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## Medical Conditions and Oral Diseases in Elderly Thai Dental Patients in Lower Northern Thailand

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## Medical Conditions and Oral Diseases in Elderly Thai Dental Patients in Lower Northern Thailand

Cover Page Footnote

None

**ORIGINAL ARTICLE**

**Medical Conditions and Oral Diseases in Elderly Thai Dental Patients in Lower Northern Thailand**

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**ABSTRACT**

The World Health Organization (WHO) aims to strengthen oral health promotion and disease prevention around the globe. The prevalence and association of systemic diseases and oral diseases has been reported. **Objectives:** The objectives of this study were to investigate prevalence of medical conditions and oral diseases in elderly Thai dental patients. **Methods:** Three hundred dental records of patient aged 60 years old and older were retrospectively reviewed. Data were analyzed using Pearson's Chi-square and Fisher's exact test with the significant level at  $p < 0.05$ . **Results:** All of them were Thai of 142 males (47.3%) and 158 females (52.7%). Their age ranged between 60 and 85 years old with an average age of  $66.1 \pm 5.4$  years old. Two third of patients had the history of systemic diseases (66.3%) and hypertension (10.3%) was the predominant one. Eighty-nine percent of patients had oral health problems. Fifteen percent were currently on antiplatelet and anticoagulant drugs, and 15.4% had the history of drug allergy. The most prevalent oral diseases were tooth loss (87.7%) followed by periodontal diseases (80.0%), tooth wear (66.0%), dental caries (65.3%) and pulp diseases (54.0%). The prevalence of oral mucosal lesions, temporomandibular disorder and orofacial pain were 23.7%, 1.6% and 1.6%, respectively. **Conclusion:** The present study provides the information of medical conditions and oral diseases in a group of older Thai dental patients in the lower northern Thailand.

**Key words:** elderly, medical condition, oral disease, Thailand

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**INTRODUCTION**

Considering the association of oral health to general health, the World Health Organization (WHO) aims to strengthen oral health promotion and disease prevention around the globe. The growing numbers of elderly challenge health authorities in many countries.<sup>1</sup> General health and oral health conditions directly influence the quality of life and lifestyle of the elderly.<sup>2</sup> Although systemic diseases can occur at any age, they are more common in older adults.<sup>3</sup> Systemic diseases are affected by numerous chronic conditions, such as diabetes, hypertension, osteoarthritis, osteoporosis, cardiovascular diseases, and cerebrovascular diseases. These medical conditions can complicate the treatment

of physical health problems, and special treatment or protocol may be applicable to this group of patients to reduce the risk of complications. Systemic conditions can negatively impact oral health, and poor oral health can worsen systemic medical conditions.<sup>4</sup>

Systemic diseases not only affect oral care and accessibility to dental services but also cause oral mucosal lesions.<sup>5-7</sup> Furthermore, the medication used for the treatment of chronic diseases has unavoidable side effects on oral health, leading to oral symptoms.<sup>8</sup> Although information regarding the prevalence and association of systemic diseases and oral diseases has

been reported elsewhere, related studies rarely focused on older adults in lower northern Thailand. Therefore, the present study investigated the medical conditions and oral diseases in Thai dental patients aged 60 years and above in the lower northern region of Thailand and evaluated the relationship between the findings in relation to age and gender.

## **METHODS**

The present study was approved by the Institutional Review Board (COA No. 206/2019). Patients archived of oral medicine clinic from 2013 to 2018 were retrospectively reviewed. Inclusion criteria were complete dental record of dental examination of patients aged 60 years and above who were visiting the oral medicine clinic. By contrast, incomplete dental record was excluded from the study. A total of 300 dental records were reviewed. Patient's information regarding age, gender, allergy, systemic diseases, medication uses, oral habits (tobacco and alcohol consumption, betel nut chewing, clenching, and bruxism), oral hygiene practice (non-brushing, brushing, and flossing), and oral conditions was evaluated. Oral mucosal lesions were diagnosed in accordance with the WHO Guideline.<sup>9</sup> Lesions suggested as premalignant lesions, cysts, benign tumors, and malignant tumors were confirmed with histopathological examination. Statistical analysis was performed using Statistical Package for the Social Sciences version 17.0 for Windows (SPSS Inc., Chicago, IL, USA). Data were analyzed using Pearson's Chi-square and Fisher's exact test with the significant level at  $p < 0.05$ .

## **RESULTS**

Table 1 shows the demographic characteristic of the patients. All patients were Thai consisting of 142 men (47.3%) and 158 women (52.7%). Their age ranged between 60 and 85 years with an average of  $66.1 \pm 5.4$  years. The highest prevalent age group was 60–69 years old. Statistical analysis showed that men had a significantly higher prevalence of smoking and drinking than women ( $p < 0.001$ ). With regard to betel nut chewing, oral hygiene practices, and oral health problems, no significant differences were found between men and women.

Table 2 shows the distribution of medical conditions in relation to gender. Two third of the patients (66.3%) had a history of systemic diseases, and women showed a higher prevalence of systemic diseases and medication use than men. The most common systemic diseases in descending order were hypertension (47.7%), dyslipidemia (23.7%), diabetes mellitus (15.3%), and heart disease (10.3%). Stroke showed significantly higher prevalence in men than women ( $p = 0.029$ ). With regard to medication use, 67.7% of the patients were taking medications, and

antiplatelet/anticoagulant drugs were significantly more prevalent in men than women ( $p = 0.013$ ).

Table 3 shows the distribution of medical conditions in relation to two age groups (60–69 and  $\geq 70$  years old). Kidney disease was significantly more common in the  $\geq 70$ -year-old patients than in the 60–69-year-old patients ( $p = 0.039$ ). Medication use was not significantly different between the two age groups.

Table 4 shows the distribution of oral diseases in relation to gender. The most prevalent oral disease was tooth loss, followed by periodontal diseases and tooth wear. Tooth wear, uncomplicated crown fracture, and impacted tooth were significantly more common in men than women ( $p = 0.006$ ,  $p = 0.002$  and  $p = 0.049$ , respectively).

Table 5 shows the distribution of oral diseases in relation to the two age groups. Faulty restoration was significantly more prevalent in the 60–69-year-old patients than in the  $\geq 70$ -year-old patients ( $p = 0.001$ ). By contrast, the  $\geq 70$ -year-old patients had higher incidence of improper denture than the 60–69-year-old patients ( $p = 0.003$ ).

Oral mucosal lesions were found in 23.7%. The most common oral mucosal lesions in descending order were traumatic ulcer, frictional keratosis, angular cheilitis, denture stomatitis, fibroma, and pseudomembranous candidiasis (Figure 1).

## **DISCUSSION**

The aging population has expanded continuously worldwide because of the improved medical care and technological advancements in the healthcare system. The rapid growth of this population comes with a number of difficulties in terms of general and oral health.<sup>10</sup> The present study obtained information about the general and oral diseases in a group of elderly Thai dental patients in the lower northern region of Thailand. Results showed that the majority of the patients were female, which was similar to studies performed in Bangkok<sup>11</sup>, Delhi<sup>12</sup>, and Carlos Barbosa.<sup>13</sup> This finding may be explained by the fact that females have a more positive health-seeking behavior or health awareness than males.<sup>12</sup> The highest prevalence age group was 60–69 years old (77.0%) possibly because this age group can have self-access to dental services and had more favorable attitudes toward dental care than the older age group.<sup>14</sup> The prevalence of non-smokers (91.7%), non-drinkers (81.7%), and non-betel nut chewers (98.7%) was in accordance with studies in Brazil<sup>13</sup>, Poland<sup>15</sup>, and the United States.<sup>16</sup> However, this finding was lower than that found in the Thai questionnaire used to evaluate the smoking and drinking behaviors of Thai patients aged 50 years old and above.<sup>17</sup> With

**Table 1.** Demographic characteristic of elderly dental patients in the Lower Northern Thailand

Variable	Total n (%)	Male n (%)	Female n (%)	p-value
Sample	300 (100.0)	142 (47.3)	158 (52.7)	
Age (years old)				0.926
60–69	231 (77.0)	109 (36.3)	122 (40.7)	
≥ 70	69 (23.0)	33 (11.0)	36 (12.0)	
Oral habit				
Smoking*	28 (9.3)	26 (8.7)	2 (0.7)	<b>&lt; 0.001</b>
Drinking*	58 (19.3)	52 (17.3)	6 (2.0)	<b>&lt; 0.001</b>
Betel nut chewing	4 (1.3)	0 (0.0)	4 (1.3)	0.125
Clenching	8 (2.7)	6 (2.0)	2 (0.7)	0.155
Bruxism	18 (6.0)	10 (3.3)	8 (2.7)	0.471
Oral hygiene practice				
No brushing	18 (6.0)	6 (2.0)	12 (4.0)	0.220
Tooth brushing	282 (94.0)	136 (45.3)	146 (48.7)	0.220
Flossing	50 (16.7)	20 (6.7)	30 (10.0)	0.255
Oral health problem				0.819
No problem	33 (11.0)	15 (5.0)	18 (6.0)	
Have a problem	267 (89.0)	127 (42.3)	140 (46.7)	

\* Chi-square test was used. Bold values represent statistically significant differences.

**Table 2.** Medical conditions in relation to gender in elderly dental patients in the Lower Northern Thailand

Medical condition	Total n = 300 n (%)	Male n = 142 n (%)	Female n = 158 n (%)	p-value
Systemic disease	199 (66.3)	91 (64.1)	108 (68.4)	0.435
Blood dyscrasia	6 (2.0)	4 (2.8)	2 (1.3)	0.427
Bone and joint diseases	25 (8.3)	13 (9.2)	12 (7.6)	0.625
Diabetes mellitus	46 (15.3)	22 (15.5)	24 (15.2)	0.942
Dyslipidemia	71 (23.7)	32 (22.5)	39 (24.7)	0.662
Epilepsy	6 (2.0)	5 (3.5)	1 (0.6)	0.105
Eye diseases	5 (1.7)	4 (2.8)	1 (0.6)	0.193
Heart diseases	31 (10.3)	19 (13.4)	12 (7.6)	0.100
Hypertension	143 (47.7)	62 (43.7)	81 (51.3)	0.188
Kidney diseases	4 (1.3)	1 (0.7)	3 (1.9)	0.625
Liver diseases	7 (2.4)	5 (3.5)	2 (1.3)	0.262
Lung diseases	11 (3.7)	7 (4.9)	4 (2.5)	0.270
Stroke**	8 (2.7)	7 (4.9)	1 (0.6)	<b>0.029</b>
Thyroid diseases	7 (2.4)	1 (0.7)	6 (3.8)	0.124
Any other	23 (7.7)	10 (7.0)	13 (8.2)	0.700
Use of medications	203 (67.7)	93 (65.5)	110 (69.6)	0.445
Use of antiplatelet/anticoagulant drugs*	45 (15.0)	29 (20.4)	16 (10.1)	<b>0.013</b>
Prosthetic implants	7 (2.3)	3 (2.1)	4 (2.5)	1.000
Allergy	46 (15.4)	23 (16.2)	23 (14.6)	0.694

\* Chi-square test was used, \*\* Fisher's exact test was used. Bold values represent statistically significant differences.

**Table 3.** Medical conditions in relation to age in elderly dental patients in the Lower Northern Thailand

Medical condition	Total n = 300 n (%)	60–69 years n = 231 n (%)	≥ 70 years n = 69 n (%)	p-value
Systemic disease	199 (66.3)	150 (64.9)	49 (71.0)	0.348
Blood dyscrasia	6 (2.0)	3 (1.3)	3 (4.3)	0.137
Bone and joint diseases	25 (8.3)	16 (6.9)	9 (13.0)	0.107
Diabetes mellitus	46 (15.3)	36 (15.6)	10 (14.5)	0.825
Dyslipidemia	71 (23.7)	58 (25.1)	13 (18.8)	0.282
Epilepsy	6 (2.0)	4 (1.7)	2 (2.9)	0.624
Eye diseases	5 (1.7)	3 (1.3)	2 (2.9)	0.325
Heart diseases	31 (10.3)	20 (8.7)	11 (5.9)	0.081
Hypertension	143 (47.7)	106 (45.9)	37 (53.6)	0.259
Kidney diseases*	4 (1.3)	1 (0.4)	3 (4.3)	<b>0.039</b>
Liver diseases	7 (2.4)	7 (3.0)	0 (0.0)	0.358
Lung diseases	11 (3.7)	8 (3.5)	3 (4.3)	0.720
Stroke	8 (2.7)	7 (3.0)	1 (1.4)	0.687
Thyroid diseases	7 (2.4)	6 (1.7)	1 (1.4)	1.000
Any other	23 (7.7)	16 (6.9)	7 (10.1)	0.378
Use of medications	203 (67.7)	152 (65.8)	51 (73.9)	0.206
Use of antiplatelet/anticoagulant drugs	45 (15.0)	33 (14.3)	12 (17.4)	0.526
Prosthetic implants	7 (2.3)	4 (1.7)	3 (4.3)	0.201
Allergy	46 (15.4)	33 (14.3)	13 (18.8)	0.357

\* Fisher's exact test was used. Bold values represent statistically significant differences.

**Table 4.** Oral diseases in relation to gender in elderly dental patients in the Lower Northern Thailand

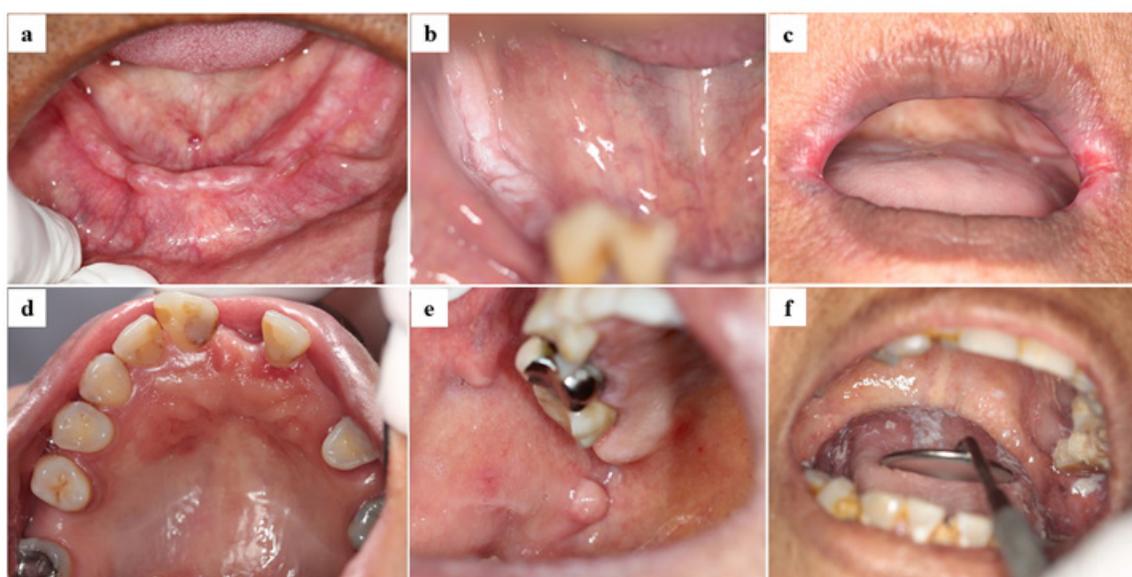
Oral disease	Total n = 300 n (%)	Male n = 142 n (%)	Female n = 158 n (%)	p-value
Dental caries	196 (65.3)	93 (65.5)	103 (65.2)	0.956
Faulty restoration	116 (38.7)	54 (38.0)	62 (39.2)	0.830
Tooth wear*	198 (66.0)	105 (73.9)	93 (58.9)	<b>0.006</b>
Uncomplicated crown fracture*	42 (14.0)	29 (20.4)	13 (8.2)	<b>0.002</b>
Pulp diseases	162 (54.0)	84 (59.2)	78 (49.4)	0.089
Impacted tooth**	4 (1.3)	4 (2.8)	0 (0.0)	<b>0.049</b>
Periodontal diseases	240 (80.0)	120 (84.5)	120 (75.9)	0.064
Loss of teeth	263 (87.7)	122 (85.9)	141 (89.2)	0.382
Improper denture	65 (21.7)	26 (18.3)	39 (24.7)	0.181
Oral mucosal lesions	71 (23.7)	38 (26.8)	33 (20.9)	0.232
Temporomandibular disorder	5 (1.6)	1 (0.7)	4 (2.5)	0.374
Orofacial pain	5 (1.6)	1 (0.7)	4 (2.5)	0.374

\* Chi-square test was used, \*\* Fisher's exact test was used. Bold values represent statistically significant differences.

**Table 5.** Oral diseases in relation to age in elderly dental patients in the Lower Northern Thailand

Oral disease	Total n = 300 n (%)	60–69 years n = 231 n (%)	≥ 70 years n = 69 n (%)	p-value
Dental caries	196 (65.3)	156 (67.5)	40 (58.0)	0.143
Faulty restoration*	116 (38.7)	101 (43.7)	15 (21.7)	<b>0.001</b>
Tooth wear	198 (66.0)	159 (68.8)	39 (52.2)	0.293
Uncomplicated crown fracture	42 (14.0)	35 (15.2)	7 (10.1)	0.058
Pulp diseases	162 (54.0)	124 (53.7)	38 (55.1)	0.839
Impacted tooth	4 (1.3)	3 (1.3)	1 (1.4)	1.000
Periodontal diseases	240 (80.0)	190 (82.3)	50 (72.5)	0.075
Loss of teeth	263 (87.7)	199 (86.1)	64 (92.8)	0.143
Improper denture**	65 (21.7)	41 (17.7)	24 (34.8)	<b>0.003</b>
Oral mucosal lesions	71 (23.7)	52 (22.5)	19 (27.5)	0.389
Temporomandibular disorder	5 (1.6)	3 (1.3)	2 (2.9)	0.325
Orofacial pain	5 (1.6)	2 (0.9)	3 (4.3)	0.082

\* Chi-square test was used. Bold values represent statistically significant differences.



**Figure 1.** Oral mucosal lesions found in older dental patients. (a) Traumatic ulcer, (b) Frictional keratosis, (c) Angular cheilitis, (d) Denture stomatitis, (e) Fibroma, and (f) Pseudomembranous candidiasis.

regard to oral hygiene practices, 94% reported tooth brushing, 16.7% reported flossing, and 6% did not brush because of complete edentulism. The prevalence of tooth brushing was higher in the present study than in the study by Chahar et al.<sup>12</sup>, whereas the prevalence of flossing was lower in the present study than in the study by Furuta et al.<sup>18</sup> Eighty-nine percent of the patients had oral health problems, and this result was in accordance with a study conducted in India.<sup>12</sup>

Similar results were obtained in the distribution of systemic diseases.<sup>1,11,16,19</sup> Hypertension, dyslipidemia,

and diabetes mellitus were the three most common systemic diseases in dental patients ≥ 60 years of age. In addition, stroke was significantly more common in men than women, whereas thyroid diseases were more frequent in women than men.<sup>11</sup> Gastroesophageal reflux disease, gastritis, benign prostatic hyperplasia, cancers, and depression were also found in this study. Approximately two third of the patients (67.7%) reported taking medications with no significant difference between men and women. Antiplatelet and anticoagulant drugs (i.e., aspirin, clopidogrel, aggrenox, and warfarin) were significantly higher in men than women ( $p = 0.013$ ).

Patients with a history of drug allergy were 15.4%, and most of the drug-related reactions were to penicillin and sulfonamide groups. Surveys indicate a high prevalence rate of medical conditions in the elderly, and age appears to be a significant factor.<sup>11</sup> However, the prevalence of medical conditions may differ from one to another because of variation in study design and population. For example, a study conducted in Japanese elderly showed a 64.2% prevalence of medical conditions<sup>20</sup>, whereas the present study and a study in Bangkok revealed 66.3% and 82.5%<sup>11</sup>, respectively. In the present study, medication use was not significantly different between the two age groups. This finding was in contrast to the previous study.<sup>11</sup> Interestingly, medication use was more frequently found in the 60–69-year-old patients than in the patients 70 years old and above (73.9% vs. 65.8%). Nevertheless, medical conditions are highly common in the elderly. Therefore, complete medical history and dental examination are necessary in the elderly who receive medication for their systemic diseases. Dental professionals need to be aware of the medical problems, nature, and side effects of the medications. Appropriate management can be modified based on clinical and medical information.<sup>5,6</sup>

In this study, the most prevalent oral diseases were tooth loss (87.7%), followed by periodontal diseases (80%), tooth wear (66%), dental caries (65.3%), and pulp diseases (54%). These findings were in accordance with previous studies<sup>21-23</sup>, and tooth loss was the most common dental problem among the elderly.<sup>15,24,25</sup>

Oral cancer was not found in this group of patients. The prevalence of oral mucosal lesions in older adults are varied among studies.<sup>9,26</sup> This finding may possibly be due to the different groups of patients. In this study, temporomandibular disorder and orofacial pain (trigeminal neuralgia and burning mouth syndrome) were found predominantly in female and in 1.6% of the patients. With regard to age, tooth loss, oral mucosal lesions, temporomandibular disorder, and orofacial pain were more frequently found in the patients 70 years old and above than in the 60–69-year-old patients but with no significant difference.

This study exhibits the inherent limitations of retrospective cross-sectional studies, such as the inability to demonstrate causality between medical conditions and oral diseases and the lack of information about the socioeconomic status of the included sample. The retrospective design enabled us to use self-reported measures for the examined medical conditions, but laboratory or physical examinations were not possible.<sup>13</sup> Furthermore, this study was carried out on a small number of populations; thus, generalizability cannot be guaranteed. Further studies should be performed on a large scale to generalize the findings.

## CONCLUSION

This study obtained information about the medical conditions and oral diseases in a group of older Thai dental patients in the lower northern region of Thailand. Two third of the patients had a history of systemic diseases, and hypertension was the predominant one. Compared with women, men had a significantly higher prevalence of smoking, drinking, stroke, and taking antiplatelet/anticoagulant drugs. The most prevalent oral disease was tooth loss, followed by periodontal diseases, tooth wear, and dental caries. This study can serve as a guide in the health promotion and disease prevention for the elderly in lower northern Thailand.

## CONFLICT OF INTEREST

The author declared no potential conflict of interest.

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