

## Original Article

# Prevalence of oral mucosal lesions among elderly population in Chennai: a survey

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**Abstract – Introduction:** The oral mucosa serves as a protective barrier against trauma, pathogens and carcinogenic agents. It can be affected by a wide variety of lesions and conditions, some of which may be harmless or with serious complications. Identification and institution of proper treatment of these lesions are an important part of total oral health care. Knowledge of clinical characteristics of oral mucosal lesions such as morphology, location, and duration helps in proper diagnosis and in identifying the type of oral mucosal lesion. The present study was designed to analyze prevalence of oral mucosal lesions in elderly population. **Materials and methods:** A descriptive pro forma-based study was conducted among the elderly patients visiting the Saveetha Dental College, Chennai, Tamil Nadu, India. Elderly patients within the age 55–90 years were considered as subjects in this study. The pro forma contained basic details of patients such as name, age, sex, occupation, chief complaint, past medical and dental history, family history and personal habits (oral hygiene habits and oral habits). On intra oral examination the characteristic features of oral mucosal lesions were recorded. **Result:** Seventy five subjects participated in the study. In 75 subjects, there were 55 males and 20 females. The patients ranged from 55 to 90 years old and were categorised into four age groups: 55–60 years, 60–70 years, 70–80 years and 80–90 years. The most common lesions were oral submucous fibrosis (21.33%), smoker's palate (20%), leukoplakia (14.66%) and tobacco pouch keratosis (10.66%). **Conclusion:** The prevalence of oral habits related lesions in elderly population are more in Indian population because of more exposure to tobacco products in old age and the prevalence of non oral habits related lesions are because of vitamin, dietary deficiency and stress. Hence, proper support and care of aged individuals will help the dentist in proper diagnosis and treatment planning programs.

## Introduction

The health of the ageing population is a great public health challenge. This challenge is further magnified in a developing economy [1]. All the tissues of the human body undergo significant changes with age. This is also reflected in the oral cavity. Elderly individuals usually have a co-existing systemic disease and are more vulnerable to various diseases affecting the hard tissues and soft tissues of the oral cavity [2].

Oral mucosa is an effective protective barrier and is commonly affected by lesions that may be innocuous to those that are malignant. Oral lesions impair with the functioning of an individual leading to impaired speech and inability to eat [3]. The lesions may cause halitosis, dysesthesia or xerostomia. These symptoms may affect the social and everyday life of an individual. Deleterious habits, irregular or sharp teeth, ill-fitting prosthesis and poor oral hygiene are other factors that determine the occurrence of oral mucosal lesions [4].

Oral mucosal lesions are more common among the elderly population. These groups of patients are at risk of developing many pathologies owing to increased occurrence of systemic diseases, age-related metabolic changes, nutritional deficiencies. They are also usually under long term medications for systemic diseases. They also wear prosthesis, and might have deleterious habits like tobacco or alcohol [5]. Hence these patients are prone to a wide spectrum of lesions ranging from infections, neoplasms, manifestations of other systemic, hematological disorders. These lesions cause significant pain to these patients [6]. Data from Oral health Surveys help in decision-making policies of the government and in developing preventing programs. These disease patterns could be altered by improving patient awareness, incorporating life style changes and focusing on oral health. Hence, the present study was designed to study prevalence of oral mucosal lesions in elderly population, who are mostly negligent towards their oral health and are reluctant to consult dental professionals to treat their problems [7,8].

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**Table I.** Prevalence of oral mucosal lesions in four age groups.

	55–60 years		60–70 years		70–80 years		80–90 years		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Oral submucous fibrosis	7	9.3	7	9.3	0	0	2	2.6	16	21.3
Smoker's palate	3	4	8	10.6	4	5.3	0	0	15	20
Leukoplakia	3	4	6	8.0	2	2.6	0	0	11	14.6
Tobacco pouch keratosis	4	5.3	3	4	1	1.3	0	0	8	10.6
Squamous cell carcinoma	2	2.6	3	4	0	0	0	0	5	6.6
Apthous ulcer	4	5.3	0	0	0	0	0	0	4	5.3
Geographic tongue	0	0	1	1.3	1	1.3	1	1.3	3	4
Herpes labials	0	0	1	1.3	1	1.3	0	0	2	2.6
Denture stomatitis	0	0	1	1.3	1	1.3	0	0	2	2.6
Angular cheilitis	2	2.6	0	0	0	0	0	0	2	2.6
Lichen planus	1	1.3	1	1.3	0	0	0	0	2	2.6
Epulis fissuratum	1	1.3	0	0	1	1.3	0	0	2	2.6
Fissured tongue	1	1.3	0	0	0	0	0	0	1	1.3
Frictional keratosis	0	0	0	0	1	1.3	0	0	1	1.3
Traumatic ulcer of tongue	1	4.3	0	0	0	0	0	0	1	1.3
Total	29	38.6	31	41.3	12	16	3	4	75	100

## Materials and methods

The present study was carried out as a prospective study with a consecutive non-probability sampling among the elderly patients visiting a Dental College, Chennai, Tamil Nadu. The Patients in the age group of 55–90 years were considered as elderly and included in this study. A total of 75 elderly patients visiting the clinic were examined. The study was conducted between the time period of September to December 2017. Participation in the study was voluntary and no incentives were provided to the participants.

There were no previously published studies on the prevalence of mucosal lesions in the elderly population in Chennai. In order to cover a representative sample of the population with a 80% confidence and a 5% margin of error, precision 5% and prevalence of elderly population at 11.3%, 66 patients were required. The present study included a total of 75 patients. Demographic data was collected from the patient and a thorough intra-oral and extra oral examination was conducted by a trained dental surgeon.

The patient pro forma contained information such as name, age, sex, occupation, chief complaint, past medical and dental history, family history and personal habits (oral hygiene habits and oral habits). The patients were examined by a dental surgeon (R.S). On intra oral examination, presence of any intra-oral lesion was recorded. The characteristic features of oral mucosal lesions including location, size, colour, type of lesion, margins, surface, discharge and duration of lesions were also recorded.

## Results

Seventy five subjects underwent this survey. In 75 subjects, there were 55 males and 20 females. The patients ranged from 55 to 90 years old and were categorised into four age groups: 55–60 years, 60–70 years, 70–80 years and 80–90 years. The most common lesions were oral submucous fibrosis (21.33%), smoker's palate (20%), leukoplakia (14.66%) and Tobacco pouch keratosis (10.66%). [Table I](#) presents the prevalence of oral mucosal lesions and shows the different frequency of lesions in the four age groups.

Among the lesions, oral lesions associated with tobacco were found to be more (74.66%) than non habits related lesions (25.33%). The most commonly occurring lesion was oral submucous fibrosis (21.33%) followed by Smoker's palate (20%) ([Tab. II](#)). The least commonly occurring lesion was frictional keratosis (1.33%). In non-habits related lesions the most common lesion was Apthous ulcer (5.33%), followed by geographic tongue (4%) ([Tab. III](#)). The least commonly occurring lesions were fissured tongue and traumatic ulcer of tongue (1.33%).

## Discussion

Oral mucosal conditions and diseases may be caused by infectious diseases (bacterial or viral), systemic diseases (metabolic or immunologic), drug-related reactions, or lifestyle factors such as the consumption of tobacco, betel quid, or alcohol [9]. Elderly individuals are more prone to develop oral

**Table II.** Prevalence of oral habits related lesions in the study participants.

Oral habits related lesions	Total number (%)
Oral submucous fibrosis	16 (21.33%)
Smoker's palate	15 (20%)
Leukoplakia	11 (14.66%)
Squamous cell carcinoma	5 (6.66%)
Frictional keratosis	1 (1.33%)
Tobacco pouch keratosis	8 (10.66%)
Total	56 (74.66%)

**Table III.** Prevalence of non oral habits related lesions in the study participants.

Non oral habits related lesions	Total number (%)
Apthous ulcer	4 (5.33%)
Geographic tongue	3 (4%)
Lichen planus	2 (2.66%)
Angular cheilitis	2 (2.66%)
Epulis fissuratum	2 (2.66%)
Denture stomatitis	2 (2.66%)
Herpes labialis	2 (2.66%)
Fissured tongue	1 (1.33%)
Traumatic ulcer of tongue	1 (1.33%)
Total	19 (25.33%)

mucosal lesions compared to younger individuals [10]. Furthermore, a relation has been reported between oral mucosal disorders and ageing [11]. However, age is not the only factor that correlates with diseases of the oral mucosa; other factors such as trauma, systemic conditions, the effects of medications, and oral and denture hygiene also play a role.

Epidemiologic studies may provide better understanding of the prevalence, extent, and severity of oral diseases in the ageing population. Very few studies have focused on the identification and prevalence of oral mucosal lesions among the elderly population [12,13]. Most studies focus on oral squamous cell carcinoma with little importance to other lesions [14] but in our study the various lesions other than carcinoma are considered.

On reviewing the literature, there were very few studies on the prevalence of mucosal lesions in the Indian population [15]. Hence the present study was conducted in Indian population to find the prevalence rate of oral mucosal lesions in elderly population.

The study results are categorised into two groups: habits-related lesions and nonhabits-related lesions. The most common oral mucosal lesion was oral submucous fibrosis (21.33%) followed by smoker's palate (20%). The prevalence of

oral mucosal lesions in elderly population occurred more commonly in the age group of 55–70 years (Tab. I). Oral submucous fibrosis, Smoker's palate and leukoplakia showed more prevalence in the age group of 55–70 years when compared to 70–90 years. These lesions also fall under the category of chronic oral mucosal diseases [16,17]. Namrata *et al.*, found that chronic oral mucosal diseases significantly greatly influence the quality of life of a patient. The lesions cause pain, limit functional capability, the treatment and medications also significantly affect the emotional and social status of the patient [18].

The prevalence of oral mucosal lesions in elderly population in India was predominantly due to their oral habits when compared to those lesions reported from other countries. The prevalence of leukoplakia in a population is directly related to tobacco usage. Since India is the top most country in the usage of tobacco and tobacco-related products, many people are exposed to tobacco products even in older age. Tobacco poses a potential threat to the oral cavity as they are in direct contact with the mucosal surface. The adverse effect of tobacco on oral cavity includes oral cancer, pre cancer, periodontal disease and other mucosal disorders, tooth loss and dental caries. Hence the oral habits related lesions are more predominant and prevalent in India which is inconsistent with the previous study conducted in Mashhad, Northeast Iran. This could be due to the influence of other factors like medications, systemic conditions compared to tobacco in those study populations.

Numerous studies on the relative incidence of oral cancer have shown that the smoking accounts for 81–87% of oral cancers among males. The intensity and duration of the tobacco smoking has a direct effect on the risk of oral cancer. The differential risk between the non smokers and smokers and the rapid rise in the progression of the risk with increased amount of smoking suggests that tobacco is the major risk factor for oral cancer [19].

In our study the most common location for oral lesions were buccal mucosa followed by palate, tongue and labial mucosa. This is in accordance with other studies [20]. Since buccal mucosa is the one which is more exposed to tobacco products for longer time, the prevalence of lesions in buccal mucosa is more common than other site lesions. There was also statistical significant association between the site of occurrence of oral lesions with site of placement of betel quid with or without tobacco ( $p < 0.001$ ).

In the present study there was also prevalence of non oral habits related mucosal lesions (25.33%). Apthous ulcer (5.33%) was the common lesion to be encountered followed by geographic tongue (4%) (Tab. III), angular cheilitis and lichen planus (2.66%). Apthous ulcer was more common among the age group of 55–60 years because of increased stress during the initial stages of old age and showed female predilection. Lichen planus occurred more commonly in the age group of 55–70 years and more in females because of increased stress and nutritional deficiency. Hence, the non habits related lesions are more prevalent in females than males [21]. There was also prevalence of denture-related lesions such as denture

stomatitis and epulis fissuratum (2.66%) because of increased usage of prosthetics in old age. These lesions can also be associated with Candida infection.

Denture stomatitis was found to be more prevalent in a study by Rojas *et al.* (22.3%) [22]. This higher prevalence of denture stomatitis among women was similar to that reported by Axell *et al.* and Kovac-Kavcic & Skaleric [23]. Poorly maintained dentures with plaque accumulation and use of dentures even during sleep may be major cause of denture stomatitis in elderly population [24]. It also important to know that the swallowing or aspiration of denture plaque would expose immunocompromised patients and medicated patients to the risk of unexpected infections. Patients with denture stomatitis also show greater probability of having angular cheilitis [25,26].

Hence this study had assessed possible risk factors for oral habits related lesions such as smoking and alcohol habits, and also risk factors for non oral habits related lesions such as vitamin and dietary deficiency. But no accurate result could be drawn because of the small sample size. Therefore, a further study with a larger sample size is required to obtain significant result.

## Conclusion

The increased number of aged individuals implies an important demographic change worldwide. Oral health is an important factor determining the quality of life in aged individuals. Aged individuals are more exposed to tobacco products, vitamin and dietary deficiency and also to stress, hence proper support and care should be given to aged individuals. Regular dental check-ups and non smoking are recommended for maintaining optimal oral health. Recommended oral self care (ROSC) includes tooth brushing more than once a day, lesser consumption of sugar containing snacks once daily or rarely and regular use of fluoride containing tooth paste [27]. Dentist must follow the ROSC as part of maintaining good general health. As dental professionals, they have a responsibility to stress on the public the importance of good oral hygiene practices. Therefore, dentists also have a responsibility of diagnosing and treating oral lesions with an underlying systemic cause.

## Conflict of interest

The authors declare that they have no conflicts of interest in relation to this article.

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