

Prevalence and Distribution of Oral Mucosal Lesions in a Geriatric Indian Population



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ABSTRACT

Background

Oral health is important to individuals of all age groups. Previous epidemiologic studies of the oral health status of the general population in India provided very little information about oral mucosal lesions in the elderly. Hence, the purpose of the present study was to determine the prevalence of the oral lesions in a geriatric Indian population.

Methods

5,100 patients were clinically evaluated, with age ranging from 60 to 98 years. There were 3,100 males and 2,000 females, with a mean age of 69 ± 6.3 yrs. The statistical analysis was done using the SPSS software, where $p < .05$ was considered to be significant.

Results

64% of the patients presented with one or more oral lesions, associated to tobacco, betel nut consumption, and lesions secondary to trauma and prosthesis. Males were more affected than females and this difference was clinically not significant ($p > .05$). The lesions were more frequently observed between 65 to 70 yrs. The most common alterations observed were smoker's palate (43%), denture stomatitis (34%), oral submucous fibrosis (30%), frictional keratosis (23%), leukoplakia (22%), and pyogenic granuloma (22%). Hard palate was the most commonly affected site (23.1%).

Conclusions

The findings of the present study provide important information when clinically evaluating oral cavity in elderly. Close follow-up and systematic evaluation is required in the elderly population to plan future treatment needs.

Key words: prevalence, soft-tissue lesions, geriatric population, India

INTRODUCTION

Oral health is important to the quality of life of individuals of all age groups. 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.⁽¹⁾ As has been established by the WHO (1984), a population aging more than 60 years old should be considered, to be an elderly population.⁽²⁾ The last national census of population conducted in India in 2011 showed that 8.6% of the population was 60 years or more.⁽³⁾ These figures indicate that geriatric health care should be given due importance, since there has been little research done in the field of gerodontology. The prevalence of oral lesions in the major adult has been reported by few researchers in Colombia, Mexico, Chile, Spain, Brazil, Israel, Argentina, USA, and a few Asian countries like Cambodia and China.⁽⁴⁻¹⁹⁾ These studies were mainly based on clinical evaluation of the lesions. The prevalence based on the biopsies of the observed lesions was reported by Correa *et al.*⁽¹²⁾ and Dehler *et al.*⁽¹⁵⁾ The oral lesions and treatment needs of the elderly patients differ according to every nation, geographic region within a country, and even in different communities. Therefore, identification of the prevalence of oral lesions in this section of the population is due to socioeconomic differences, medical and dental history, treatment expenditure, and any handicap.⁽²⁰⁾ No previous studies have been done till date in the Indian subcontinent estimating the prevalence of oral mucosal lesions in the elderly population. Epidemiologic studies provide information that is important to understand the prevalence, incidence, and severity of oral disease in a specific population, but the results of such studies have rarely been published worldwide.^(1,21) Earlier epidemiologic studies of the oral health status of the general population in India

provided very little information about oral mucosal lesions particularly as seen in the elderly.^(22,23) The present study was carried out to find the prevalence of oral mucosal lesions in 5,100 geriatric patients in India.

METHODS

This study consisted of 5,100 patients, 3,100 (60.8%) men and 2,000 (39.2%) women with age range, 60 to 98 years, attending the Department of Oral Medicine and Radiology, Jodhpur Dental College General Hospital, from September 2008 to October 2012. Ethical clearance was obtained from the Institutional Ethical Committee. A written informed consent was obtained from the patients prior to the inclusion for the study. All elderly patients who were not willing or could not be allowed the clinical oral examination were excluded. All the examinations were carried out by one researcher. Before recording the clinical parameters, the examiner and another researcher calibrated the clinical examination. Both a dental and a general medical history of the patients were obtained, and a questionnaire was completed by each patient, after which a clinical examination was performed. Some of the mucosal changes were diagnosed solely by clinical examination (e.g., linea alba, fissured tongue). When clinical features were not diagnostic, a biopsy was undertaken. Clinical examinations were performed according to the WHO guideline.⁽²⁴⁾

The clinical diagnosis was established according to the correlation in the etiological factor associated to the lesion by systematic examination of oral mucosa and classifying those alterations according to the epidemiology guide for the diagnosis of oral mucosal diseases (WHO). The elements to evaluate during the questionnaire included: general status of the patient, systemic diseases, medications used, age, gender, alcohol and tobacco consumption, habits (trauma), and prosthetic or other appliances use. During the clinical examination the following elements were analyzed: features of the lesion, anatomical location, extension, etiological factors or related factors, dental status, alcohol, tobacco, trauma, use of prosthesis and whether or not these were well adapted. All non-pathological conditions or developmental such as leukoedema, lingual varices, fordyce granules, benign migratory glossitis, and fissured tongue were excluded from the present study. The results were analyzed using the SPSS software (12.0; SPSS Inc. Chicago, IL, USA).

RESULTS

There were 3,100 (60.8%) men and 2,000 (39.2%) women with the age range 60 to 98 years. The mean age of the study population was 69 ± 6.3 years. Of these 5,100 patients, 3,264 patients (64%) presented with various oral lesions. Males were more affected (66%) than females (34%), and this difference was not statistically significant ($p > .05$). In the majority of the cases, only one lesion was found (42%); however, some patients exhibited more than one oral lesion simultaneously.

The majority of the oral lesions were observed in patients between 65 to 70 years of age. Table 1 shows the distribution of the lesions according to the site. The hard palate had most lesions (23.1%), followed by the tongue (16.4%) and gingiva (14.7%), whereas soft palate (3.6%) was the least affected site. The lesions identified during the study were classified according to clinical, histopathological, and microbiological diagnosis and were distributed in 27 different clinical entities (Table 2). Nicotinic stomatitis (43%) due to tobacco use and denture stomatitis (34%) due to long use of prostheses were the most commonly diagnosed lesions. OSMF (30%) was also a commonly seen premalignant lesion due to high percentage of people with the habit of betel nut chewing.

DISCUSSION

According to different studies, it is a common finding to observe oral pluripathology in the elderly, due to the aging process, systemic complexity involvement in these patients, metabolic changes, nutritional factors, prosthetic use, medications, psychobiological habits, and alcohol or tobacco habits. Therefore, several conditions are to be encountered in this particular age group which include neoplasms, infections, immunological, hematological, and systemic disorders, leading to oral pain and discomfort in the elderly patient.⁽²⁰⁾ Among the various causes leading to changes in the oral mucosa due to aging are bacterial, fungal, viral, parasitic infections and infections caused by other agents, physical and thermal alterations, immune system changes, systemic diseases, tumors, trauma, and other factors.⁽¹⁾

The prevalence of oral mucosal lesions has been found to be higher in older patients than in the younger population.^(19,25) Associations have been reported between oral mucosal disorders and aging. The prevalence of mucosal changes or lesions was 64% in the present study, which was higher than that of the findings of Mujica *et al.*⁽²⁰⁾ and Espinoza *et al.*⁽⁹⁾ who noted the prevalence of mucosal changes to be 57% and 53%, respectively.⁽⁹⁾ However, Cebeci *et al.*⁽¹⁾ observed the prevalence of oral changes to be 15.5% in the elderly patients. Gonzalez *et al.*⁽⁵⁾ demonstrated a prevalence of 23.2% in the Mexican population. These variations could be explained due to

TABLE 1.
Site distribution of mucosal lesions

Site	Frequency
Hard palate	23.1 %
Tongue	16.4%
Gingiva	14.7%
Buccal mucosa	12.3%
Lip/ Labial mucosa	11.5%
Floor of mouth	7.1%
Vestibule	6.9%
Comissures	5.8%
Soft palate	3.6%

TABLE 2.
Prevalence of oral soft tissues lesions in elderly
according to clinical presentation

<i>Oral Lesions</i>	<i>N</i>	<i>%</i>
<i>Inflammatory Lesions</i>		
Denture stomatitis	1734	34
Angular cheilitis	918	18
Inflammatory papillary hyperplasia	816	16
Erythematous Candidiasis	765	15
Acute necrotizing ulcerative gingivitis	51	01
<i>Reactive Lesions</i>		
Pyogenic granuloma	1122	22
Traumatic Ulcer	1020	20
Frictional keratosis	1173	23
Fibroepithelial Hyperplasia	561	11
Fibroma	459	09
Mucocele	204	04
<i>Premalignant and Malignant Lesions</i>		
Nicotinic Stomatitis	2193	43
Leukoplakia	1122	22
OSMF	1530	30
Lichen planus	918	18
Squamous cell carcinoma	110	02
<i>Pigmented Lesions</i>		
Amalgam Tattoo	561	11
Melanotic macule	510	10
Hemangioma	357	07
Nevus	153	03
<i>Infectious Lesions</i>		
Aphthous Ulcers	969	19
Papilloma	510	10
Secondary herpes	408	08
<i>Tongue Lesions</i>		
Fissured tongue	306	06
Geographic tongue	255	05
Coated Tongue	153	03
<i>Drug-induced Lesions</i>		
Drug-induced gingival enlargement	110	02

the different methodologies used by different researchers. Most population-based studies correlate oral mucosal disease with oral cancer and precancerous conditions, but few authors have recorded overall oral mucosal lesions or mucosal changes.⁽¹⁾

The most common mucosal lesion found in the present study was nicotinic stomatitis (43%), whereas Mujica *et al.*⁽²⁰⁾ and Cebeci *et al.*⁽¹⁾ showed that the most common lesion was denture stomatitis (18%) and anatomical changes (7%), respectively. In the present study, denture stomatitis was the second common lesion and was observed in 34% of patients, which was more when compared to the other studies.^(9,11,20) In the present study, OSMF was recorded in 30% of population, but this condition was not at all seen in the studies by Mujica

et al.⁽²⁰⁾ who reported leukoplakia to be the most common premalignant lesion (13%). Leukoplakia was seen in 22% of the patients, in the present study which, however, was more when compared to results of the above study and the findings of Cebeci *et al.*⁽¹⁾ who noted leukoplakia in 0.4%. In the current study, lichen planus was detected in 18% of patients, whereas in the Mujica⁽²⁰⁾ and Cebeci⁽¹⁾ studies, lichen planus was noted in 3% and 0.8%, respectively. In the present investigation, 110 patients (2%) were diagnosed as having malignancies, all of whom were diagnosed as having squamous cell carcinoma. This finding was more when compared to the results of previous studies. The oral cavity is one of the most suitable locations for the development of cancerous diseases. Most oral cancers, especially squamous cell carcinomas involving the mucosal tissue, are usually evident. However, all such potentially malignant lesions should be confirmed by microscopic analysis.^(1,26)

In the present study, tobacco and its related products were the strongest risk factor, followed by use of faulty dentures. The odds of having a lesion increased with age, even after adjusting the tobacco use, the presence of faulty dentures, race/ethnicity and sex.⁽¹⁶⁾ The use of prostheses or their condition in the elderly helps to determine the number of oral lesions present in these individuals.⁽²⁰⁾ In the present study, 42% of patients exhibited one lesion, similar to the findings of Mujica *et al.*,⁽²⁰⁾ Jorge *et al.*,⁽¹¹⁾ and Corbet *et al.*⁽¹⁸⁾ Espinoza *et al.*⁽⁹⁾ stated that the use of poorly adapted prostheses should be considered as a relevant factor, explaining the fact that in some aged populations, where the use of prosthesis is low or limited, the prevalence of oral pathologies is relatively low. This fact could be evidenced in reports from Hoard-Reddick⁽²⁷⁾ and Corbet *et al.*⁽¹⁸⁾ who noted a prevalence of 41% and 31%, respectively, due to poorly adapted prosthesis. In the present study, however, of the lesions related to prosthesis use, denture stomatitis, was the most common one, representing 1,734 cases (34%) as reported in the literature.^(11,17,20,27) The length of denture use and diabetes mellitus can be considered as significant risk factors for denture stomatitis and denture hyperplasia. Some important associations between denture-related lesions, systemic diseases, and medication use which require further investigation has also been observed.⁽¹⁾

Different sites in oral cavity show predilection for different types of lesions. Certain lesions are more commonly seen on lower lip, while few are seen most commonly on upper lip. Different interactions between genetic and environmental factors in the oral mucosa lead to the formation of different lesions. The site of the lesion is also an important etiological factor. Hard palate (23.1%) was the most commonly affected site in the present study, whereas the soft palate was the least involved (3.6%). Knowledge of site predilection for different diseases will be useful in acknowledging the factors responsible for the same.⁽²⁸⁾

According to gender distribution, the majority of the studies have not demonstrated differences in the prevalence of the lesions.^(9,11,17) Mosqueda *et al.*⁽⁶⁾ reported a female preponderance similar to Gonzalez *et al.*,⁽⁵⁾ and Mujica *et al.*⁽²⁰⁾ in 67% of their cases. In contrast to these findings, a slight male preponderance is noted in the present study.

CONCLUSION

In conclusion, the present study has provided information about the epidemiologic aspects of oral mucosal lesions in the geriatric population that may prove valuable in the planning of future oral health studies of this group of the population in India. The increased number of aged individuals implies an important demographic change all over the globe. Therefore, it is important to plan accordingly in the social-, economic-, and health-related areas. Further, community programs should be enhanced to educate the elderly population along with the younger generation to get the elderly screened for any oral-mucosal lesions by availing adequate clinical and pathological laboratory facilities.

CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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