

## Treatment Needs of Thai Dental Patients Aged 55 Years and Older

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### Abstract

This study aimed to investigate the prevalence of medical conditions and dental treatment needs in Thai dental patients aged 55 years and older.

Four hundred thirty-eight records of patients aged 55 years and older were reviewed. They were Thai, consisting of 210 males (47.94%) and 228 females (52.06%) with an average age of  $63.3 \pm 6.1$  (ranging from 55 to 85) years old. Two-thirds of patients had a history of medication use; hypertension (44.75%) was the predominant systemic disease and significantly more common in the 55-64 years patients. Cerebrovascular diseases, benign and malignancies showed significantly higher prevalence in men than women. Thyroid diseases were significantly more prevalent in women than men. Eighty-nine percent of the patients had oral health problems. The most prevalent dental treatment needs were tooth replacement (92.69%), followed by periodontal treatment (89.95%), fillings (82.42%), and extractions (47.72%). Fillings and extractions were significantly higher in men than women, whereas tooth replacement was significantly more prevalent in women than men.

Periodontal treatment, fillings, and oral mucosal lesions treatment were significantly higher in the 55-64 years patients. The present study provides medical conditions and dental treatment needs in Thai dental patients aged 55 and older in lower northern Thailand.

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### Introduction

Oral diseases such as dental caries, periodontal diseases, and tooth loss affect many people worldwide.<sup>1,2</sup> Also, oral diseases are associated with various medical conditions.<sup>3,4</sup> The aging population has expanded globally because of improved medical care and technological advancements in the healthcare system. With the increase of the aging population, older people have physical restrictions, several chronic medical conditions, require medication, increased frailty, and higher vulnerability to stressors, increasing the risk of oral diseases.<sup>4</sup> Similarly, poor oral health increases the risk of other medical conditions.<sup>5</sup>

Abounding reports showed that the prevalence of medical conditions and oral diseases increases in the older person, which affects the quality of life and general health, causes pain, results in poor nutrition, and worsens chronic conditions in elderly patients.<sup>6-8</sup> The older population's rapid growth comes with several general and oral health difficulties.<sup>9</sup>

There is an essential need for further research and evidence-based knowledge within geriatrics and other fields related to surveillance and improvement of the oral health of older people. Previous reports from Thailand examining the data about medical conditions, oral diseases, and dental treatment needs have primarily focused on older people.<sup>10-16</sup> Other relevant populations, pre-elderly adults, are vulnerable and face increasing medical and oral diseases.<sup>2-4</sup> The pre-elderly person will be entered into the older person in the coming time. However, the prevalence of medical conditions and oral health care needs in Thai pre-elderly and elderly dental patients is limited. Therefore,

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the present study's objectives were to investigate the medical conditions and dental treatment needs of Thai patients aged 55 and older in Thailand's lower northern region.

### Materials and methods

The University Institutional Review Board approved the study protocol (IRB-COA No. 206/2019). The patients archived at the Oral Diagnosis and Oral Medicine Clinic, Dental Hospital during the 2013-2018 period were retrospectively reviewed for the complete dental examination of patients. The inclusion criteria were a full dental record of the oral examination of patients aged 55 years and older. In contrast, the incomplete dental form was excluded from the study. A total of 438 medical and dental records were investigated. Patient data regarding age, gender, allergy, systemic diseases, medication uses, oral habits (tobacco and alcohol consumption and betel nut chewing), oral hygiene practice (non-brushing, brushing, and flossing), and dental treatment needs were evaluated. Statistical analysis was performed using SPSS (version 17; SPSS Inc., Chicago, IL, USA). Data were analyzed by Pearson's Chi-square and Fisher's exact test with a significant  $P < 0.05$ .

### Results

Variables	Total n = 438 n (%)	Male n = 210 n (%)	Female n = 228 n (%)	55-64 years n = 284 n (%)	≥ 65 years n = 154 n (%)
Age (years old)					
55-64	284 (64.84)	135 (30.82)	149 (34.02)	284 (64.84)	0 (0)
≥ 65	154 (35.16)	75 (17.12)	79 (18.04)	0 (0)	154 (35.16)
Oral habits					
Smoking	38 (8.67)	34 (7.76)	4 (0.91)	24 (5.48)	14 (3.19)
Drinking	83 (18.95)	73 (16.67)	10 (2.28)	51 (11.64)	32 (7.31)
Betel nut chewing	4 (0.91)	0 (0)	4 (0.91)	1 (0.23)	3 (0.68)
Oral hygiene practice					
No brushing	21 (4.79)	6 (1.37)	15 (3.42)	8 (1.82)	13 (2.97)
Tooth brushing	417 (95.2)	204 (46.57)	213 (48.63)	276 (63.01)	141 (32.19)
Flossing	73 (16.67)	32 (7.31)	41 (9.36)	52 (11.87)	21 (4.8)
Oral health problems					
No problem	48 (10.96)	22 (5.02)	26 (5.94)	33 (7.54)	15 (3.42)
Have a problem	390 (89.04)	188 (42.92)	202 (46.12)	251 (57.3)	139 (31.74)

**Table 1.** Demographic characteristics of the patients.

Table 1 shows the demographic characteristics of patients. They were Thai, consisting of 210 men (47.95%) and 228 women (52.05%). Their age ranged from 55 to 85, with an average age of  $63.3 \pm 6.1$  years old. This study classified the patients into two age groups: 55-64 years and  $\geq 65$  years. The highest prevalent age group was 55-64 (64.84%).

Statistical analysis revealed that men had a significantly higher prevalence of smoking and drinking than women ( $P < 0.001$ ).

Medical conditions	Total n = 438 n (%)	Male n = 210 n (%)	Female n = 228 n (%)	P-value
Allergy	67 (15.29)	31 (7.07)	36 (8.22)	0.765
Blood disorders	8 (1.82)	4 (0.91)	4 (0.91)	1.000
Bone and joint disorders	32 (7.3)	17 (3.88)	15 (3.42)	0.542
Cardiovascular diseases	39 (8.9)	24 (11.4)	15 (3.42)	0.075
Cerebrovascular diseases	8 (1.82)	7 (1.6)	1 (0.23)	<b>0.031</b>
Diabetes mellitus	58 (13.24)	28 (13.3)	30 (13.2)	0.957
Dyslipidemia	88 (20.09)	40 (19.0)	48 (21.1)	0.601
Eye and ear problems	6 (1.37)	4 (0.91)	2 (0.46)	0.433
Gastrointestinal disorders	10 (2.28)	3 (0.68)	7 (1.6)	0.342
Hypertension	196 (44.75)	85 (19.41)	111 (25.34)	0.084
Liver diseases	9 (2.05)	6 (1.37)	3 (0.68)	0.322
Neuromuscular diseases	2 (0.46)	0 (0)	2 (0.46)	0.500
Psychogenic disorders	3 (0.68)	1 (0.23)	2 (0.46)	1.000
Renal diseases	8 (1.82)	4 (0.91)	4 (0.91)	1.000
Respiratory diseases	12 (2.74)	8 (3.8)	4 (0.91)	0.188
Thyroid diseases	10 (2.28)	1 (0.23)	9 (2.05)	<b>0.021</b>
Benign and malignancies	12 (2.74)	11 (2.51)	1 (0.23)	<b>0.002</b>
Any other	5 (1.14)	1 (0.23)	4 (0.91)	0.374
Use of medications	281 (64.15)	132 (30.13)	149 (34.02)	<b>0.587</b>
Use of antiplatelet/ anticoagulant drugs	61 (13.92)	36 (8.22)	25 (5.7)	0.062
Prosthetic implants	8 (1.82)	4 (0.91)	4 (0.91)	1.000

**Table 2.** Medical conditions concerning gender.

Table 2 shows the distribution of medical conditions with gender. Two-thirds of patients (64.15%) had a history of medication use, and women showed a higher prevalence of medication use than men. The most common systemic diseases in descending order were hypertension (44.75%), dyslipidemia (20.09%), diabetes mellitus (13.24%), and cardiovascular diseases (8.9%). Cerebrovascular diseases, benign and malignancies showed a significantly higher prevalence in men than women ( $P = 0.031$  and  $P = 0.002$ , respectively). Thyroid diseases were significantly more prevalent in women than men ( $P = 0.021$ ).

Medical conditions	Total n = 438 n (%)	55-64 years n = 284 n (%)	≥ 65 years n = 154 n (%)	P-value
Allergy	67 (15.29)	39 (8.9)	28 (6.39)	0.217
Blood disorders	8 (1.82)	4 (0.91)	4 (0.91)	0.460
Bone and joint disorders	32 (7.3)	15 (3.42)	17 (3.88)	<b>0.027</b>
Cardiovascular diseases	39 (8.9)	15 (3.42)	24 (5.48)	<b>&lt; 0.001</b>
Cerebrovascular diseases	8 (1.82)	3 (0.68)	5 (1.14)	0.136
Diabetes mellitus	58 (13.24)	35 (7.99)	23 (5.25)	0.441
Dyslipidemia	88 (20.09)	55 (12.56)	33 (7.53)	0.607
Eye and ear problems	6 (1.37)	3 (0.68)	3 (0.68)	0.429
Gastrointestinal disorders	10 (2.28)	6 (1.37)	4 (0.91)	0.746
Hypertension	196 (44.75)	115 (26.26)	81 (18.49)	<b>0.015</b>
Liver diseases	9 (2.05)	6 (1.37)	3 (0.68)	1.000
Neuromuscular diseases	2 (0.46)	1 (0.23)	1 (0.23)	1.000
Psychogenic disorders	3 (0.68)	3 (0.68)	0 (0)	0.555
Renal diseases	8 (1.82)	4 (0.91)	4 (0.91)	0.460
Respiratory diseases	12 (2.74)	5 (1.14)	7 (1.6)	0.123
Thyroid diseases	10 (2.28)	8 (1.82)	2 (0.46)	0.505
Benign and malignancies	12 (2.74)	5 (1.14)	7 (1.6)	0.123
Any other	5 (1.14)	3 (0.68)	2 (0.46)	1.000
Use of medications	281 (64.15)	172 (39.27)	109 (24.88)	<b>0.033</b>
Use of antiplatelet/ anticoagulant drugs	61 (13.92)	34 (7.76)	27 (6.16)	0.109
Prosthetic implants	8 (1.82)	3 (0.68)	5 (1.14)	0.136

**Table 3.** Medical conditions concerning age.

Table 3 shows the distribution of medical conditions in two age groups. Bone and joint disorders and cardiovascular diseases were significantly more common in patients  $\geq 65$  years than in 55-64 years ( $P = 0.027$  and  $P < 0.001$ , respectively). Hypertension was significantly more common in 55-64 years patients than  $\geq 65$  years patients ( $P = 0.015$ ). Medication use had a significantly higher prevalence in 55-64 years patients ( $P = 0.033$ ).

Dental treatment needs	Total n = 438 n (%)	Male n = 210 n (%)	Female n = 228 n (%)	P-value
Periodontal treatment	394 (89.95)	195 (44.52)	199 (45.43)	0.052
Fillings	361 (82.42)	183 (41.78)	178 (40.64)	<b>0.013</b>
Endodontic treatment	81 (18.49)	39 (8.9)	42 (9.59)	0.968
Extractions	209 (47.72)	116 (26.49)	93 (21.23)	<b>0.009</b>
Tooth replacement	406 (92.69)	188 (42.92)	218 (49.77)	<b>0.014</b>
Treatment of OML	71 (16.21)	31 (7.08)	40 (9.13)	0.430
Treatment of TMD	7 (1.6)	1 (0.23)	6 (1.37)	0.124
Treatment of orofacial pain	5 (1.14)	1 (0.23)	4 (0.91)	0.374

**Table 4.** Dental treatment needs concerning gender.

OML, oral mucosal lesions; TMD, temporomandibular disorders.

Table 4 shows the distribution of dental treatment needs with gender. The most prevalent dental treatment needs were tooth replacement, periodontal treatment, and fillings. Fillings and extractions were significantly higher in prevalence in men than in women ( $P = 0.013$  and  $P = 0.009$ , respectively). Tooth replacement was significantly more prevalent in women than men ( $P = 0.014$ ).

Dental treatment needs	Total n = 438 n (%)	55-64 years n = 284 n (%)	$\geq 65$ years n = 154 n (%)	P-value
Periodontal treatment	394 (89.95)	269 (61.41)	125 (28.54)	<b>&lt; 0.001</b>
Fillings	361 (82.42)	253 (57.76)	108 (24.66)	<b>&lt; 0.001</b>
Endodontic treatment	81 (18.49)	53 (12.1)	28 (6.39)	0.902
Extractions	209 (47.72)	133 (30.37)	76 (17.35)	0.385
Tooth replacement	406 (92.69)	260 (59.36)	146 (33.33)	0.211
Treatment of OML	71 (16.21)	37 (8.45)	34 (7.76)	<b>0.014</b>
Treatment of TMD	7 (1.6)	4 (0.92)	3 (0.68)	0.701
Treatment of orofacial pain	5 (1.14)	2 (0.46)	3 (0.68)	0.350

**Table 5.** Dental treatment needs concerning age.

OML, oral mucosal lesions; TMD, temporomandibular disorders.

Table 5 shows the distribution of dental treatment needs in two age groups. Periodontal treatment, fillings, and treatment of oral mucosal lesions were significantly higher in prevalence in 55-64 years patients than in  $\geq 65$  years patients ( $P < 0.001$ ,  $P < 0.001$ , and  $P < 0.014$ , respectively).

## Discussion

Oral health is the general health sector and contributes to physical, psychological, and social well-being. The present study obtained medical conditions and dental treatment needs in pre-elderly and elderly Thai dental patients in Thailand's lower northern region. Results showed that the patients' preponderance was female, identical to Delhi<sup>17</sup> and Chile<sup>18,19</sup> studies. This finding may be disclosed by females having more positive health-seeking behavior or health awareness than males. The highest prevalence age group was the 55-64 years group, possibly because this age group can access oral care services and had more favorable attitudes toward oral care than the older age group.<sup>20</sup>

The prevalence of non-smokers (91.33%), non-drinkers (81.05%), and non-betel nut chewers (99.09%) were similar to studies in Poland<sup>21</sup> and the United States.<sup>22</sup> The smoking prevalence (8.67%) in this study was lower than in elderly Chileans in southern Chile (37.3%).<sup>18</sup> Nonetheless, this result was lower than the Thai questionnaire used to evaluate Thai patients' smoking and drinking behaviors aged 50 years and above.<sup>16</sup> Regarding oral hygiene practices, tooth brushing prevalence was higher in the present study than in the report from Delhi.<sup>17</sup> In contrast, the prevalence of flossing was lower in the present study than in Japanese dental patients.<sup>23</sup> Almost 90% of the patients had oral health problems, which agreed with an analysis performed in Delhi.<sup>17</sup>

The chronic diseases causing death worldwide are cardiovascular disease, diabetes, cancer, and respiratory disease. Substantial evidence demonstrates an association between oral conditions and each of these diseases. Complementary results were obtained in the distribution of systemic diseases.<sup>24, 25</sup> The present study found hypertension, dyslipidemia, diabetes mellitus, and cardiovascular diseases were common systemic diseases in pre-elderly and elderly dental patients. Cerebrovascular diseases, benign and malignancies were significantly more common in men than women. In contrast, thyroid diseases were more common in women than men. Bone and joint disorders and cardiovascular diseases were significantly more common in  $\geq 65$  years than 55-64 years. In contrast, hypertension was significantly more

common in 55-64 years patients than in  $\geq 65$  years patients.

Approximately two-thirds of the patients (64.15%) reported medication use with no significant difference between men and women, but the prevalence was significantly higher in 55-64 years of patients. Drug allergy was found in 15.29% of patients, and most of the drug-related reactions were to penicillin and sulfonamide groups. Dental patients may present with various medical conditions. Therefore, a complete medical history and physical examination are necessary for the elderly who receive medication for their systemic diseases. Healthcare professionals require mindful medical conditions, medication descriptions, and side effects. Appropriate patient management can be modified based on clinical and medical information.<sup>26</sup>

The geriatric population's oral health status is generally deficient, with an elevated prevalence of caries, periodontal disease, and tooth loss. These conditions are causing mastication difficulties, chronic disease destabilization, and impaired oral quality of life. In addition, the study demonstrated that psychological factors influence the development of oral diseases such as tooth decay or periodontitis and appear as consequences of tooth loss.<sup>27</sup> Therefore, control and improvement of the oral health of older people should be a vital purpose of the multidisciplinary team responsible for their care, incorporating healthcare professionals and caregivers.

The present study found that 57.3% of the patients aged 55-64 years and 31.74% of those aged  $\geq 65$  years have at least one clinically determined treatment need. This study's most prevalent dental treatment needs were tooth replacement, periodontal treatment, and fillings. These findings were following previous studies on Mexican elders.<sup>28,29</sup> Tooth replacement was a significantly higher prevalence in women than men. Periodontal treatment, fillings, and treatment of oral mucosal lesions had significantly higher prevalence in 55-64 years patients than in  $\geq 65$  years patients. Regarding oral mucosal lesions in this study, traumatic ulcer and denture stomatitis were most prevalent, consistent with the previous survey in the Chilean elderly.<sup>30</sup> Treatment of temporomandibular disorders (TMD) was found in only 1.6% of patients. However, a prior study in elderly adults in Mexico City demonstrated that TMD occurred

in one of every three subjects surveyed, showing a relationship between age and trauma history.<sup>31</sup>

However, the present study has the limitations of retrospective cross-sectional studies, such as the inability to demonstrate causality between medical conditions and oral health care needs and the need for more information about the included sample's socioeconomic status. In addition, this study was performed on a small number of populations. Therefore, further studies should be conducted on a large-scale sample to generalize the results.

## Conclusions

This study revealed information about the medical conditions and dental treatment needs of a group of pre-elderly and elderly Thai dental patients in Thailand's lower northern region. Two-thirds of patients had a history of medication use; hypertension was the predominant systemic disease and significantly more common in the 55-64 years patients. Cerebrovascular diseases, benign and malignancies were markedly higher in prevalence in men than women. Thyroid diseases were significantly more common in women than men. Almost 90% of patients had oral health problems, and the most prevalent oral health care needs were tooth replacement followed by periodontal treatment and fillings. Fillings and extractions were significantly higher in men than women, whereas tooth replacement was significantly higher in women than men. Periodontal treatment, fillings, and oral mucosal lesions treatment were significantly higher in 55-64 years patients. This study can guide health promotion and disease prevention for pre-elderly and elderly groups.

## Declaration of Interest

The authors report no conflict of interest.

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