

## Original Research

# Prevalence and Distribution of Oral Mucosal Lesions in Jammu, Jammu & Kashmir: A Prospective Study

Sania<sup>1</sup>, Rhythm<sup>2</sup>, Sukanya Mohanty<sup>3</sup>, Esha Bali<sup>4</sup>, Pranav Gupta<sup>5</sup>

<sup>1</sup> Associate professor, Dept of Dentistry, Shri Mata Vaishno Devi Institute of Medical Excellence (Medical College and Associated Hospital) Kakrayal, Jammu

<sup>2</sup> MA Sociology, Jammu

<sup>3</sup> MDS, Periodontology

<sup>4</sup> Reader and Head, Department of Public Health dentistry, Institute Of Dental Sciences, Sehora Jammu

<sup>5</sup> General Duty Medical Officer, Indian Institute of Technology, Jammu.

### Corresponding Author:

Pranav Gupta

General Duty Medical Officer, Indian Institute of Technology, Jammu.

Received Date: 02 November 2024

Accepted Date: 13 November 2024

### Abstract

**Introduction:** Several Oral Mucosal lesions carry potential risk of developing into cancer. Therefore, early detection and prompt treatment of oral lesions are key to optimal outcomes.

**Aims:** The main aim of our study was to assess the prevalence and distribution of oral mucosal lesions in population of Jammu, J & K.

**Materials and Method:** Total 905 patients aged 18 and above reporting to the outpatient department of Oral medicine and radiology of Institute of Dental Sciences, Sehora, Jammu were selected for the prospective study. The diagnosis of Oral mucosa lesions was done in line with WHO criteria. Evaluation of type of oral mucosal lesion, its prevalence and site of lesion was evaluated.

**Results:** Out of 905 participants, 200 subjects showed various oral mucosal lesions. Out of 200 participants oral submucous fibrosis was more prevalent (21%) followed by coated tongue (16%), aphthous ulcerations (12.5%), leukoedema (9%), candida lesions (8%), leukoplakia (6%), geographic/fissured tongue (5%), lichen lesions (4.5%), and mucocele (4%). Lesion location was more frequent at buccal mucosa (46%) followed labial mucosa (17.5%), vestibular region (15%), and tongue (13%). There was higher prevalence of OSMF in males (15.5%) compared to females (5.5%). There was no statistically significant difference between males and females for other lesion in the present study.

**Conclusion:** The results of this study provide an important update on the prevalence and distribution of oral mucosal lesions in patients seeking dental treatment. This study provides a basis for future research on the prevalence of oral mucosal lesions in the general population

**Keywords:** Prevalence, Oral Mucosal Lesions, Aphthous, OSMF.

---

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

---

### INTRODUCTION

The orofacial region is affected by various oral mucosal lesions (OMLs). Oral mucosa is explicitly affected by seven oral potentially malignant disorders. Various other OMLs include several types of cysts, benign and malignant tumours, inflammatory lesions, lesions associated with tobacco, areca nut, betel nut chewing, and others; immune-mediated lesions like recurrent aphthous stomatitis (RAS) and oral pemphigus, which pose a

challenge in the management and may become life-threatening if early diagnosis fails.

These lesions cause disturbance in day-to-day activities as they interfere with the consumption of food, causing pain, burning sensation, facial asymmetry, and others. In contrast, other normal variants of oral mucosa do not cause harm but can be misdiagnosed as a potentially life-threatening condition. This makes it necessary for us to have the proper knowledge about oral lesions (OLs) and

the normal variants for proper management.[1]

Mucosal lesions may be identified during regular dental examinations and they develop depending on age, gender and/or race. There are very limited studies pertaining to oral mucosal lesions as compared to periodontal diseases and dental caries. Smoking and drinking are positively associated with oral lesions such as oral submucous fibrosis (OSMF), leukoplakia, and oral lichen planus, which have the potential for malignant transformation.[2] The World Health Organization considered as potentially malignant lesions or disorders with the following conditions: leukoplakia, erythroplakia, lichen planus, actinic cheilitis, and oral submucous fibrosis. Oral leukoplakia is the most common premalignant oral lesion.[3]

Leukoplakia is the one of the most communal potentially malignant lesion occurred in the oral cavity. They are usually diagnosed at middle age and are commonly found in males due to smoking habit. Leukoplakia can be classified based on clinical presentation as homogeneous or non-homogenous. Homogenous lesions, which are usually thin, flat, asymptomatic, whereas non-homogenous are usually symptomatic with nodular, verrucous.

Tobacco and areca nut use is the main risk factor for leukoplakia and OSMF. Leukoplakia can remain stable, or may progress to carcinoma. Oral leukoplakia needs to be differentiated from other white keratotic lesions including frictional keratosis and stomatitis nicotina, which do not have malignant potential.[4] Various oral premalignant lesion have risk for transferring into cancer. Conversely, all potentially malignant epithelial oral lesions should be diagnosed through microscopic examination because of apparent differences between clinical and histological diagnosis.[5] Hence there is a need of early identification of oral lesions and prompt treatment.

The aim of this study was to assess the prevalence and distribution of oral mucosal lesions, and location of lesion among patients aged 18 years and above, visiting to OPD department of Oral medicine and Radiology of Institute of Dental Sciences, Sehora, Jammu.

## MATERIALS AND METHODS

This cross-sectional study was done to evaluate the prevalence of oral mucosal lesions and site preference for lesions. The study was carried out between April 2023 and August 2024. The study participants were consisting of patients visiting to the OPD department of Oral medicine and Radiology.

Ethical clearance was obtained from institutional ethics committee and informed consent was

attained from all the participants. The World Health Organization (WHO) Oral Health Assessment Form was adopted for clinical evaluation and the findings were recorded in the proforma. All subjects underwent a comprehensive type III clinical examination of the oral mucosa performed by three trained investigators.

Demographic profile of all the participants was recorded including, gender, cigarette smoking, alcohol habits. The diagnosis of OML was performed in accordance with WHO criteria.[6] The obtained data was tabulated and statistically evaluated using IBM SPSS statistical software version 18, Chicago, and frequency and distribution tables of oral mucosal lesions was obtained.

## Result

Among total 905 participants, 200 had various oral mucosal lesions. The prevalence of different oral mucosal lesions in the present study was 22.09 %. Tables 1 indicates prevalence and distribution of oral mucosal lesions among the participants. Graph 1 shows mean age of different oral mucosal lesions. Among the reported oral mucosal lesions in the present study, Oral sub- mucous fibrosis was more prevalent (21%) followed by coated tongue (16%), aphthous ulcerations (12.5%), leukoedema (9%), candida lesions (8%), leukoplakia (6%), geographic/fissured tongue (5%), lichen lesions (4.5%), mucocele (4%), herpes lesions (3%), chewers mucosa (2.5%), radiation mucositis (2.5%), irritational fibroma (2%), malignancy (1.5%), linea alba (1.5%), and smoker's palate (1%).

The mean age for most of the lesion was above 40 years and 28.5 years for Linea alba and Geographic/ fissured tongue. There was higher prevalence of OSMF in males (15.5%) compared to females (5.5%).

There is not statistically significant difference between males and females for other lesion in the present study. Table 2 and Graph 2 shows the location of various oral mucosal lesions. Lesion location was more frequent at buccal mucosa (46%) followed labial mucosa (17.5%), vestibular region (15%), tongue (13%)m gingival (3.5%), palate (3%) and floor of mouth (2%).

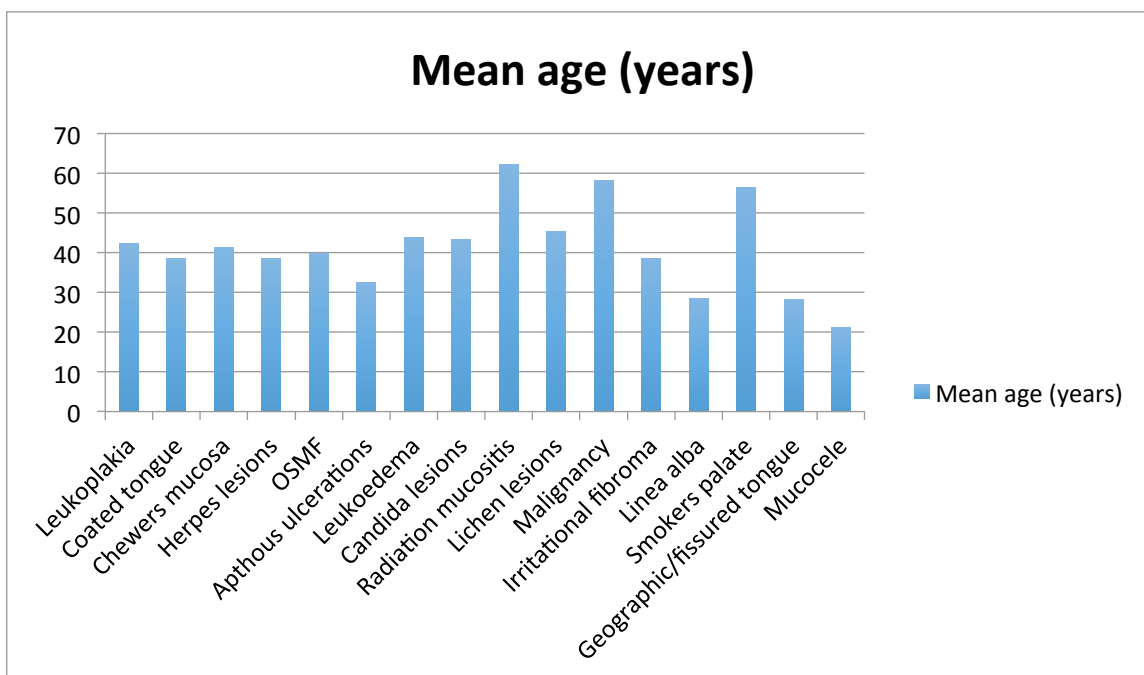
## DISCUSSION

Prevalence and distribution of oral mucosal lesions vary between 10.8% and 61.6% in different individuals. [7] Oral health is important for all people to live a good life. Oral diseases can affect swallowing, speaking, chewing, and symptoms such as bad breath, dry mouth, or halitosis can affect daily relation

nships among affected patients. Appropriate treatment of patients with oral mucosal lesions

**Table 1. Prevalence and distribution of oral mucosal lesions among the participants.**

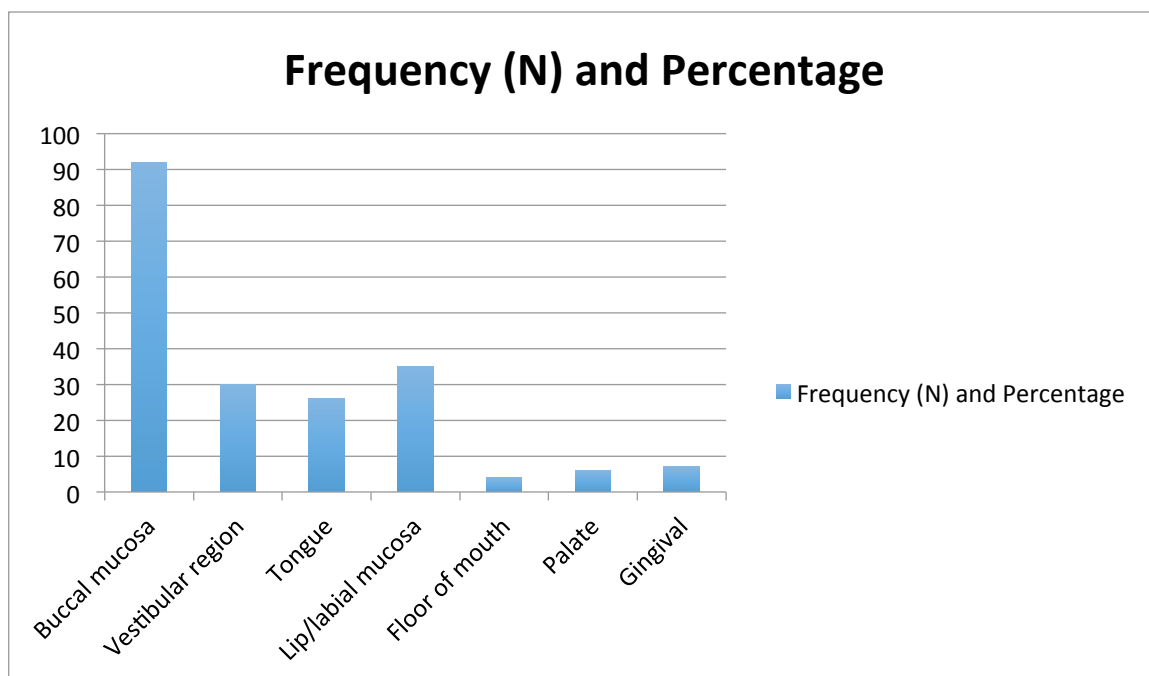
Lesion type (n=200)	Prevalence of lesion	Mean age (years) (%)	Male (%)	Female (%)
Leukoplakia	12 (6%)	42.3	8 (4%)	4(2%)
Coated tongue	32(16%)	38.6	18 (9%)	14(7%)
Chewers mucosa	5(2.5%)	41.3	3 (1.5%)	2(1%)
Herpes lesions	6(3%)	38.5	2 (1%)	4(2%)
OSMF	42(21%)	39.7	31(15.5%)	11(5.5%)
Apthous ulcerations	25(12.5%)	32.4	12(6%)	13(6.5%)
Leukoedema	18(9%)	43.7	12(6%)	6(3%)
Candida lesions	16(8%)	43.2	10(5%)	6(3%)
Radiation mucositis	5(2.5%)	62.1	3(1.5%)	2(1%)
Lichen lesions	9(4.5%)	45.3	5 (2.5%)	4(2%)
Malignancy	3(1.5%)	58.3	2(1%)	1(0.5%)
Irritational fibroma	4(2%)	38.5	2 (1%)	2(1%)
Linea alba	3(1.5%)	28.5	1(0.5%)	2(1%)
Smokers palate	2(1%)	56.5	2(1%)	0(0)
Geographic/fissured tongue	10(5%)	28.2	4 (2%)	6(3%)
Mucocele	8(4%)	21.2	3(1.5%)	5(2.5%)
Total	200		118 (59%)	82(41%)



**Graph 1 shows mean age of different oral mucosal lesions.**

**Table 2: Oral mucosal lesions distribution according to location.**

Location of the lesion	Frequency (N) and Percentage
Buccal mucosa	92 (46%)
Vestibular region	30 (15%)
Tongue	26 (13%)
Lip/labial mucosa	35 (17.5%)
Floor of mouth	4 (2%)
Palate	6 (3%)
Gingival	7 (3.5%)
Total	200 (100)



**Graph 2 shows frequency and percentage on different locations in oral cavity**

begins with a correct diagnosis. Examination of the soft tissues of the mouth is very important and should be done appropriately. Epidemiological studies provide important information to understand the prevalence, incidence, and severity of oral diseases in a particular ethnic group.[5]

Mehta and Pindborg conducted a survey on leukoplakia and oral cancer on 50,915 participants and found 0.2 to 4.9% prevalence for Leukoplakia

and 3.0% to 12.4% prevalence for epithelial atypia. They stated that hookli smoking and reverse

smoking were related with leukoplakia.[8] Vlad et al, evaluated the prevalence of oral leukoplakia and

correlated it with age, gender, age, alcohol and smoking habit. Prevalence of 3.32% for homogenous leukoplakia and it was commonly found on cheek, lip and tongue and commonly in

males.[3] Feller and Lemmer from their review stated that, leukoplakia is considered as precancerous lesion and there is a link between human papillomavirus (HPV) with oral leukoplakia.[4]

Kumar et al evaluated the prevalence, distribution and associated risk factors of oral mucosal lesion on 1048 patients. They found 18.89% prevalence of oral mucosal lesions and 5.63% premalignant lesions. They concluded that smoking, chewing habits, and alcohol use are main factors for higher prevalence of premalignant lesions.[2] These findings are similar to our results. Bokor-Bratiæ evaluated the prevalence of precancerous oral lesions on 2385 participants. In this majority of cases was homogeneous type as compared to non-homogeneous type. They found leukoplakia above 40 years of age.[9] Ambika et al found oral mucosal lesions in more than half of the participating children.[10] Kamble et al found 39.1% of prevalence of Oral lesions.[5]

Mathew et al assessed the prevalence of oral mucosal lesions and they found most commonly Fordyce's granules (6.55%) followed by frictional keratosis (5.79%), fissured tongue (5.71%), and leukoedema.[11] Rooban et al evaluated the prevalence of various oral mucosal lesions. They concluded that subjects who misuse alcohol have poor oral hygiene and are at risk for the development of periodontal disease. It has been reported that, chronic alcohol exposure in rats causes oral mucosal atrophy, dysplastic changes, an increase in the size of the basal cell nuclei.[12] Oivio UM et al assessed the prevalence of oral mucosal lesions on 12,068 participants and they found various oral mucosal lesions in 81.8% of participants. Among that oral lichen planus was most common.[7] Pontes et al from their study found higher prevalence rates (21%) of OML. Nicotine stomatitis (33%) and leukoplakia (19%) were common oral lesions reported. Prevalence was more among males compared to females.[13] Sharma et al from their study found hyperkeratosis followed by leukoplakia and smoker's melanosis as a common oral lesions and cigarette/bidi and gutkha could be common cause for the oral lesions. [14] Saraswathi et al found OSF as prevalent oral lesions amongst who chewed pan- masala or gutkha or betel quid with or without tobacco. [15]

Toum et al from their study concluded that there is a need of adequate awareness about management of oral mucosal lesions.[16] Gambhir et al concluded from their study that there is need of community

based awareness program for management of oral mucosal lesions.[17]

Ferreira et al concluded that the prevalence of Oral potentially malignant disorders (OPMDs) was 29.6%. Rural workers showed high vulnerability to the presence of OPMDs, as estimated prevalence exhibited was high.[18]

Current study showed prevalence and distribution of different oral mucosal lesions was 22.09%. Oral submucous fibrosis was most prevalent (21%) which is similar to previous studies.[1, 12] In the present study due to smoking and tobacco chewing habit among males. There was higher prevalence of SMF in males (15.5%) compared to females (5.5%). Epidemiological survey can help in early diagnosis and prompt management of various oral mucosal and premalignant lesions. There is need to create awareness among the public about various Oral mucosal lesions and various serious consequences of these lesions.

The only shortcoming of this study was smaller sample size and limited use of microscopy to confirm precancerous lesions. Long term studies with larger samples and more microscopic observations are needed.

## CONCLUSION

The results of this study provide an important update on the prevalence and distribution of oral mucosal lesions in patients seeking dental treatment. This study provides a basis for future research on the prevalence and distribution of oral mucosal lesions in the general population.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

## REFERENCES

1. A. Gupta and L. N. Rao, "Areca nut an ignored carcinogen of Asian continent in anutshell," *Journal of Global Oral Health*, vol. 4, no. 1, pp. 67-68, 2021.
2. Kumar S, Narayanan VS, Ananda SR, Kavitha AP, Krupashankar R. Prevalence and risk indicators of oral mucosal lesions in adult population visiting primary health centers and community health centers in Kodagu district. *J Family Med Prim Care*. 2019 Jul;8(7):2337-2342. Pubmed PMID: 31463253.

3. Vlad R, Panainte I, Stoica A, Monea M. The prevalence of oral leukoplakia: results from a Romanian Medical Center. *Eur. Sci. J.* 2016 Sep 1;12(27):12- 17.
4. Feller L, Lemmer J. Oral Leukoplakia as it relates to HPV Infection: A Re- view. Hindawi Publishing Corporation. *International Journal of Dentistry*. Volume 2012, Article ID 540561, 7 pages
5. Kamble KA, Guddad SS, Nayak AG, Suragimath A, Sanade AR. Prevalence of oral mucosal lesions in Western Maharashtra: A Prospective Study. *J Indian Acad Oral Med Radiol.* 2017 Oct 1;29(4):282-7.
6. Kramer IR, Pindborg JJ, Bezroukov V, Infirri JS. Guide to epidemiology and diagnosis of oral mucosal diseases and conditions. World Health Organization. *Community Dent Oral Epidemiol.* 1980 Feb 1;8(1):1-26.
7. Oivio UM, Pesonen P, Ylipalosaari M, Kullaa A, Salo T. Prevalence of oral mucosal normal variations and lesions in a middle-aged population: a Northern Finland Birth Cohort 1966 study. *BMC Oral Health.* 2020 Dec 9;20(1):357.Pubmed PMID: 33298037.
8. Mehta FS, Pindborg JJ, Gupta PC, Daftary DK. Epidemiologic and histologic study of oral cancer and leukoplakia among 50,915 villagers in India. *Cancer.* 1969 Oct;24(4):832-49.Pubmed PMID: 4898206.
9. Bokor-Bratić M. The prevalence of precancerous oral lesions: oral leukoplakia. *Arch. Oncol.* 2000 Jan;8(4):169-70.
10. Ambika L, Keluskar V, Hugar S, Patil S. Prevalence of oral mucosal lesions and variations in Indian public school children. *Braz J Oral Sci.* 2011;10(4):288-93.
11. Mathew AL, Pai KM, Sholapurkar AA, Vengal M. The prevalence of oral mucosal lesions in patients visiting a dental school in Southern India. *Indian J Dent Res.* 2008 Apr 1;19(2):99-103.
12. Rooban T, Rao A, Joshua E, Ranganathan K. The prevalence of oral mucosal lesions in alcohol misusers in Chennai, south India. *Indian J Dent Res.* 2009 Jan-Mar;20(1):41-6.Pubmed PMID: 19336859.
13. Pontes CC, Chikte U, Kimmie-Dhansay F, Erasmus RT, Kengne AP, Matsha TE. Prevalence of Oral Mucosal Lesions and Relation to Serum Cotinine Levels-Findings from a Cross-Sectional Study in South Africa. *Int J Environ Res Public Health.* 2020 Feb 7; 17(1065):1-10.Pubmed PMID: 32046216.
14. Sharma G, Gokulraj S, Bharadwaj A, Jagadeesh KN, Parihar AS, Hegde SS. Assessment of Oral Mucosal Lesions Among Tobacco Users–A Cross-Sectional Survey. *J Orofac Sci.* 2020 Jul 1;12(2):80-3.
15. Saraswathi TR, Ranganathan K, Shanmugam S, Sowmya R, Narasimhan PD, Gunaseelan R. Prevalence of oral lesions in relation to habits: Cross-sectional study in South India. *Indian J. Dent. Res.* 2006 Jul 1;17(3):121-125.
16. [El Toum S, Cassia A, Bouchi N, Kassab I. Prevalence and Distribution of Oral Mucosal Lesions by Sex and Age Categories: A Retrospective Study of Patients Attending Lebanese School of Dentistry. *Int J Dent.* 2018 May 17;2018:4030134.Pubmed PMID: 29887889.
17. Gambhir RS, Veerasha KL, Sohi R, Kakkar H, Aggarwal A, Gupta D. The prevalence of oral mucosal lesions in the patients visiting a dental school in Northern India in relation to sex, site and distribution: A retrospective study. *J ClinExp Dent.* 2011;3(1):e10-7.
18. A. M. Ferreira, E. E. de Souza Lucena, T. C. de Oliveira, J. D. da Silveira, P. T. de Oliveira, and K. C. de Lima, "Prevalence and factors associated with oral potentially malignant disorders in Brazil 's rural workers," *Oral Diseases*, vol. 22, no. 6, pp. 536 –.