Original Article

Oral Mucosal Lesions in Thai Elderly Dental Patients

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Objective: To evaluate the prevalence of oral mucosal lesions of Thai elderly dental patients and to determine its association with age, gender, medical conditions, oral habits, and denture wearing.

Materials and Methods: Two hundred eleven patients who were 60-years-old or older and attended Dental Hospital, Naresuan University, Thailand participated in the present study. The prevalence of oral mucosal lesions as well as the medico-demographic data were collected. Intraoral examination and diagnosis were done according to the World Health Organization Guideline. The association and the correlation between variables were analyzed using Pearson's Chi-square test.

Results: The overall prevalence of oral mucosal lesions was 61.6%. There was no statistically significant difference between age groups, genders, medical conditions, smoking, alcoholic beverage consumption, areca nut chewing, and denture wearing. The three most common lesions were traumatic ulcer (12.8%), frictional keratosis (10.9%), and melanotic macule (9.5%).

Conclusion: Thai elderly dental patient group in Thailand has slightly high prevalence of oral mucosal lesions. Age, gender, medical conditions, oral habits, and denture wearing are not associated with overall prevalence, but specifically associated with some individual lesions.

Keywords: Oral mucosal lesions, Elderly, Thailand, Oral habit, Denture

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Currently, geriatric population is increasing worldwide, especially in developing countries[1], including Thailand. In Thailand, the number of elder people rised from 6.8% in 1994 to 15.3% in 2014[2]. Therefore, oral health status of the elders is more important as this population is expanding. Besides high levels of tooth loss, dental caries, and periodontal disease, oral mucosal disease is another significant problem found in the elders[3].

The prevalence of oral mucosal conditions is an important parameter in evaluating the oral health condition and determining the appropriate oral health program in the elderly population[4]. Its determination is important for the government's decision-making regarding the health programs[5]. With the advancing age, oral epithelium, the outer protective barrier of oral mucosa, becomes significantly thinner allowing chemicals and pathogens to easily penetrate underlying tissue[6,7]. They also loose connective tissue component resulting from increasing degradation and decreasing production of collagen and regenerative ability[6]. As a result, oral mucosa of this age group is vulnerable to be abnormal or diseased. In other words, elderly individuals would show a higher prevalence of oral mucosal disease than that of the younger one.

Age has an important influence on the prevalence of oral mucosal disease, which was found to be higher in elder subjects versus younger individuals[4,8-10]. However, age is not the only related factor. Other findings such as systemic disease, malnutrition, medications, poor oral hygiene, denture wearing, smoking, alcoholic beverage consumption, and areca nut chewing may also influence the development of oral mucosal diseases[4,11-13]. Moreover, the role of gender in oral health status and the prevalence of oral mucosal disease is still debated since some studies support its role and some do not[5,8,9].

In Thailand, the information regarding the prevalence of oral mucosal lesion and its association with other factors is very limited since only two studies are available, one clinical based and one biopsy based[4,15]. Therefore, the objective of the present study was to evaluate the prevalence of oral mucosal lesions in elderly dental patients and to determine its

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association with factors including age, gender, medical conditions, smoking, alcoholic beverage consumption, areca nut chewing, and denture wearing.

Materials and Methods

Patient population

Two hundred eleven patients that were 60-years-old or older and attended Dental Hospital, Naresuan University, Thailand, between 2015 and 2016 participated in the present study. The number of subjects were calculated using Cochran's equation and the prevalence of oral mucosal condition used to determine the sample size came from the previous study[4], which corresponded to 83.6%. The present study was approved by the Naresuan University Institutional Review Board, IRB number 151/59.

Intraoral examination and data collection

All subjects were initially tested with mini-mental state examination [MMSE] and only those who passed the test would be included in the study. Then, their medico-demographic data including age, gender, medical conditions, smoking, alcoholic beverage consumption, areca nut chewing, and denture wearing were collected. Moreover, the denture wearers who had only removable denture including complete denture, removable partial denture, and acrylic partial denture were included in the present study. Intraoral examination was performed and the diagnosis was done following the World Health Organization Guideline (WHO 1980)[16]. Lesions suggested as premalignant lesions, cysts, benign tumors, and malignant tumors were confirmed with histopathological examination.

Statistical analysis

Data were analyzed using Pearson's Chi-square test for the association among variables. The significance level was set at *p*-value smaller than 0.05.

Results

There were 211 Thai elderly dental patients, 102 (48.3%) male and 109 (51.7%) female, divided into three age groups as follows: 60 to 64 years old with 84 patients (39.8%), 65 to 69 years old with 66 patients (31.3%), and 70 years old or above with 61 patients (28.9%). The average ages of male and female patients were 66.71±5.518 years old and 67.54±5.911 years old, respectively.

One hundred sixty-two patients had systemic disease (76.8%) and 159 patients (75.4%) were taking medication. Fifty patients (23.7%) were denture wearers, 130 patients had no history of smoking, alcoholic consumption, and areca nut chewing (61.6%), and 81 patients (38.4%) had at least one factor as follows, smoking 64 (30.3%), alcoholic beverage consumption 47 (22.3%), and areca nut native to Thai chewing 16 (7.6%). For those who had a history of smoking, 59 were male and five were female, 14 of those (6.6%) were current smokers while other 50 (23.7%) were former smokers.

For the alcoholic beverage consumers, 19 patients (9.0%) were still drinking and 28 patients (13.3%) quit drinking. Compared between gender, male (43 patients) consumed alcoholic beverage higher than female (4 patients). For areca nut chewers, eight patients (3.8%) were current chewers and eight patients (3.8%) were former chewers. In contrary to other oral habits, there was a higher prevalence of areca nut chewing in female than that of male or (14:2). Statistical analysis showed significantly higher male smokers and alcoholic beverage consumers than female.

Table 1 showed the overall prevalence of oral mucosal lesions classified according to the age groups and gender. One hundred thirty patients (61.6%) had oral mucosal lesions. No significant difference in the prevalence of oral mucosal lesion. This prevalence was not statistically significant difference among age groups and gender.

Table 2 illustrated the distribution and association of individual oral mucosal lesions in relation with gender and variety of age groups, and Table 3 showed the distribution and association of individual oral mucosal lesions in relation with medical conditions including systemic disease and medication usage, as well as oral habits including smoking, alcoholic consumption and areca nut chewing.

The results in the present study demonstrate that age, gender, medical conditions, smoking,

Table 1. Prevalence of oral mucosal lesions in distribution between gender and age groups

Age group (year)	Present, n (%)			Not present, n (%)		
	Male (n = 66)	Female (n = 64)	Total (n = 130)	Male (n = 36)	Female (n = 45)	Total (n = 81)
60 to 64	26 (39.4)	21 (32.8)	47 (36.2)	18 (50.0)	19 (42.2)	37 (45.7)
65 to 69	22 (33.3)	21 (32.8)	43 (33.1)	11 (30.6)	12 (26.7)	23 (28.4)
70 or above	18 (27.3)	22 (34.4)	40 (30.8)	7 (19.4)	14 (31.1)	21 (25.9)

alcoholic beverage consumption, areca nut chewing and denture wearing are not associated with overall prevalence.

Discussion

The overall prevalence of oral mucosal lesions of the geriatric in the present study was 61.6%, which is higher than the Thai's national survey. This should be because of the different groups of participants. Compared to the previously reported epidemiological studies, the prevalence observed in the present study was in a similar range (44.2% to 83.6%)[4,5,17-22]. However, the prevalence was slightly lower than that of Jainkittivong et al's study (79.5%) done in Thailand[4]. This difference was possibly caused by the different criteria of data collection, which recorded only lesions without recording normal variations in the present study. Although there was a difference in overall prevalence, the prevalence of each lesion was consistently similar. Three most common oral mucosal lesions of our study, sorted descending, were traumatic ulcer, frictional keratosis and melanotic macule. The present result was similar to the Thai previous study that the highest prevalence of oral lesion among the

Table 2. Distribution of prevalence of variety of oral mucosal lesions in relation with gender and age groups

Oral mucosal lesion	Gender, n (%)			Age group (years), n (%)		
	Total (n = 211)	Male (n = 102)	Female (n = 109)	60 to 64 (n = 84)	65 to 69 (n = 66)	≥70 (n = 61)
Traumatic ulcer	27 (12.8)	15 (14.7)	12 (11.0)	6 (7.1)	10 (15.2)	11 (18.0)
Frictional keratosis	23 (10.9)	15 (14.7)	8 (7.3)	7 (8.3)	9 (13.6)	7 (11.5)
Melanotic macule	20 (9.5)	13 (12.7)	7 (6.4)	7 (8.3)	8 (12.1)	5 (8.2)
Smoker's melanosis	18 (8.5)	18 (17.6)	0 (0.0)	10 (11.9)	5 (7.6)	3 (4.9)
Oral lichen planus	13 (6.2)	3 (2.9)	10 (9.2)	6 (7.1)	4 (6.1)	3 (4.9)
Denture stomatitis	12 (5.7)	5 (4.9)	7 (6.4)	4 (4.8)	4 (6.0)	4 (6.6)
Blood extravasation	10 (4.7)	9 (8.8)	1 (0.9)	5 (6.0)	2 (3.0)	3 (4.9)
Angular cheilitis	8 (3.8)	0 (0.0)	8 (7.3)	1 (1.2)	5 (7.6)	2 (3.3)
Oral candidiasis	6 (2.8)	5 (4.9)	1 (0.9)	1 (1.2)	3 (4.5)	2 (3.3)
Epulis fissuratum	4 (1.9)	2 (2.0)	2 (1.8)	0 (0.0)	1 (1.5)	2 (3.3)
Leukoplakia	4 (1.9)	1 (1.0)	3 (2.8)	1 (1.2)	2 (3.0)	1 (1.6)
Drug induced hyperpigmentation	4 (1.9)	3 (2.9)	1 (0.9)	0 (0.0)	1 (1.5)	3 (4.9)
Atrophic glossitis	3 (1.4)	0 (0.0)	3 (2.8)	0 (0.0)	0 (0.0)	3 (4.9)
Nicotinic stomatitis	3 (1.4)	3 (2.9)	0 (0.0)	2 (2.4)	1 (1.5)	0 (0.0)
Amalgam tattoo	3 (1.4)	0 (0.0)	3 (2.8)	2 (2.4)	1 (1.5)	0 (0.0)
Aphthous ulcer	3 (1.4)	1 (1.0)	2 (1.8)	2 (2.4)	1 (1.5)	0 (0.0)
Epithelium desquamation	3 (1.4)	2 (2.0)	1 (0.9)	2 (2.4)	1 (1.5)	0 (0.0)
Mucous membrane pemphigoid	2 (0.9)	0 (0.0)	2 (1.8)	0 (0.0)	1 (1.5)	1 (1.6)
Erythroleukoplakia	2 (0.9)	0 (0.0)	2 (1.8)	0 (0.0)	1 (1.5)	1 (1.6)
Fibroma	2 (0.9)	1 (1.0)	1 (0.9)	0 (0.0)	1 (1.5)	1 (1.6)
Squamous cell carcinoma	2 (0.9)	1 (1.0)	1 (0.9)	0 (0.0)	1 (1.5)	1 (1.6)
Nevus	2 (0.9)	1 (1.0)	1 (0.9)	1 (1.2)	1 (1.5)	0 (0.0)
Pemphigus vulgaris	1 (0.5)	0 (0.0)	1 (0.9)	1 (1.2)	0 (0.0)	0 (0.0)
Radiation induced mucositis	1 (0.5)	1 (1.0)	0 (0.0)	0 (0.0)	1 (1.5)	0 (0.0)
Chemotherapy induced mucositis	1 (0.5)	0 (0.0)	1 (0.9)	1 (1.2)	0 (0.0)	0 (0.0)
Mucocele	1 (0.5)	0 (0.0)	1 (0.9)	1 (1.2)	0 (0.0)	0 (0.0)
Vascular malformation	1 (0.5)	1 (1.0)	0 (0.0)	1 (1.2)	0 (0.0)	0 (0.0)
Pyogenic granuloma	1 (0.5)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (1.6)
Post-inflammatory hyperpigmentation	1 (0.5)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (1.6)
Mucosal burn	1 (0.5)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (1.6)
Areca nut stain	1 (0.5)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (1.6)
Mucosal inflammation from osteo-myelitis	1 (0.5)	0 (0.0)	1 (0.9)	1 (1.2)	0 (0.0)	0 (0.0)
Chronic cheek biting	1 (0.5)	1 (1.0)	0 (0.0)	0 (0.0)	1 (1.5)	0 (0.0)

Table 3. Distribution of prevalence of variety of oral mucosal lesions in relation with medical conditions and oral habits

Oral mucosal lesion	Systemic disease, n (%)		Medication usage, n (%)		Smoking, n (%)		Alcoholic consumption, n (%)		Areca nut chewing, n (%)	
	Present (n = 162)	Not present (n = 49)	Present (n = 159)	Not present (n = 52)	Yes (n = 64)	No (n = 147)	Yes (n = 47)	No (n = 164)	Yes (n = 16)	No (n = 195)
Traumatic ulcer	23 (14.2)	4 (8.2)	22 (13.8)	5 (9.6)	5 (7.8)	22 (15.0)	3 (6.4)	24 (14.6)	2 (12.5)	25 (12.8)
Frictional keratosis[$ +]	19 (11.7)	4 (8.2)	19 (11.9)	4 (7.7)	12 (18.8)	11 (7.5)	7 (14.9)	16 (9.8)	2 (12.5)	21 (10.8)
Melanotic macule	17 (10.5)	3 (6.1)	16 (10.1)	4 (7.7)	7 (10.9)	13 (8.8)	3 (6.4)	17 (10.4)	0 (0.0)	20 (10.3)
Smoker's melanosis[† # +]	10 (6.2)	8 (16.3)	8 (5.0)	10 (19.2)	18 (28.1)	0 (0.0)	12 (25.5)	6 (3.7)	1 (6.3)	17 (8.7)
Oral lichen planus	9 (5.6)	4 (8.2)	10 (6.3)	3 (5.8)	2 (3.1)	11 (7.5)	2 (4.3)	11 (6.7)	0 (0.0)	13 (6.7)
Denture stomatitis	11 (6.8)	1 (2.0)	10 (6.3)	2 (3.8)	6 (8.2)	9 (6.1)	1 (2.1)	11 (6.7)	0 (0.0)	12 (6.2)
Blood extravasation[$]	8 (4.9)	2 (4.1)	8 (5.0)	2 (3.8)	6 (8.2)	4 (2.7)	4 (8.5)	6 (3.7)	0 (0.0)	10 (5.1)
Angular cheilitis[†]	7 (4.3)	1 (2.0)	5 (3.1)	3 (5.8)	1 (1.6)	7 (4.8)	0 (0.0)	8 (4.9)	2 (12.5)	6 (3.1)
Oral candidiasis	6 (3.7)	0 (0.0)	5 (3.1)	1 (1.9)	3 (4.7)	3 (2.0)	2 (4.3)	4 (2.4)	0 (0.0)	6 (3.1)
Epulis fissuratum[#]	0 (0.0)	2 (4.1)	1 (0.6)	3 (5.8)	1 (1.6)	3 (2.0)	1 (2.1)	3 (1.8)	1 (6.3)	3 (1.5)
Leukoplakia[‡]	4 (2.5)	0 (0.0)	4 (2.5)	0 (0.0)	2 (3.1)	2 (1.3)	1 (2.1)	3 (1.8)	3 (18.8)	1 (0.5)
Drug induced hyperpigmentation	4 (2.5)	0 (0.0)	4 (2.5)	0 (0.0)	1 (1.6)	3 (2.0)	1 (2.1)	3 (1.8)	0 (0.0)	4 (2.1)
Atrophic glossitis	2 (1.2)	1 (2.0)	3 (1.9)	0 (0.0)	0 (0.0)	3 (2.0)	0 (0.0)	3 (1.8)	3 (18.8)	0 (0.0)
Nicotinic stomatitis	2 (1.2)	1 (2.0)	2 (1.3)	1 (1.9)	3 (4.7)	0 (0.0)	3 (6.4)	0 (0.0)	1 (6.3)	2 (1.0)
Amalgam tattoo	2 (1.2)	1 (2.0)	2 (1.3)	1 (1.9)	0 (0.0)	3 (2.0)	0 (0.0)	3 (1.8)	0 (0.0)	3 (1.5)
Aphthous ulcer	2 (1.2)	1 (2.0)	2 (1.3)	1 (1.9)	1 (1.6)	2 (1.3)	1 (2.1)	2 (1.2)	0 (0.0)	3 (1.5)
Epithelium desquamation	2 (1.2)	1 (2.0)	2 (1.3)	1 (1.9)	2 (3.1)	0 (0.0)	1 (2.1)	2 (1.2)	0 (0.0)	3 (1.5)
Mucous membrane pemphigoid[‡]	2 (1.2)	0 (0.0)	2 (1.3)	0 (0.0)	0 (0.0)	2 (1.3)	0 (0.0)	2 (1.2)	1 (6.3)	1 (0.5)
Erythroleukoplakia	2 (1.2)	0 (0.0)	2 (1.3)	0 (0.0)	0 (0.0)	2 (1.3)	0 (0.0)	2 (1.2)	2 (12.5)	0 (0.0)
Fibroma[‡]	1 (0.6)	1 (2.0)	1 (0.6)	1 (1.9)	1 (1.6)	1 (0.7)	1 (2.1)	1 (0.6)	1 (6.3)	1 (0.5)
Squamous cell carcinoma[‡]	1 (0.6)	1 (2.0)	1 (0.6)	1 (1.9)	1 (1.6)	1 (0.7)	1 (2.1)	1 (0.6)	1 (6.3)	1 (0.5)
Nevus	2 (1.2)	0 (0.0)	2 (1.3)	0 (0.0)	1 (1.6)	1 (0.7)	0 (0.0)	2 (1.2)	0 (0.0)	2 (1.0)
Pemphigus vulgaris	1 (0.6)	0 (0.0)	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Radiation induced mucositis	1 (0.6)	0 (0.0)	0 (0.0)	1 (1.9)	1 (1.6)	0 (0.0)	1 (2.1)	0 (0.0)	0 (0.0)	1 (0.5)
Chemotherapy induced mucositis	1 (0.6)	0 (0.0)	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Mucocele	1 (0.6)	0 (0.0)	0 (0.0)	1 (1.9)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Vascular malformation	1 (0.6)	0 (0.0)	1 (0.6)	0 (0.0)	1 (1.6)	0 (0.0)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Pyogenic granuloma	1 (0.6)	0 (0.0)	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Post-inflammatory hyperpigmentation	1 (0.6)	0 (0.0)	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Mucosal burn	0 (0.0)	1 (2.0)	1 (0.6)	0 (0.0)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	1 (6.3)	0 (0.0)
Areca nut stain	0 (0.0)	1 (2.0)	0 (0.0)	1 (1.9)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	1 (6.3)	0 (0.0)
Mucosal inflammation from osteomyelitis	0 (0.0)	1 (2.0)	0 (0.0)	1 (1.9)	0 (0.0)	1 (0.7)	0 (0.0)	1 (0.6)	0 (0.0)	1 (0.5)
Chronic cheek biting	0 (0.0)	1 (2.0)	1 (0.6)	0 (0.0)	1 (1.6)	0 (0.0)	1 (2.1)	0 (0.0)	0 (0.0)	1 (0.5)

Pearson's Chi-square test, $p<0.05$

[†] Systemic disease column, [#] Medication usage column, [$] Smoking column, [+] Alcoholic beverage consumption column, [‡] Areca nut chewing column

elderly was traumatic ulcer[4]. The cause of this may be the thinner epithelium in elders that makes it vulnerable for injury[6,7].

The present study showed no significant correlation between the prevalence of overall oral mucosal lesion and age group. The present result was in contrast with other studies[5,8] including a study that was done in Thailand and showed higher prevalence with advancing age[4]. Nevertheless, the authors' study illustrated that atrophic glossitis was found merely in the eldest group (p = 0.024). This finding supported several studies reporting the increased prevalence with elevating age[4,5,8]. Regarding medical condition, there were slightly more oral mucosal lesions in those who had medical condition than those who did not, but it did not reach statistical significance. The present result agreed with previous studies that showed no predilection of oral mucosal lesion in those who had systemic disease[8,17]. A report from Lynge Pedersen et al showed association with some individual lesions[11]. However, Fedele et al reported an independent association[12].

According to distribution of gender, even though,

most studies illustrated no association between overall prevalence and gender[4,11,19], some studies reported the predilection of gender[5,9] including the present study. We reported that there were two lesions that associated with gender, smoker's melanosis and angular cheilitis. Smoker's melanosis was found in all male smokers as observed in the previous study[14]. This strong gender and habitual predilection was influenced by Thai social value that male had a higher smoking rate than female. Since the alcohol consumption rate went in line with smoking rate, these lesions were found associated with drinking as well. Similarly, although nicotinic stomatitis, which was also classified as tobacco-related lesion, showed slight association with gender, it showed strong association with smoking and alcohol consumption. On the contrary to smoker's melanosis, angular cheilitis was rarely found in male in our study while other studies showed no association with gender ($p>0.05$)[4,11]. The result might possibly be attributed to denture wearing manner. However, further study should evaluate the denture-related factors that may play roles in the prevalence of angular chelitis. These factors include denture hygiene, nocturnal denture wearing, level of vertical occlusal dimension loss and nutritional status. Frictional keratosis was found associated with smoking and alcohol consumption. Even though these two habits were not initial factors, they could be described as predisposing factors of causing frictional keratosis[13].

In Thailand, the habit of chewing areca nut dramatically diminished over the past few years, as a result, the percentage of areca nut chewers was small. However, the percentage of premalignant lesion, leukoplakia observed in the present study was in the same range compared to other reports (0.3% to 22.0%) [4,17-20], but much lower than Patil et al's study that reported a prevalence of 80.0%[21]. The authors found an association of areca nut chewing with leukoplakia, erythroleukoplakia, and squamous cell carcinoma, which were classified as premalignant and malignant lesions. This was also observed in other studies[23,24]. These findings support that areca nut chewing increases the risk of oral premalignant and malignant lesions. Additionally, the present study found the association of smoking with localized blood extravasation including oral purpura and petechiae. They might also be the subsequence of the thinning of the epithelium[6,7]. The underlying vessels in connective tissue could be easily harmed, not only mechanically, but also thermally, and chemically. Moreover, areca nut chewing caused higher risk of having mucosal burn, areca nut stain, and fibroma. The elevating risk might be the result of irritation from areca nut components to mucosal tissue, which can be seen in various forms[13,25]. For fibroma, there was no scientific support of the association between this lesion and areca nut chewing. These may be the result from the alteration effect of arecoline, the product found in areca nut, to underlining fibroblasts. The product caused proliferation, more collagen secretion and lesser the collagen degradation[25]. Beside the lesions described above, the authors' study found the association of areca nut chewing with the prevalence of mucous membrane pemphigoid. The findings may account from that mucous membrane pemphigoid as predilection in adult to the elderly female patients. This kind of population in Thailand had a higher rate of areca nut chewing than the others[26,27].

The prevalence of oral mucosal lesions varies. Different lifestyle, habits of patients, culture, and medical conditions would largely affect each individual and eventually make the prevalence of lesion different among population groups. Although these factors are not direct causes, they could predispose patients to the risk.

Conclusion

Elderly dental patient group in Thailand has slightly high prevalence of oral mucosal lesions. Age, gender, medical conditions, smoking, alcoholic beverage consumption, areca nut chewing, and denture wearing are not associated with overall prevalence, but specifically associated with some individual lesions distinctly.

What is already known on this topic?

Currently, geriatric population is increasing world-wide, especially in developing countries, including Thailand. Therefore, oral health status of the elders is more important as this population is expanding. Besides high levels of tooth loss, dental caries, and periodontal disease, oral mucosal disease is another significant problem found in the elders. In addition, the prevalence of oral mucosal lesions is an important parameter in evaluating the oral health condition and determining the appropriate oral health program in the elderly population. Its determination is important for the government's decision-making regarding the health programs. However, in Thailand, the information regarding the prevalence of oral mucosal lesion and its association with other factors is very limited since only two studies are available, one clinical based- and one biopsy based.

What this study adds?

The overall prevalence of oral mucosal lesions in the geriatric population of the present study was 61.6%, which is higher than the Thai's national survey. Three most common oral mucosal lesions of the authors' study, were traumatic ulcer, frictional keratosis, and melanotic macule. Age, gender, medical conditions, smoking, alcoholic beverage consumption, areca nut chewing, and denture wearing are not associated with overall prevalence, but specifically associated with some individual lesions.

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Potential conflicts of interest

The authors declare no conflict of interest.

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