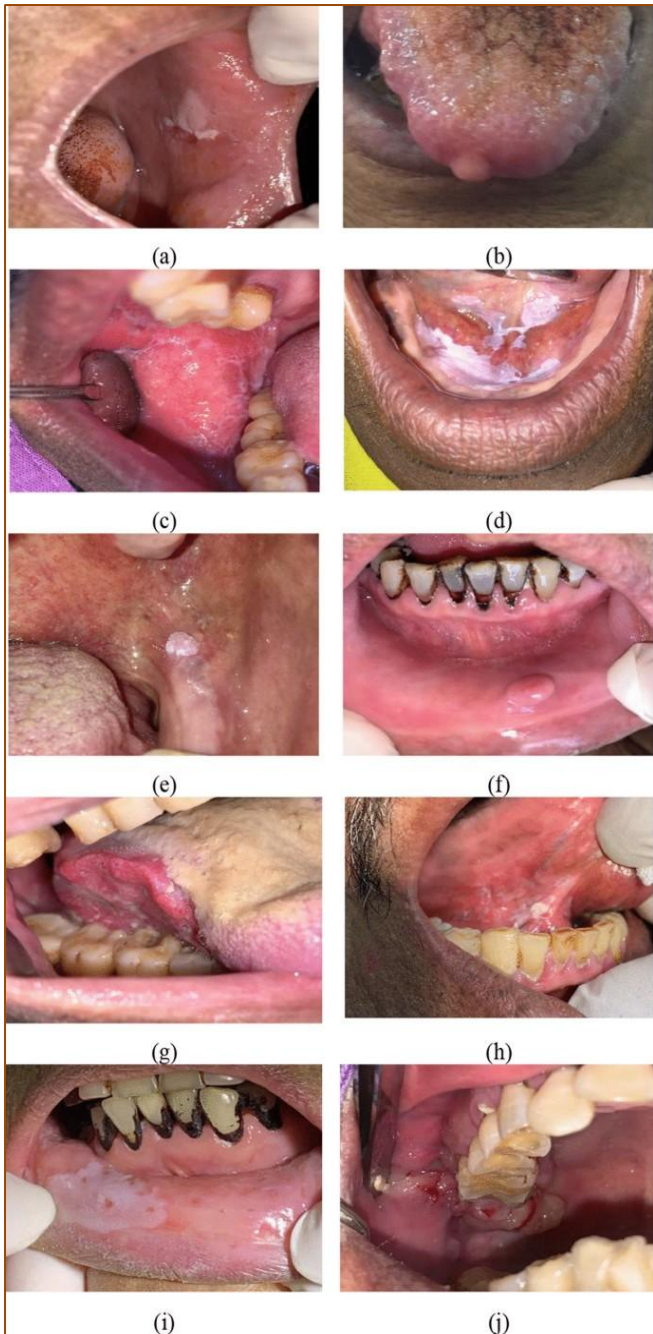
Tobacco uses in all its forms is becoming a serious and expanding health concern. More than 60 of the 7000 compounds included in tobacco products are thought to be harmful. Cigarettes and bidis

are commonly used forms of bulk tobacco products. (7) Commercially accessible paan masala is growing increasingly popular among the smokeless variety, particularly among young people and teens as opposed to the elderly population. (8) While the majority of patients in the smokeless tobacco group were between the ages of 20 and 33, the majority of patients in the conventional and reverse smoking groups were between the ages of 40 and 55. Each habit group's frequency of tobacco use in the current study indicated an average of 1–5 units daily. There is clear evidence linking tobacco use to both mouth cancer and other potentially harmful conditions. (9) Long-term exposure to tobacco products can cause alterations in the oral mucosa that may be caused by the carcinogen itself or by the oral cavity's defence system. According to histopathological data, fibrous hyperplasia, also known as fibroma, was the second most frequent oral lesion identified, accounting for 24.5% of cases. Many of the participants in this study did not have regular dental checkups and had poor oral hygiene. (10)

The majority of tobacco smokers in this survey were drivers, cleaners, fisherman, daily wage earners, farmers, and agricultural workers. When combined with peer pleasure, the majority of these jobs demand a lot of physical exertion and are linked to high levels of physical stress, which can cause the development of harmful oral habits like tobacco use. Depending on the kind of tobacco use, different oral mucosal ulcers may develop. Therefore, a study was required to determine the variety of tobacco use and the oral mucosal lesions that are linked to it. Smoking induces increased melanin pigmentation in the oral mucosa which may be due to the effect of nicotine on melanocytes located along the basal cells, which results in basilar melanosis with varying amounts of melanin incontinence. Whereas pigmentation at the site of quid placement was absent with mild pigmentation noticed away from the site of quid placement in smokeless tobacco form. It can be hypothesized that the mechanical and chemical irritation from smokeless tobacco may have induced melanin pigmentation. (11)

CONCLUSION:

The most avoidable cause of disease and death is tobacco smoking in all its forms. It has a causative relationship to precancerous lesions and oral malignancies. It also causes a variety of oral lesions that are not thought to be malignant, which might cause cancer anxiety if they are not recognised. Every oral mucosal lesion that a tobacco user experience has to be thoroughly inspected and diagnosed. They ought to be linked to the behaviours and taken into account for long-term monitoring. Therefore, a comprehensive understanding of these tobacco-related pathologies is necessary for patient care and differential diagnosis. Habits like smoking, chewing tobacco, and drinking alcohol grow with age, which may possibly be the cause of the trend we saw in our study. Using tobacco products raised the likelihood of oral mucosal alterations, and 28.75% of oral mucosal lesions were possibly malignant conditions. This highlights how important it is to regularly examine the oral mucosa and how patients need to be encouraged to break this harmful practice. It is important to create awareness among the general population on deleterious effects of tobacco use and to encourage them to quit the habit for the benefit of improving their oral and general health.



Representative clinical pictures of the 10 most common oral lesions according to histopathological diagnosis. a Mild epithelial dysplasia; b fibrous hyperplasia; c oral lichen planus; d moderate epithelial dysplasia; e squamous papilloma; f giant cell fibroma; g squamous cell carcinoma; h severe epithelial dysplasia; i acanthosis with hyperkeratosis; j pyogenic granuloma ⁽¹²⁾

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