

## Research Article

# Prevalence of oral mucosal lesions and associated habits in Kashmir, India

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### ABSTRACT

**Background:** A large number of factors may influence the conditions of oral-mucosa and regulate its thresholds against reactions to external irritations and insults. External damage to the tissues may be caused by infections and other chemical, thermal and mechanical means or there may be some genetic factors involved. The aim of the study was to determine the prevalence of different oral habits and habit related oral lesions among the study population in Kashmir, India.

**Methods:** The final study sample comprised of 7000 patients visiting 2 Government Hospitals in Srinagar and Pulwama district, Kashmir, India. All the selected subjects were examined for any oral mucosal lesions. The diagnosis of the lesion was made based on history, clinical features, according to standard guidelines and color atlas.

**Results:** Prevalence of oral mucosal lesions was found to be 8%. Smoker's palate was the most frequently found oral lesion comprising of 33.89% followed by oral lichen planus and leukoplakia (13.55% each). Other lesions included chemical burns, erythroplakia, OSMF and lichenoid reactions. Subjects were indulged into various habits; the most prevalent being the cigarette smoking (56.46%), followed by hukka and bidi smoking and smokeless tobacco.

**Conclusions:** The prevalence of oral mucosal lesions was 8% among the study sample. Subjects were associated with various deleterious habits which were found more in males than females. This study helps in public awareness about the ill effects of oral habits and may motivate them in overcoming their indulgence.

**Keywords:** Oral lesions, Habits, Smoking, Tobacco

### INTRODUCTION

A state of tobacco epidemic with a larger population of tobacco users emerging day by day is seen in today's Universe. In India, there are 240 million tobacco users (195 million men and 45 million women), accounting for one-fifth of the world's tobacco consuming population.<sup>1</sup>

A large number of factors may influence the conditions of oral-mucosa and regulate its thresholds against reactions to external irritations and insults. External

damage to the tissues may be caused by infections and other chemical, thermal and mechanical means or there may be some genetic factors involved. Interaction between genetic and environmental factors in the oral mucosa leads to the formation of a lesion. These interactions are different in different diseases. Tobacco use is one of the most important risk factors for the development of oral mucosal lesions including oral pre-cancer and cancer. Chewing tobacco (CT) use is very common in India. In traditional form, CT is consumed as betel quid mixture of areca nut, slaked lime, and

flavoring agent wrapped in betel leaf and tobacco commercial preparations (TCPs) such as gutka, zarda, khaini, mishri, etc., contain the pieces of areca nut coated with powdered tobacco, sweetening and flavoring ingredients in addition to other spices such as saffron, cardamom, etc. which are very popular and highly addictive.<sup>2</sup> A wide spectrum of oral mucosal alterations or lesions varying from mucosal pigmentation to thickening/ulceration of the epithelium, may result from tobacco use in any form, be it smoked or smokeless one. Oral cancer (OC) and other oral mucosal lesions such as chewer's mucositis (CM), frictional keratosis, leukoplakia, and submucous fibrosis (SMF) are strongly associated with tobacco consumption. The type and location of the lesion varies with the frequency and duration of use, type of tobacco used and the way it is used. The duration of tobacco exposure plays a vital role in mucosal irritation and possibility of malignant transformation in chronic users is increased by multiple folds.

In India and in many parts of Asia, masala and gutkha are easily available. Many brands of these products contain areca nut and tobacco, both of which have been implicated in occurrence of oral cancer. The investigators have also observed that smoking and chewing of tobacco and betel quid act synergistically in oral carcinogenesis and that persons with mixed habits form a substantially high-risk population.

In India, oral cancers represent over 30% of all cancers which is highly different from the data in western countries which account for 3% of malignancies; the difference might be attributed to the regional variation in prevalence and pattern of habits.<sup>3</sup>

Though oral pre-cancer and cancer is widespread in India, epidemiological data from various geographical areas is scarce. Studies to assess the distribution of oromucosal lesions are helpful and imperative in estimating the prevalence of a disease in the population and thus identifying high risk sub-population which in turn would facilitate in promotive, preventive and curative health services; hence a study was conducted to know the prevalence of habits and oral mucosal lesions in Kashmir, India.

**METHODS**

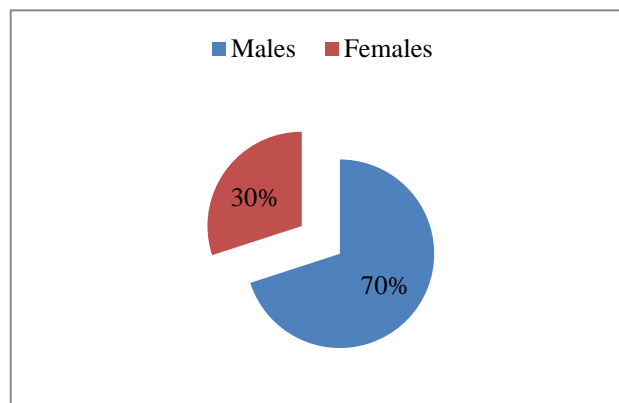
A study was carried out in Government Gousia Hospital, Srinagar and District Hospital, Pulwama; to assess the prevalence of habits and oral mucosal lesions in Kashmir, India. During 5 months period between November 2015 to March 2016, a total of 9000 patients visited the outpatient department of the two hospitals.

Out of the total patients, 7000 fulfilled the inclusion criteria and hence were included into the study after taking their consent of participation. All the selected subjects were examined for any oral mucosal lesions. The

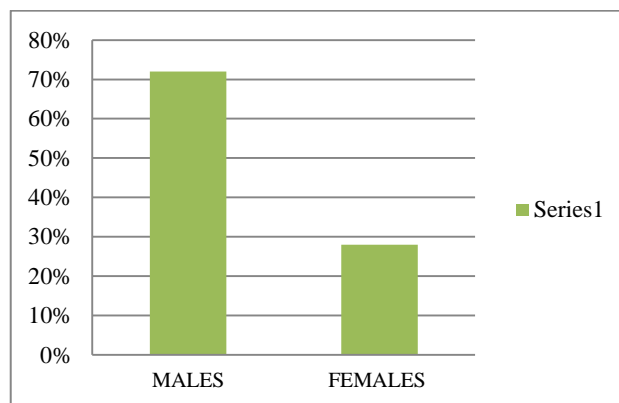
diagnosis of the lesion was made based on history, clinical features, according to standard guidelines and color atlas.<sup>4</sup> In addition to the oral examination; the subjects were enquired about their habits of smoking, chewing or drinking.

**RESULTS**

In the present study, out of total study sample of 7000 subjects; 4900 (70%) were males and 2100 (30%) were females (Figure 1). Age range of the subjects was between 15 years to 60+ years old (Table 1). The overall prevalence of oro-mucosal lesions was found to be 8% among the study population. It was found that out of total 7000 subjects; 52.5% (3567) subjects had one or the other deleterious habits; out of which 72% (2646) subjects were males and 28% (1029) were females (Figure 2). Majority of the subjects suffered from smoker's palate (33.89%) followed by oral lichen planus (40%) and leukoplakia (40%); rests oro-mucosal lesions found among the subjects were lichenoid reactions, chemical burns, erythroplakia, OSMF and others (Figure 3). Subjects were indulged in various habits such as cigarette smoking (56.46%), hukka smoking (26.80%), smokeless tobacco (0.59%), supari (0.68%), gutka (0.76%), bidi smoking (14.69%) (Figure 4).



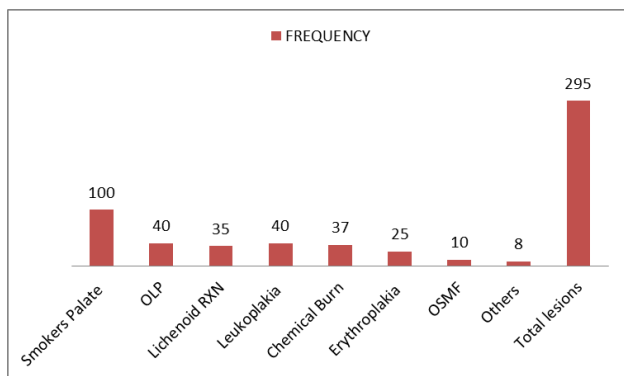
**Figure 1: Distribution of study sample as per gender.**



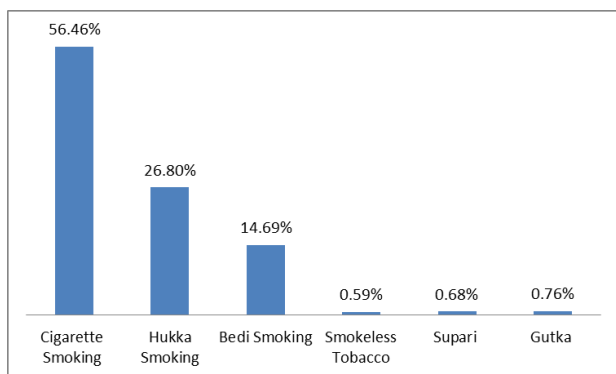
**Figure 2: Habit distribution as per gender.**

**Table 1: Distribution of subjects according the age-groups.**

Age in years	Frequency of subjects
15-25	1890 (27%)
26-45	1960 (28%)
46-60	1666 (23.8%)
60+	1484 (21.2%)



**Figure 3: Frequency of oro-mucosal lesions among study subjects.**



**Figure 4: Distribution of subjects as per habits.**

**DISCUSSION**

Oral mucosal lesions could be due to infection (bacterial, viral, fungal), local trauma and or irritation (traumatic keratosis, chemical burns), systemic disease (metabolic or immunological), or related to lifestyle factors such as the usage of tobacco, areca nut, betel quid, or alcohol. Oral lesions can lead to interference of daily activities due to discomfort or pain that interferes with mastication, swallowing, and speech, producing additional symptoms such as halitosis, xerostomia, or oral dysesthesia, which hampers an individual’s daily social activities.<sup>5</sup>

The prevalence of oral lesions in population has been documented in many parts of the world like Argentina<sup>6</sup>, USA, Israel and Cambodia, mainly based on clinical evaluation of the lesions.<sup>7-9</sup> In contrast, Correa et al and Dehler et al conducted prevalence studies based on the

clinicopathological correlation, evaluating the biopsies of the observed lesions.<sup>10,11</sup>

The prevalence of these lesions in general population has been reported 9.7% in Malaysia, 15.5% in Turkey, 25% in Italy 4 and 61.6% in Slovenia.<sup>12-14</sup> These lesions have been found in 15% of Saudi Arabian and 41.2% of Indian dental patients.<sup>15,16</sup>

Tobacco was introduced in India by the Portuguese nearly 400 years ago and since then it rapidly became a part of socio-cultural milieu in various communities.<sup>17</sup> India is the second largest producer and consumer of tobacco next only to China. India accounts for one-fifth of World’s tobacco consuming population with 240 million tobacco users out of which One-third of women and two-third of men use tobacco in one or the other form.<sup>18</sup>

Smoking, drinking and tobacco chewing have been positively associated with oral lesions such as leukoplakia, oral submucous fibrosis and oral lichen planus which have the potential for malignant transformation. Tobacco consumption also remains the most important avoidable risk factor for oral cancer. Tobacco related cancers account for nearly 50% of all cancers in men and 25% in women.<sup>19</sup> Oral squamous cell carcinoma may occur either de novo or from the precursor lesions. As a result, prompt intervention at appropriate levels may aid in prevention and better control of tobacco induced lesions. Keeping in view the major risk factors for oral mucosal lesions and its associated effects, a range of preventive measures could be implemented at primary, secondary or tertiary levels.

In the present study, the prevalence of oral mucosal lesions was found to be 8%. The prevalence was higher than that found in the previous study in Chennai (4.1%).<sup>20</sup> This difference can be attributed to the variations in the study population surveyed, i.e., a hospital-based study with mixed population and differences in the pattern and duration of habits. The prevalence of oro-mucosal lesions was similar to previous studies done in other parts of India wherein the prevalence of oral mucosal lesions was found to be 8.4%.<sup>21,22</sup>

Out of total 295 (8%); 232 (78.6%) oral lesions were found in males and 63 (21.3%) were found in females. This difference may be due to the fact that a large number of men are reported to have the habit of smoking and chewing tobacco and with mixed habits.

Smoker’s palate is also known as leukokeratosisnicotina palate and is a common reaction of palatal mucosa to smoking. Clinically the lesion appear as diffuse white patch with numerous excrescences having central red dots corresponding to minor salivary gland ducts. These lesions are more prevalent in men due to increased usage of tobacco smoke among them. In the present study; among all the oral mucosal lesions, Smoker’s palate was

the most prevalent (33.89%); followed by Leukoplakia (13.55%) and oral lichen planus (13.55%). Leukoplakia is defined as a predominantly white lesion or plaque affecting the oral mucosa that cannot be characterized clinically or histopathologically as any other disease and is not associated with any other physical or chemical agents except tobacco.<sup>23</sup> Leukoplakia is considered as a potentially malignant disorder with a malignancy conversion rate ranging from 0.1% to 17.5%.<sup>24</sup> Lichen planus is a mucocutaneous disorder affecting the skin and mucous membrane with increased potential for malignant transformation. The malignant potential of lichen planus has been a subject of intense research with studies showing malignant transformation in the range of 0 to 12.5%.<sup>25</sup>

In the present study, out of total 8% of subjects having oral lesions; oral submucous fibrosis (OSMF) was found in 10 subjects (3.38%). This finding was similar to the prevalence of OMFS found in Jaipur, India (3.39%).<sup>26</sup> The signs seen were generalised blanching, presence of fibrotic bands in the oral mucosa and the patients' complained of burning sensation.

In the present study; 12.54% of the mucosal lesions comprise of chemical burns among the study subjects. This finding may be attributed to the cigarette smoking being used by high percentage (56.46%) of subjects. Burns and keratotic patches are common on the lips at the site of habitual cigarette smoking, particularly where the cigarette or cigar is retained as a stub for lengthy periods. The lesions characteristically appear on the mucosal surface of the lower and upper lips at the site at which the cigarette is held. They are characterized by flat or slightly elevated whitish areas with red striations.<sup>27</sup>

In the present study erythroplakia was seen in 8% of the subjects. This finding was higher than the previous study in which only 9 cases (0.02%) among 51000 villagers were reported in a study from five states of India. The reason might be the difference in study design, study setting, sample size and the habits associated. Erythroplakia is an uncommon but severe form of precancerous lesion defined by WHO as "any lesion of the oral mucosa that presents as bright red velvety plaques which cannot be characterized clinically or histopathologically as any other recognizable condition".<sup>28</sup>

In the present study cigarette smoking was the most prevalent habit among the study sample accounting for 56.46%; followed by hukka smoking (26.80%) and bidi smoking (14.69%). This might have been the reason for the presence of high frequency of oral mucosal lesions in the present study; as in the previous study, smoking has been positively associated with oral lesions such as leukoplakia, oral submucous fibrosis and oral lichen planus which have the potential for malignant transformation.<sup>20</sup>

### Limitations

The present study was based on the information given by patients regarding their habits *etc.* so there is a possibility of information bias; that has to be considered while interpreting the results. Moreover, the diet history could not be taken.

### CONCLUSION

It was concluded that the prevalence of oro-mucosal lesions in Kashmir was 8% which may be due to lack of awareness or ignorance for the oral health issues. The lesions were found in those who were indulged in various deleterious habits such as cigarette, bidi, hukka smoking and use of smokeless tobacco, gutka, supari. The oral mucosal lesions were seen more in males than females. Hence, Screening and early detection of such oral lesions in population at risks are mandatory to decrease morbidity and mortality associated with oral cancer.

### Recommendations

- The Community interventions should mainly focus on protecting youth from tobacco, maintaining smoke free public places and promoting health literacy on tobacco related matters. Imparting health education through mass media and school and community based education programs is most imperative step to increase the knowledge and awareness about the harmful effects of tobacco among the masses.
- Legislative measure should be undertaken wherein the sale of tobacco is prohibited for youngsters.
- It is the obligatory role of health professionals including dental surgeons & specialists to bring the behavioural changes at individual by proper counseling to de-addiction therapies among the patients indulged in tobacco usage. Also, emphasis should be made on routine examination of oral mucosa among the general population.
- In order to facilitate effective participation of dental professionals, concrete steps are needed to be implemented at various levels. These could be effective training at various educational levels on the different aspects of tobacco usage and their effects on oral and general health. Conduct continuing dental health education and workshops on tobacco control for the benefit of the practicing dentists. Training dentists for identifying tobacco induced oral lesions at an early stage and provide appropriate therapy if possible. Encouraging dentists to participate in community level programs aimed at educating the public on harmful effects of tobacco. Encourage dentists to identify individual patients who are tobacco users and provide them with necessary help regarding cessation of such habits. Involve dental professionals in policy control programs for framing tobacco control guidelines.

provide incentives to dentists participating in tobacco control programs.

- For planning of national or regional oral health promotion programs as well as to prevent and treat oral health problems, baseline data about magnitude of the problem is required. India has a vast geographic area, divided into states, which differ with regard to their socioeconomic, educational, cultural and behavioural traditions. These factors may affect the oral health status. Hence to obtain nationwide representative data, a nationwide study is required. A more practical alternative is to develop regional databases and review data from various regions which may give an understanding of the national scenario.

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