Original Article

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Association of religious and socio-cultural factors on dental service utilization among the elderly in Narathiwat, Thailand.

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Objective: The objective is to explore the association between religious and socio-cultural factors on dental service uses of elderly.

Materials and Methods: This observational study used retrospective dental treatment data from public dental health services in Narathiwat Province collected from July to December 2022 to identify eligible elderly patients. All of the elderly patients with an ADL Barthel score of 12 or higher were recruited to participate in the study. Then, face-to-face interviews were conducted using questionnaires adapted from Penchansky and Thomas's framework on health-service accessibility. The analysis included descriptive statistics and chi-square tests.

Results: A total of 106 elderly participated in the study. Most participants were female, aged 60-69, Muslims, and 47% had no formal education. Muslim-elderly-participants were more likely than Buddhists to report conflicts between dental procedures and religious principles. Additionally, 72.2% of Muslim elderly experienced difficulties in accessing services due to language barriers.

Conclusion: The study highlighted the significant association of socio-cultural factors on dental service utilization among the elderly in Thailand's southern border provinces. These findings emphasized the need for culturally sensitive public health policies, incorporating cultural awareness and language proficiency, to improve healthcare accessibility.

Keywords: aged, accessibility, barriers, dental, service utilizations, socio-cultural factors.

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Introduction

Thailand has been classified as an aging society since 2005 [1], with the elderly population steadily increasing and expected to grow further. As the overall population growth rate declines, essential facilities and services for the elderly may become necessary in various locations. Preparing health care for an aging society is important and challenging, particularly regarding the deteriorating health of the elderly over time. According to the 2021 Health and Welfare Survey [2], the dental utilization rate among the elderly (60 and older) was 7.3%, the lowest compared to the national average of 9.9% for all age groups. Oral and dental health care is crucial for maintaining the quality of life in old age. Studies by Nitschke *et al* [3], Spinler *et al* [4]

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indicate that dental utilization decreases with age among the elderly population, while the study from Soares *et al* [5] indicated that early elderly individuals have higher utilization rates.

Access to dental care services is a crucial factor for maintaining good oral health. Regular oral health care is essential for all age groups, and neglecting oral health can have long-term adverse effects. One of the dental public health challenges is access to dental services, despite efforts to expand service availability. Wongsasauluk and Srithong [6] found that the utilization of dental services among the elderly is relatively low representing only 5.4% in 2019 and 7.1% in 2021. The study [6] reported that long waiting lists and delayed treatments were factors affecting dental utilization among the elderly. The 9th National Dental Health Survey of Thailand 2023 [7] revealed that 66.2% of elderly individuals aged 60-74 had not utilized dental services in the past year, mainly due to not having reported any symptoms. Penchansky and Thomas [8] have proposed an evaluation framework for service accessibility, highlighting five dimensions: availability, accessibility, accommodation, acceptability, and affordability. A scoping review by Ghanbari-Jahromi M *et al* [9] identified five factors influencing dental service access among the elderly: access, demographic factors, social factors, health level, and mental factors and found that income, education level, living area, number of teeth, and importance of care had a great impact on utilization of dental services by the elderly. Herkrath *et al* [10] found that factors such as gender, skin color, educational level, and income influenced dental utilization in adults. Drachev *et al* [11] studied in the elderly aged 65-74 years and indicated that educational level influenced dental utilization.

In Thailand, the three southern border provinces, encompassing Yala, Pattani, and Narathiwat, are distinguished by their unique socio-cultural landscape. These provinces are home to a diverse population, marked by unique cultural, linguistic, and religious characteristics that significantly influence the region's healthcare dynamics. Islam is the predominant religion, and religious practices and beliefs play a crucial role in shaping healthcare-seeking behavior. For instance, Islamic principles regarding cleanliness (taharah) may raise concerns about sterilization practices in healthcare settings. Additionally, some elderly Muslims may worry that certain medical procedures, such as the use of anesthetics or medications, could conflict with religious observances, such as fasting. Gender segregation in healthcare also poses challenges, particularly for elderly female patients needing to interact with male dental professionals. One pressing concern within this context is the notably low dental utilization rate among elderly residents. For example, in Narathiwat province, the 2022 population statistics [12] reported a total population of 814,121, with 101,146 individuals aged 60 and above accounting for 12.42% of the population. However, only 3-6% of the patients aged 60 and above utilized dental services at Srisakorn Hospital between 2019 and 2021.

Research on dental service utilization in the three southern border provinces is particularly intriguing due to the multicultural social structure. The majority of the population practices Islam, speaks Melayu in daily life, and resides in a unique environment different from other regions of Thailand. According to Penchansky and Thomas [8], conceptualized the idea of access to health care as comprising five dimensions, known as the Five A's of access: availability, accessibility, accommodation, affordability, and acceptability. The Five A's of access concepts are particularly relevant to the southern border provinces. For example, while Muslim elderly

in the region primarily speak Melayu, most dentists in these areas mainly communicate in Thai. This significant language barrier often results in the patients not fully understanding dental procedures, treatment plans, and medical advice [13]. The language barrier also makes the patients reluctant to access dental care services. In addition, unrested situations in the southern border provinces might have an impact on accessibility which deals with the location of service and patient travel time, distance, and effort on dental service utilization. However, few studies on dental services utilization within these unique socio-cultural contexts were conducted due to unrest situations in the areas. Thus, this study aims to explore the relationship between religious and socio-cultural factors on dental service uses of the elderly in Si Sakhon district, Narathiwat, Thailand. The study findings could lead to a better understanding of the specific characteristics of the local population with unique socio-cultural contexts and improve the accessibility of dental service utilization among the elderly.

Materials and Methods

This study used retrospective data from elderly individuals who had visited public dental health services in Narathiwat Province from July to December 2022. Elderly participants were recruited based on the following inclusion criteria: 1) Thai nationals aged 60 years or older, 2) residents of Si Sakhon district, Narathiwat Province, as in-house registration, 3) having the Barthel ADL index with a score of 12 or above 4) willing to participate in an interview 4) receiving dental services from July to December 2022 at public dental health services in Si Sakhon, Narathiwat Province. The exclusion criteria included a diagnosis of dementia and unwillingness to participate in the study. The research instruments included a demographic questionnaire and a survey adapted from Penchansky and Thomas's framework on service accessibility, covering five dimensions of access to health care. Interviews were conducted at home or in the hospital by a Thai village health volunteer proficient in Melayu. Content validity was assessed from Indexes of Item-Objective Congruence (IOC) by 3 experts. IOC was determined to be 0.85. Additionally, the reliability of the questionnaire was evaluated through Cronbach's alpha, which resulted in a value of 0.752. Descriptive statistics such as percentages, means, and standard deviations were used for data analysis. The relationship between religious and socio-cultural factors on dental service uses of the elderly was examined using the chi-square test, with SPSS version 29. Statistical significance was set at a *p-value* of ≤0.05.

This study adhered to the Helsinki Declaration and all subjects gave informed consent. The study was approved by the Human Research Ethics Committee of Mahidol University, project number MU-MOU CoA 2023/023.0803.

Results

Of 106 elderly dental patients included in the study, 55.7% were female. Most participants, 60.4%, were aged between 60-69 years (early elderly). The youngest participant was 60 years old, and the oldest was 88 years old, with a median age of 65 years, an average age of 68 years, and a standard deviation of 6.8 years. Nearly three-quarters, 74.5%, practiced Islam, and an equal percentage were married. Additionally, it was found that 67% of the participants lived in households with 1-4 members. Nearly half, 47.2%, had no formal education, and 48.1% were retired and not engaged in any occupation. In terms of dental treatment history, 48.1% had recently received dentures, and 34% had tooth extractions, as detailed in Table 1.

Table 1 Demographic data among participants

Demographic data	Amount (n)	Percentage
Gender		
- Male	47	44.3
- Female	59	55.7
Age		
- 60-69	64	60.4
- 70 or more	42	39.6
Mean +/- S.D.	68 +/- 6.8	
Median (Minimum – Maximum)	65 (60 - 88)	
Religion		
- Islam	79	74.5
- Buddhist	27	25.5
Health Care Scheme		
- Universal coverage	94	88.7
- Civil servant medical benefits	11	10.4
- Other	1	0.9
Marital status		
- Single/Widowed/Divorced/Separated	27	25.5
- Married	79	74.5
Household members		
- 1-4 people	71	67
- 5-8 people	31	29.2
- More than 8	4	3.8
Educational level		
- No formal education	50	47.2
- Pondok school*	5	4.7
- Primary school	41	38.7
- Secondary school	8	7.5
- Bachelor or more	2	1.9
Occupation		
- Retirement	51	48.1
- Agriculturist	39	36.8
- Merchant	4	3.8
- Mullah**	1	0.9
- Employee	11	10.4

Table 1 Demographic data among participants (continued)

Demographic data	Amount (n)	Percentage
Recent dental treatment		
- Oral examination	11	10.4
- Filling	5	4.7
- Scaling	3	2.8
- Extraction	36	34.0
- Denture	51	48.1

*Pondok school is a traditional Islamic educational institution, commonly found in Southeast Asia, where students study religious subjects such as the Quran, Islamic law, and theology.

**Mullah is a religious leader in Islam, responsible for leading prayers, teaching Islamic theology and law, and providing guidance on religious matters within the Muslim community.

In terms of satisfaction with the quality of dental services, 79.7% of Muslim elderly and 63% of Buddhist elderly were satisfied, while 20.3% of Muslim elderly and 37% of Buddhist elderly reported being very satisfied. Regarding the quality of dental services provided by the facility in Si Sakhon district, 100% of elderly Muslim participants rated the quality as good. Nearly all elderly Buddhist participants (96.3%) also rated the quality as good. Confidence in the cleanliness of dental services was high among both groups, with 98.7% of Muslim elderly and 100% of Buddhist elderly expressing confidence. 57% of Muslim elderly and 59.3% of Buddhist elderly considered the dental facilities in Si Sakhon district to be insufficient. However, 83.5% of Muslim elderly and 77.8% of Buddhist elderly believed that the adequacy of dental providers in Si Sakhon district was adequate. All Muslim elderly (100%) and nearly all Buddhist elderly (96.3%) reported that accessing dental services was not difficult. Both groups agreed that there was readiness in providing dental services. Financial capability to afford dental services varied, with 83.5% of Muslim elderly and 40.7% of Buddhist elderly reporting an inability to afford dental services. 59.5% of Muslim elderly perceived religious discrepancies with dental practices, while only 14.8% of Buddhist elderly reported the same. Barriers to Thai language communication in dental services affected 72.2% of Muslim elderly and 11.1% of Buddhist elderly.

Significant differences in perspectives between the two groups were observed in their ability to afford dental services, perceptions of religious discrepancies in dental practices, and language barriers in accessing dental care, as detailed in Table 2.

Table 2 Association between religion and various perspectives on dental utilization among participants

Various perspectives on dental utilization	Muslim elderly	Buddhist elderly	*p*-value
The satisfaction with the quality of dental services			
- Satisfied	63(79.7%)	17(63.0%)	
- Very satisfied	16(20.3%)	10(37.0%)	0.080
Quality of dental services			
- Good	79(100.0%)	26(96.3%)	
- Not so good	0(0.0%)	1(3.7%)	0.086
Confidence in the cleanliness of dental services			
- Yes	78(98.7%)	27(100.0%)	
- No	1(1.3%)	0(0.0%)	0.557
Adequacy of dental facilities			
- No	34(57.0%)	16(59.3%)	
- Yes	45(43.0%)	11(40.7%)	0.145
Adequacy of dental providers			
- No	13(16.5%)	6(22.2%)	
- Yes	66(83.5%)	21(77.8%)	0.500
Difficulty in accessing dental services			
- No	79(100.0%)	26(96.3%)	
- Yes	0(0.0%)	1(3.7%)	0.086
Readiness in providing dental services			
- Yes	79(100.0%)	27(100.0%)	
- No	0(0.0%)	0(0.0%)	-
Financial capability to afford dental services			
- Able to afford	13(16.5%)	16(59.3%)	
- Unable to afford	66(83.5%)	11(40.7%)	**<0.001***
Perceptions of Religious Discrepancies in Dental Practices			
- Yes			
- No	47(59.5%)	4(14.8%)	
	32(40.5%)	23(85.2%)	**<0.001***
Barriers to Thai Language Communication in Dental Services			
- No			
- Yes	22(27.8%)	24(88.9%)	
	57(72.2%)	3(11.1%)	**<0.001***

**p*-values were calculated using the Chi-square test

Discussion

This study found that, in terms of general data, the distribution of gender within the participants was slightly higher for females (55.7%) compared to males (44.3%). Most of the participants were in the early elderly, with 60.4% aged between 60-69, and 39.6% in the middle to late elderly. These were consistent with previous studies [14, 15]. The majority of participants were in the early elderly group (60-69 years), which may influence the findings on dental service utilization. Early elderly individuals are generally more active, have fewer mobility issues, and may face fewer health challenges compared to the middle and late elderly groups. This could lead to a higher utilization rate among this group. The majority were married and unemployed, aligning with the findings of Subbowon [16]. Education appeared to be an interesting factor, as more than four-fifths of the participants had only up to primary education (85.9%), reflecting limited access to education in remote areas in the past. The majority of participants were Muslim (74.5%) but considering that about 90% of the population in Si Sakhon district, Narathiwat Province, practices Islam, and 10% practices Buddhism [17], while the 25.5% of participants were Buddhist which indicates higher access to dental services among Buddhists elderly.

Regarding the dimensions of access to dental service along with Penchansky and Thomas's framework, availability, the study results indicated diverging perceptions about the adequacy of dental facilities, with 57% of Muslim elderly and 59.3% of Buddhist elderly considering the dental facilities in Si Sakhon district to be insufficient. Despite this, a larger percentage believed that the availability of dental providers was adequate, with 83.5% of Muslim elderly and 77.8% of Buddhist elderly affirming this. This discrepancy highlighted a contrast between the perceived adequacy of dental facilities and the adequacy of personnel available to provide dental care, emphasizing the importance of having sufficient healthcare resources in the community. Although the availability of dental providers was deemed adequate by most participants, the perceived inadequacy of facilities suggests a gap in resource distribution, which could impact overall access to care. Accessibility was notably high, with all Muslim elderly (100%) and nearly all Buddhist elderly (96.3%) reporting no difficulty in accessing the services due to most of the elderly living near the service areas. Accommodation was agreed by both groups, with full agreement on the readiness of dental services (100%) and the participants expressed strong satisfaction with the preparedness and organization of dental services. This dimension evaluated how effectively the healthcare system was structured to meet the specific needs of patients. The findings suggested that dental services were well-organized to meet the needs of elderly patients, with service readiness and appointment availability aligning with the expectations of the community. Acceptability, in terms of service quality, was high, with 100% of Muslim elderly and 96.3% of Buddhist elderly rating the services positively, indicating strong confidence in the facilities. Regarding satisfaction, 79.7% of Muslim elderly and 63% of Buddhist elderly were fairly satisfied with the quality of dental services, demonstrating that both groups were generally satisfied despite there being only three dental service facilities in the area (two health promoting hospitals and one public hospital). The slightly lower satisfaction among Buddhist participants suggested potential differences in expectations or experiences, highlighting the need for ongoing attention to cultural competence

and personalized care to ensure broad acceptability across all groups. Affordability issues revealed significant financial barriers between the groups. A considerable portion of Muslim elderly (83.5%) reported being unable to afford dental services, compared to a smaller fraction (40.7%) of Buddhist elderly, underscoring economic challenges that were more pronounced in the Muslim group (p-value < 0.001). The observed differences in financial capacity between Muslim and Buddhist participants aligned with the affordability dimension, which was crucial in determining access to care. These economic hardships were more pronounced in the Muslim population, likely influenced by socio-economic factors such as lower-income occupations and limited educational attainment in Muslim communities in Narathiwat. These factors reduce earning potential and directly impact their ability to afford healthcare, highlighting the need for targeted interventions to reduce financial barriers and improve equitable access to dental services.

The study highlighted that in a multicultural society, religious practices significantly impact perceptions of dental service utilization. About 59.5% of Muslim elderly believed there were discrepancies between dental services and their religious principles, while only 14.8% of Buddhist elderly perceived such discrepancies (p<0.001). These differences might stem from religious beliefs related to healthcare, such as concerns about medical procedures aligning with Islamic principles. For example, during Ramadan, some dental procedures might result in the ingestion of water or other substances, which could violate fasting principles. Trust in healthcare providers and a lack of cultural sensitivity, particularly in a region where dental services were often delivered by non-Melayu-speaking professionals, may also contribute to these perceptions. Addressing these socio-cultural and religious factors was crucial for improving healthcare access and acceptability in the region. Language was also a significant barrier to access to dental services, with 72.2% of Muslim elderly experiencing difficulties with Thai language communication, compared to a small percentage (11.1%) of Buddhist elderly (p< 0.001). Effective communication between providers and patients is crucial for accessing dental services, as stated by Olerud *et al* [18] and Flores [19]. Training personnel who understand cultural awareness and local socio-cultural factors, including having interpreters or staff who can communicate in Melayu, is essential.

Our study had some limitations due to its retrospective nature, which may have introduced recall bias in the association between socio-cultural factors and accessibility. Therefore, longitudinal data are needed to understand how these accessibility and satisfaction outcomes changed over time for elderly dental patients through improved communication, improved understanding, trust, and connectedness between patients and providers. In addition, potential bias according to collecting data from only dental service users may occur. Although we did not examine the competencies and awareness of providers, this would not alter the key finding that the Muslim elderly had an increased risk of experiencing barriers to dental care.

In conclusion, elderly patients faced barriers to dental services worldwide, but these barriers were more severe in the southern part of Thailand, where healthcare resources were often very scarce at both the health system and patient levels. To our knowledge, this was the first study to examine socio-cultural factors and dental service utilization among the elderly in

the unrested southern border provinces, where the majority practiced Islam and spoke Melayu. The findings revealed significant associations between religious factors, perceptions of religious discrepancies in dental practices, and barriers related to Thai language communication in dental services. It was recommended that further qualitative research is needed to explore these issues more deeply, particularly to understand the nature of religious discrepancies and to develop targeted interventions that can mitigate these barriers and enhance service accessibility for all community members, especially in the southern border provinces where Islam is predominant and Melayu is widely spoken.

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