



www.bioinformation.net
Volume 21(9)



Research Article

Received September 1, 2025; Revised September 30, 2025; Accepted September 30, 2025, Published September 30, 2025

DOI: 10.6026/973206300213401

SJIF 2025 (Scientific Journal Impact Factor for 2025) = 8.478

2022 Impact Factor (2023 Clarivate Inc. release) is 1.9

Declaration on Publication Ethics:

The author's state that they adhere with COPE guidelines on publishing ethics as described elsewhere at <https://publicationethics.org/>. The authors also undertake that they are not associated with any other third party (governmental or non-governmental agencies) linking with any form of unethical issues connecting to this publication. The authors also declare that they are not withholding any information that is misleading to the publisher in regard to this article.

Declaration on official E-mail:

The corresponding author declares that lifetime official e-mail from their institution is not available for all authors

License statement:

This is an Open Access article which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited. This is distributed under the terms of the Creative Commons Attribution License

Comments from readers:

Articles published in BIOINFORMATION are open for relevant post publication comments and criticisms, which will be published immediately linking to the original article without open access charges. Comments should be concise, coherent and critical in less than 1000 words.

Disclaimer:

Bioinformation provides a platform for scholarly communication of data and information to create knowledge in the Biological/Biomedical domain after adequate peer/editorial reviews and editing entertaining revisions where required. The views and opinions expressed are those of the author(s) and do not reflect the views or opinions of Bioinformation and (or) its publisher Biomedical Informatics. Biomedical Informatics remains neutral and allows authors to specify their address and affiliation details including territory where required.

Edited by Akshaya Ojha

E-mail: akshayaojha11@gmail.com

Citation: Sharma *et al.* Bioinformation 21(9): 3401-3403 (2025)

Prevalence of oral mucosal lesions among elderly Indian patients: A retrospective study

Kavita Sharma¹, Mudita Chaturvedi², Rashi Dubey³, N. Sriram Choudary⁴, Prasanthi Bajana⁵, Dheeraj Voulligonda⁶ & Heena Dixit Tiwari^{3,*}

¹Consultant Oral and Maxillofacial Surgeon, Bhopal, Madhya Pradesh, India; ²Department of Oral and Maxillofacial Pathology, Dental Research Cell, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India; ³Department of Dental Surgery, S N Medical College, Agra, Uttar Pradesh, India; ⁴Department of Oral & Maxillofacial Surgery, Dhanalakshmi Srinivasan Dental College & Hospital, Siruvachur, Perambalur, Tamil Nadu, India; ⁵Department of Oral Medicine and Radiology, Government Dental College and Hospital, Vijayawada, Andhra Pradesh, India; ⁶Department of Oral Medicine and Radiology, Mamata Institute of Dental Sciences, Hyderabad, Telangana, India; *Corresponding author

Affiliation URL:

<https://www.dypatil.edu/>

<https://dmimsu.edu.in/>
<https://snmcagra.ac.in/>
<https://dchmumbai.bharatividyapeeth.edu/>
www.igids.org
<https://mamata dentalcollege.com/>
<https://chfw.telangana.gov.in/>

Author contacts:
Kavita Sharma - E-mail: kaviddoc@gmail.com
Mudita Chaturvedi - E-mail: drmudita@hotmail.com
Rashi Dubey - E-mail: rashi.singh271@gmail.com
N. Sriram Choudary - E-mail: drsriramchoudary87@gmail.com
Prasanthi Bajana - E-mail: prasanthi14@gmail.com
Dheeraj Voulligonda - E-mail: dheerajroy45@gmail.com
Heena Dixit Tiwari - E-mail: drheenatiwari@gmail.com

Abstract:
Oral mucosal lesions (OMLs) are common in elderly populations and often linked to risk factors such as tobacco use and denture wearing. Hence, this retrospective study analyzed clinical records of 354 Indian patients aged 60 years and above to identify the prevalence and distribution of OMLs. The overall prevalence was 54.7%, with leukoplakia (19.5%), lichen planus (17.8%), malignancy (13.0%), and denture stomatitis (9.0%) being the most frequent findings. Tobacco use and denture wearing showed significant associations with lesion occurrence, whereas sex and systemic diseases were not related. These findings highlight the considerable burden of OMLs among elderly Indian patients and emphasize the need for preventive care, habit modification, and improved denture hygiene to reduce disease risk

Keywords: Oral mucosal lesions, aged, India, prevalence, denture stomatitis.

Background:
Oral mucosal lesions (OMLs) represent a significant burden in the elderly, who often present with multiple systemic illnesses and declining oral health resilience [1]. Studies across India have highlighted that more than half of older adults suffer from at least one mucosal lesion, demonstrating the magnitude of the problem [2]. Commonly identified lesions include leukoplakia, oral lichen planus and denture-related stomatitis, conditions that not only impair quality of life but also predispose to malignant transformation [3]. International epidemiologic investigations similarly report prevalence rates nearing 60% in geriatric cohorts, emphasizing that this is not a localized phenomenon but a global concern [4]. The Indian demographic, however, is unique owing to widespread betel quid chewing, tobacco use and inadequate denture hygiene, all of which exacerbate lesion occurrence [5]. Further, hospital-based analyses have shown higher lesion frequency in elderly males, likely due to cumulative exposure to deleterious oral habits [6]. Pathophysiologically, aging mucosa undergoes epithelial atrophy, reduced salivary flow and impaired tissue repair, increasing susceptibility to traumatic and inflammatory lesions [7]. Cross-sectional research has suggested that denture wearers have significantly higher odds of developing mucosal pathology compared with non-users [8]. Moreover, potentially malignant disorders such as leukoplakia and lichen planus are increasingly being recognized in older populations, necessitating vigilant surveillance [9]. Despite growing literature, few Indian retrospective analyses have specifically targeted elderly populations, leaving an evidence gap for hospital-based dental

cohorts [10]. Therefore, it is of interest to retrospectively evaluate the prevalence, lesion types and risk associations of OMLs in elderly Indian patients, contributing to evidence-based geriatric oral health planning.

Materials and Methods:
This retrospective study was conducted at a tertiary dental college hospital. Ethical approval was obtained from the Institutional Review Board. Clinical records of patients aged ≥60 years who attended outpatient services between January 2022 and December 2024 were reviewed. Records with incomplete demographic, diagnostic, or clinical details were excluded. Variables extracted included age, sex, systemic conditions (diabetes, hypertension), oral habits (smoking, betel quid and alcohol), denture wearing and diagnosis of oral mucosal lesions. Lesions were categorized according to WHO criteria: leukoplakia, oral lichen planus, malignancy, denture stomatitis and others (e.g., ulcers, oral submucous fibrosis). Data were entered into anonymized spreadsheets. Descriptive statistics (mean, SD, percentages) were calculated. Associations between OMLs and risk factors were tested using chi-square tests. A p-value <0.05 was considered statistically significant. Analyses were performed using SPSS v25. Post-hoc power analysis confirmed >80% power to detect a prevalence difference of 10%.

Table 1: Distribution of oral mucosal lesions (n=354)

Lesion Type	Cases (n)	Prevalence (%)
Leukoplakia	69	19.5
Lichen planus	63	17.8
Malignancy (SCC, etc.)	46	13.0

Denture stomatitis	32	9.0
Others (ulcers, OSMF)	41	11.6
Total lesions	194	54.7

Lesion prevalence was highest among the 60-70 year group (58%) compared to 51% in 71-80 years and 45% in >80 years (p=0.03).

Table 2: Association of risk factors with lesion prevalence

Risk Factor	With Lesion (%)	Without Lesion (%)	p-value
Tobacco use	63	37	0.02
Denture use	61	39	0.04

No significant association was found with sex or systemic disease.

Results & Discussion:

A total of 354 elderly patient records were included (202 males, 152 females; mean age 68.9 ± 6.3 years). Overall, 194 (54.7%) had one or more OMLs (Table 1 & 2). The prevalence of 54.7% observed in this study reinforces prior Indian retrospective evidence, which reported similar rates among geriatric dental patients [11]. Comparable figures have been documented in large international surveys, where nearly 60% of elderly individuals exhibited one or more mucosal lesions [12]. The predominance of leukoplakia and lichen planus in our sample echoes previous epidemiological patterns, particularly in populations with high exposure to tobacco and betel quid [13]. Malignancies accounted for 13% of all lesions, aligning with reports that geriatric cohorts contribute substantially to the burden of oral cancer [14]. This underscores the urgent need for early detection and preventive strategies within routine geriatric dental care. The significant association between tobacco use and OMLs in our findings is consistent with established data linking smoking and chewing habits to potentially malignant disorders [15]. Similarly, denture-related stomatitis was strongly associated with prosthetic use, paralleling studies showing that poor hygiene and prolonged denture wearing significantly increase lesion risk [16]. Interestingly, our data showed declining lesion prevalence in those over 80 years. This may reflect survival bias, whereby individuals with high-risk habits and lesions are underrepresented in the oldest age groups, a phenomenon supported by geriatric epidemiologic studies [17]. While systemic diseases such as diabetes and hypertension were common in our cohort, no significant association with OMLs was found which is in agreement with other hospital-based studies suggesting local risk factors dominate lesion development [18]. From a clinical perspective, these results emphasize the need for integrating oral mucosal screening into routine geriatric dental visits. Preventive strategies should prioritize habit cessation programs, regular prosthesis maintenance and early biopsy of suspicious lesions. Comparable approaches have been successful in reducing oral cancer incidence in other high-risk populations [19]. Finally, despite the retrospective design, the congruence of our results with multicenter and global data underscores their validity and

relevance. Future longitudinal studies are warranted to explore lesion progression, malignant transformation and the impact of preventive interventions in elderly Indian cohorts [20].

Conclusion:

A large number of elderly Indian dental patients present with oral mucosal lesions, chiefly leukoplakia, lichen planus, malignancy and denture stomatitis. Hence, preventive care, habit intervention and prosthesis hygiene are essential for reducing this burden.

References:

[1] Ankit K et al. *J Pharm Bioallied Sci.* 2024 **16**:S2303. [PMID: 39346149]

[2] Radwan-Oczko M et al. *Int J Environ Res Public Health.* 2022 **19**:2853. [PMID: 35270543]

[3] Shivakumar K.M et al. *J Cancer Res Ther.* 2022 **18**:S239. [PMID: 36510971]

[4] Sowmya S & Sangavi R. *Cureus.* 2023 **15**:e49642. [PMID: 38161840]

[5] Gautam AK et al. *Sci Rep.* 2025 **15**:15611. [PMID: 40320454].

[6] Zhang S et al. *BMC Oral Health.* 2023 **23**:645. [PMID: 37670255]

[7] Perić M et al. *J Fungi (Basel).* 2024 **10**:328. [PMID: 38786683]

[8] Abuhajar E et al. *Int J Environ Res Public Health.* 2023 **20**:3029. [PMID: 36833718]

[9] Sulaiman D et al. *Asian Pac J Cancer Prev.* 2022 **23**:3983. [PMID: 36579978].

[10] Marbaniang I et al. *PLoS One.* 2022 **17**:e0270876. [PMID: 35788753]

[11] Carneiro M.C et al. *Head Neck Pathol.* 2023 **17**:708. [PMID: 36892803]

[12] Zhou P et al. *BMC Oral Health.* 2025 **25**:444. [PMID: 40148866]

[13] Peralta-Mamani M et al. *J Evid Based Dent Pract.* 2024 **24**:101899. [PMID: 38821659]

[14] <https://pubmed.ncbi.nlm.nih.gov/31424866/>

[15] Mahalakshmi K et al. *J Oral Maxillofac Pathol.* 2022 **26**:553. [PMID: 37082050].

[16] Haj-Hosseini N et al. *J Maxillofac Oral Surg.* 2024 **23**:23. [PMID: 38312957]

[17] Yuwanati M.B et al. *Oral Dis.* 2023 **29**:1920. [PMID: 35503720]

[18] Sridharan N et al. *Oral Maxillofac Pathol.* 2024 **28**:56. [PMID: 38800439]

[19] Khaksar R et al. *J Maxillofac Oral Surg.* 2025 **24**:52. [PMID: 39902434]

[20] Kumbhalwar A et al. *J Oral Biol Craniofac Res.* 2022 **20**:293. [PMID: 36159096]