Original Article

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Ten Years of Thailand's Universal Coverage Experience: Strategies to Prevent Tooth Loss and Denture Service Access among Pre-elderly and Elderly

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Abstract:

Objective: This study aimed to compare the need for and access to prosthetic services, and to analyze the trends in delivering preventive interventions among the pre-elderly and elderly in Thailand.

Material and Methods: The population in this study was the pre-elderly (aged 40–59 years) and the elderly (aged 60 years and above) in Thailand. Dental service delivery for these populations focused on dentures and prosthetic needs. Primary preventive interventions included oral examination, toothbrushing, and fluoride application. Secondary data analysis was conducted. The time frame was 10 years, from 2014 to 2024.

Results: Between 2014 and 2024, partial denture (PD) coverage remained very low among the pre-elderly (<0.3%), despite stable need estimates of 13–14%, whereas complete denture (CD) need was negligible, although services were still provided. Among the elderly, PD need was high (43–45%), but coverage stayed below 0.6%, while CD need (2.7–3.4%) contrasted with service delivery, which peaked at over 60,000 cases in 2023 before declining in 2024. Preventive services showed marked expansion in oral examinations and assisted toothbrushing across both groups, while fluoride application remained persistently limited.

Conclusion: The findings highlight substantial unmet prosthetic and preventive dental needs, particularly among the pre-elderly.

Keywords: elderly, pre-elderly, prosthetic denture services, Thailand, universal health coverage

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Introduction

Dental prosthetics are critical for older adults because of their profound influence on oral health, nutrition, and quality of life[1]. Dentures restore masticatory function, reduce risks of chronic diseases through improved dietary intake, and maintain oral structures by preventing bone resorption[2–3]. They also support communication and social confidence, contributing to psychological well-being and independence in daily living[4–7]. As a cost-effective rehabilitation strategy, prosthetic treatment remains essential worldwide[8–10].

In Thailand, oral health care for aging populations has followed two complementary approaches: prevention and rehabilitation[11–12]. Preventive measures are delivered through national oral health promotion programs, including routine dental check-ups, supervised toothbrushing, fluoride varnish for high-risk groups[11], and public health campaigns such as the "Less Sweet" initiative[12]. On the rehabilitative side, the Royal Denture Project, initiated in 2003 under the patronage of Her Royal Highness Princess Maha Chakri Sirindhorn, scaled up access to free dentures nationwide between 2004 and 2010[13]. Since 2011, denture services have been formally integrated into the Universal Health Coverage (UHC) system, guaranteeing prosthetic care as a health benefit[14]. Together, these initiatives have expanded access to dental services, though challenges in coverage and equity remain[15].

Despite these policy advances, major evidence gaps persist. Existing studies largely examine short-term program outcomes or focus on single interventions[13,16], while long-horizon, nationally harmonized analyses are lacking. In particular, no study has jointly compared investment and access in preventive versus rehabilitative services across Thailand's aging population. Moreover, the COVID-19 pandemic disrupted service delivery, further underscoring the need for robust monitoring frameworks that capture both resilience and equity in oral health systems.

Therefore, this study aimed to compare the need for and access to prosthetic denture services, and also to analyze the trends in delivering preventive interventions among pre-elderly and elderly Thais during 2014–2024, addressing the knowledge gap with a decade-long, nationally integrated perspective.

Material and Methods

This study included the pre-elderly population (aged 40–59 years) and the elderly population (aged 60 years and above) in Thailand. Dental service delivery for pre-elderly and elderly focused on the provision of dentures and prosthetic needs. Primary preventive service delivery for these populations focused on the oral examination, tooth brushing, and fluoride application.

The data were based on the secondary data analysis. The source of data was divided into four parts: (1) the 7th, 8th, and 9th Thai National Oral Health Survey: the Bureau of Dental Health[17–19], (2) Health Data Center (HDC)[20], (3) the Denture and Oral Health Promotion and Prevention Projects[21], and (4) the Universal Coverage Information System (UC) developed by the National Health Security Office (NHSO)[14] (Table 1). The data analyzed in this study covered 10 years, from 2014 to 2024, except for data from the Denture and Oral Health Promotion and Prevention Projects[21], which were collected between 2018 and 2023.

Thai National Oral Health Survey: The Bureau of Dental Health conducts a nationwide oral health survey every five years. In this study, the data on service needs for partial denture (PD) and complete denture (CD) were derived from the 7th, 8th, and 9th National Oral Health Surveys[17–19]. Data collection spans from 2014 to 2024. The data from 2014 to 2016 were analyzed based on the 7th survey, which was originally conducted in 2012[17]. The data from 2017 to 2022 were based on the 8th survey conducted in 2017[18]. Lastly, data from 2022 to 2024 were analyzed from the 9th survey, which was carried out in 2023[19].

Table 1 Source of pre-elderly and elderly information in Thailand

Source	Data	Service type	Year
Thai national oral health survey: the bureau of dental health, department of health[17-19]	Service needed	PD needed	2014-2024
		CD needed	2014-2024
Health data center (HDC)[20]	Service delivery	Oral examination	2014-2024
		Hands-on toothbrushing	2014-2024
		Fluoride application	2014-2024
		PD delivery	2022-2024
		CD delivery	2022-2024
The denture and oral health promotion and prevention projects[21]	Service delivery	PD delivery	2018-2023[#]
		CD delivery	2018-2023[#]
Universal coverage information[14]	Population	Population by age (pre-elderly[$] and elderly)	2014-2024

[#]=The data for the denture and oral health promotion and prevention projects were collected only between 2018 and 2023,
[$]=The pre-elderly age group is defined as individuals between 40-59 years of age, PD=partial denture, CD=complete denture

The Health Data Center (HDC) serves as a centralized national health data repository under the Ministry of Public Health Thailand[20]. It compiles comprehensive health-related data, including population demographics, health status, access to healthcare services, and other relevant information. The system collects health data from public healthcare facilities across the country to support health data management, monitoring, and analysis. The data on service delivery, which includes partial and complete denture (CD) delivery, as well as preventive services, such as oral examinations, hands-on toothbrushing instruction, and fluoride application, were retrieved from the HDC[20]. Preventive service data were collected for two specific age groups: the pre-elderly population (aged 40-59 years) and the elderly population (aged 60 years and older)[20].

The Denture and Oral Health Promotion and Prevention Projects were initiated as part of the Royal Denture Project and the promotion of oral health among older adults, in celebration of the auspicious occasion of His Majesty the King's 72nd birthday anniversary in 2018[21]. Data related to the provision of CD and acrylic PD were derived from this. The acrylic PD provided under this project typically involves the replacement of nearly all teeth, with 16 or more artificial teeth.

The Universal Coverage Information system, developed by NHSO, provides data related to the utilization of Thailand's UHC scheme for Thai citizens[14]. This study utilized the data for the population by age (pre-elderly and elderly) from UC.

In the data analysis, coverage (%) was defined as the number of PD or CD delivered divided by the population of PD or CD needed in the specified age group, multiplied by 100. The population of PD or CD needed was estimated by multiplying the total population in that age group by the percentage of PD or CD needed derived from the national oral health survey.

To assess disparities between age groups, absolute differences (elderly minus pre-elderly) and relative differences (ratio of elderly to pre-elderly) in coverage and percentage of PD or CD needed were reported. Because age-disaggregated raw data were not available, 95% confidence intervals (CIs) could not be calculated. Instead, trend statistics were provided by estimating the average annual change (percentage points per year) across 2014–2024.

Ethics approval

Ethical approval was not required (publicly available data).

Results

Table 2 shows the PD services for the pre-elderly population from 2018 to 2024. The delivery of PD was higher, with the numbers of 3,202 in 2023 and 3,882 in 2024. While very limited coverage was seen from 0.0017% to 0.2465%. The percentage of PD needed ranged from 13.7% to 13.8% over the years.

Table 3 describes the CD services for the pre-elderly population from 2018 to 2024. The CD was delivered at 6,243 in 2023 and rose to 7,951 in 2024. It is shown that 0% CD was needed for the pre-elderly population, and the coverage was not assessed.

Table 4 presents PD services for the elderly population from 2018 to 2024. The number of PD deliveries increased in 2023 and 2024, 21,865 in 2023 and 14,402 in 2024. The coverage was low and varied from 0.3% to 0.55%. The percentage of PD needed ranged from 42.6% to 45.3% over the years.

Table 2 Partial denture (PD) services for the pre-elderly population

Year	Pre-elderly total population[a]	PD needed (%)[b]	Population of PD needs	Goal of PD delivery	PD Delivery[c]	Coverage (%)
2018	13,630,710	13.7	1,867,407	NR	NR	NR
2019	13,415,623	13.7	1,837,940	NR	NR	NR
2020	12,452,476	13.7	1,705,989	NR	NR	NR
2021	12,663,930	13.7	1,734,958	NR	NR	NR
2022	12,196,348	13.7	1,670,899	NR	29	0
2023	11,883,069	13.8	1,639,863	NR	3,202	0.2
2024	11,494,751	13.8	1,574,780	NR	3,882	0.2

[a]=This population group comprises Thai citizens aged 40–59 years who are beneficiaries of the 30-Baht UHC Scheme. (Ages 40–59 years, as defined by the HDC, refers to the pre-elderly age group), [b]=These data represent the percentage of individuals aged 35–44 years who required PD, as reported in the Thai National Oral Health Survey, [c]=Refers to receiving a service for the placement of removable partial dentures for almost the entire mouth (placement of 16 or more teeth, NR=data are not reported, PD=partial denture

Table 3 Complete denture (CD) services for the pre-elderly population

Year	Pre-elderly total population[a]	CD needed (%)[b]	Population of CD needs	Goal of CD delivery	CD delivery	Coverage (%)
2018	13,630,710	0	0	NR	NR	NR
2019	13,415,623	0	0	NR	NR	NR
2020	12,452,476	0	0	NR	NR	NR
2021	12,663,930	0	0	NR	NR	NR
2022	12,196,348	0	0	NR	24	NR
2023	11,883,069	0	0	NR	6,243	NR
2024	11,494,751	0	0	NR	7,951	NR

[a]=This population group comprises Thai citizens aged 40–59 years who are beneficiaries of the 30-Baht UHC Scheme. (Ages 40–59 years, as defined by the HDC, refers to the pre-elderly age group), [b] =These data represent the percentage of individuals aged 35–44 years who required CD, as reported in the Thai National Oral Health Survey, NR=data are not reported

Table 4 Partial denture (PD) services for the elderly population

Year	Source	Elderly total population[a]	PD needed (%)[b]	Population of PD needs	Goal of PD delivery[c]	PD delivery	Coverage (%)
2018	The denture and oral health promotion and prevention projects	8,757,031	42.6	3,730,495	68	11,890	0.3
2019	The denture and oral health promotion and prevention projects	7,122,995	42.6	3,034,395	0	13,165	0.4
2020	The denture and oral health promotion and prevention projects	7,325,413	42.6	3,120,625	0	11,099	0.4
2021	The denture and oral health promotion and prevention projects	8,253,239	42.6	3,515,879	0	10,096	0.3
2022	The denture and oral health promotion and prevention projects	8,609,186	42.6	3,667,513	0	11,613	0.3
2023	The denture and oral health promotion and prevention projects	9,098,847	45.3	4,121,777	0	21,865	0.5
2024	Health Data Center (HDC)	9,617,470	45.3	4,356,713	NR	14,402	0.3

[a]=This population group comprises Thai citizens aged 60 years and above who are beneficiaries of the 30-Baht UHC Scheme, [b]=These data represent the percentage of individuals aged 60–74 years who required removable partial dentures, as reported in the Thai National Oral Health Survey, [c]=The official annual service target for denture delivery. A target of 68 was specified in 2018, but no targets were set for subsequent years, likely due to the COVID-19 pandemic when denture services were suspended except for emergency cases, NR=data are not reported

Table 5 Complete denture (CD) services for the elderly population

Year	Source	Elderly total population[a]	CD needed (%)[b]	Population of CD needs	Goal of CD delivery	CD delivery	Coverage (%)
2018	The denture and oral health promotion and prevention projects	8,757,031	2.7	236,439	39,206	47,674	20.2
2019	The denture and oral health promotion and prevention projects	7,122,995	2.7	192,320	39,181	50,500	26.3
2020	The denture and oral health promotion and prevention projects	7,325,413	2.7	197,786	38,979	41,707	21.1
2021	The denture and oral health promotion and prevention projects	8,253,239	2.7	222,837	41,295	37,077	16.6
2022	The denture and oral health promotion and prevention projects	8,609,186	2.7	232,448	41,960	33,824	14.6
2023	The denture and oral health promotion and prevention projects	9,098,847	3.4	309,360	41,903	60,587	19.6
2024	Health Data Center (HDC)	9,617,470	3.4	326,993	NR	47,447	14.5

[a]=This population group comprises Thai citizens aged 60 years and above who are beneficiaries of the 30-Baht UHC Scheme, [b]=These data represent the percentage of individuals aged 60–74 years who required CD, as reported in the Thai National Oral Health Survey. NR=data are not reported

Table 5 demonstrates CD services for the elderly population from 2018 to 2024. In 2019, CD delivery was 50,500, with the highest number of deliveries and coverage (26.3%) within three years from 2018 to 2020. The number of services delivered was higher at 60,587 in 2023, with the coverage of 19.6%. This trend showed a slight decrease to 47,447 in 2024, and coverage ranged to 14.5%. The percentage of CD needed ranged from 2.7% to 3.4% over the years.

Figure 1 illustrates the trends in primary preventive service delivery, such as oral examination, toothbrushing, and fluoride application for the pre-elderly and elderly populations in Thailand from 2014 to 2024. For the pre-elderly population, the graph shows a gradual increase in these three service delivery over the years. Oral examination (blue solid line) started with low coverage in 2022, but by 2023, the coverage had significantly improved. The toothbrushing program (blue dashed line) also demonstrated starting with low coverage in 2018 and a significant growth in coverage in 2020. It gradually increases until 2024. Fluoride application (blue dotted line) also followed a similar upward trend, though the coverage remained lower in comparison.

For the elderly population, there is a more noticeable increase in coverage of oral examination (red dashed line) and toothbrushing services (red dotted line). Both services showed a rise in coverage from 2018 to 2023, with a slight decrease afterward. In contrast, fluoride application (red solid line) for the elderly showed a gradual increase, but with lower coverage compared to the other interventions.

Between 2014 and 2024, PD coverage among the pre-elderly remained below 0.3%, whereas elderly coverage ranged from 0.3% to 0.5%. The absolute difference in PD coverage between the elderly and pre-elderly averaged 0.2 percentage points, with elderly coverage being approximately 2.0–2.5 times higher than pre-elderly coverage. For CD delivered, elderly coverage reached 14–26% compared to the negligible values in the pre-elderly group, representing an absolute gap of >14 percentage points. The relative difference indicated that elderly individuals were over 50 times more likely to receive CDs than pre-elderly individuals

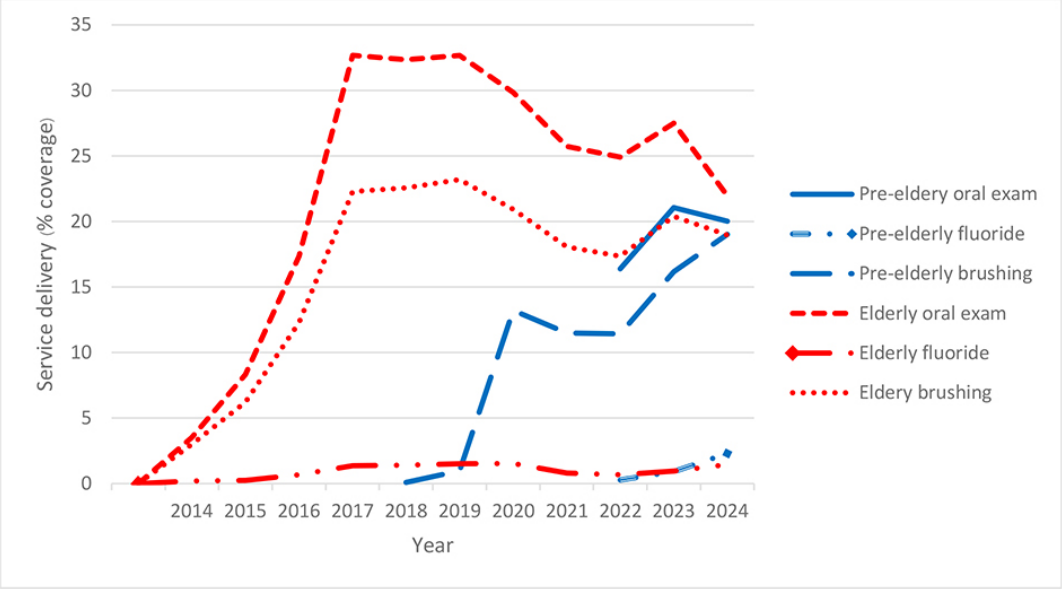

Figure 1 Primary preventive service delivery (pre-elderly and elderly)

during the study period. Trend analysis showed that elderly CD coverage peaked in 2019 (26.3%) before declining to 14.5% in 2024, whereas pre-elderly CD coverage remained essentially at zero across the decade. For preventive services, oral examinations and assisted toothbrushing rose steadily in both groups, with average annual increases of 1–2 percentage points, while fluoride application remained flat at <5% coverage.

Discussion

In Thailand, 60.9% of those aged 60–74 had at least one missing tooth, and 43.7% of those aged 80–85 years had lost all their teeth[19]. About 8% of those had chewing difficulties, affecting nutrition and quality of life[19]. Hence, the role of dentures is vital in helping the older population rehabilitate their oral health function[8]. The analysis of this study showed that the CD was delivered more than the PD among the pre-elderly population in Thailand, whereas the percentage of PD needed was higher, with very limited coverage. Also, in the elderly population, CD delivery was more than PD. Otherwise, the PD needed was higher than the CD, with limited coverage among the elderly population. They indicated that there is still a gap in prosthetics needed in older populations.

While both the pre-elderly and elderly populations have experienced increases in service delivery for complete dentures and prosthetic needs, the elderly population benefits from significantly higher access to these services. The pre-elderly group, despite gradual improvements, has still faced challenges in accessing adequate dental services, with barriers such as a lack of time, a lack of service entitlements, and inconvenient access with limited coverage[22]. Whereas the elderly group has seen more substantial progress in using the prosthetic services, with relatively high coverage. Service demand increase was shown to be attributed to the benefits of the 30-Baht UHC Scheme, which focuses on secondary and tertiary care, such as root canal treatment, dentures, and crowns, but with limitations in available resources[21]. These findings of this study underscore the need for continued efforts to improve access to dental care for the pre-elderly, while also maintaining and enhancing the services available to the elderly population under Thailand's UHC program.

The preventive dental services in Thailand have historically prioritized the elderly, especially for oral examination and assisted toothbrushing, with coverage peaking around 2018, with a slight decrease after 2023. This suggests that the elderly population has benefited significantly from these preventive measures, especially in the last few years. However, fluoride application among the elderly remained consistently low, indicating a service gap in caries prevention. The pre-elderly groups began receiving increased attention from 2019 onward, with notable growth across all three interventions: oral examination, fluoride treatment, and toothbrushing. Service coverage among the pre-elderly nearly matched or even exceeded that of the elderly in some areas during 2023–2024. The findings highlighted the trend of expanding access to primary preventive oral health services for both age groups.

In Thailand, the benefits of dental prosthetics are significantly supported through the Royal Thai Denture Project and the National Health Security Office (NHSO)[14,21], which provide free or subsidized dental prosthetics to low-income individuals. This is in contrast to the United States, where government health insurance does not fully cover dental prosthetics, leading to high out-of-pocket costs despite the availability of non-profit assistance programs[23]. In the United Kingdom, the National Health Service (NHS) reduces the cost of dental prosthetics, but patients may still incur additional expenses based on income brackets[24]. Australia offers partial support through government programs, but individuals still face considerable costs[25]. In Japan, while the health insurance system covers part of the cost, patients are responsible for substantial out-of-pocket expenses[26]. Thus, Thailand's approach stands out for its comprehensive and equitable support for dental prosthetics compared to other countries.

Many elderly people, especially those in rural areas, have faced limitations in traveling to dental facilities, cost barriers, or limited awareness[9]. Also, the number of elderly people needing dentures far exceeds those receiving them. As prevention and rehabilitation of oral health are vital, integration of dental care into the primary health care system and home care for dependent elderly has to be promoted. Public health policy should continuously support early prevention, oral health promotion, and timely prosthetic rehabilitation. Moreover, community-based preventive programs focusing on creating dental health literacy, risk factor reduction, and facilitating routine dental check-ups should be established to reach both the pre-elderly and the elderly population. The findings of the study would help policymakers to enhance both preventive and rehabilitative oral health services efficiently to improve the quality of life among the older population in Thailand.

This study has several limitations that should be acknowledged. The survey data reported prosthetic need in the age groups 35–44 and 60–74 years, whereas our analysis required estimates for the pre-elderly (40–59 years) and elderly (≥60 years). Accordingly, the survey groups were applied as proxies, which may have introduced bias into coverage and access estimates; age-standardization or recalculation was not possible due to the lack of age-disaggregated data. In addition, prosthetic delivery data were obtained from project records for 2018–2023 and from the HDC for 2024, raising concerns about source heterogeneity. However, the 2024 figures were broadly consistent with earlier years, and the unusually high 2023 values likely reflected the final year of the Denture and Oral Health Promotion and Prevention Projects, when service delivery was intensified. Another limitation is the attribution of needs between survey cycles. Because the national oral health survey is conducted every five years, the most recent survey estimate was carried forward until the next survey became available (assumption of stability), which may have introduced bias if needs changed more dynamically. Finally, although the survey reported 0% CD need among the pre-elderly, service data indicated that CDs were still delivered (e.g., 7,951 cases in 2024), possibly due to clinical indications not captured in the survey, re-treatment or replacement of existing dentures, individuals at the upper end of the age group transitioning into the elderly category, or data recording issues. More broadly, the study is limited by its reliance on secondary data and heterogeneous sources across years, which may affect comparability. It should also be noted that a reported value of 0% may not indicate a complete absence of demand; in some cases, the true prevalence may have been very low and therefore not visible in aggregated reports, and because decimal details were not provided, small values may have been rounded down to zero. To strengthen oral health equity, policies should prioritize targeted fluoride programs, harmonization of data systems across databases, and outreach strategies that integrate preventive and rehabilitative services within primary care.

Conclusion

This study assessed trends in the need and access to prosthetic denture services and the delivery of preventive oral health interventions among Thailand's pre-elderly and elderly populations during 2014–2024. Findings show that while service delivery for CD increased in both groups, coverage remained limited—particularly for PD among the pre-elderly. Preventive services such as oral examinations and toothbrushing expanded markedly, but fluoride application stayed persistently low. By consolidating both prosthetic and preventive perspectives, the study underscores substantial unmet needs, highlights inequities between pre-elderly and elderly groups, and provides evidence to guide policies that strengthen both preventive and rehabilitative oral health strategies to improve the quality of life in Thailand's aging population.

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Conflict of interest

The authors have no competing interests to declare.

References

1. Prakash J, Singh P, Dubey D, Golgeri MS, Haleem S, Bhati A. The status, need, and influence of dental prosthetics on oral health-related quality of life in the geriatric population: an epidemiological survey. Cureus 2022;14.
2. Moynihan P, Varghese R. Impact of wearing dentures on dietary intake, nutritional status, and eating: a systematic review. JDR Clin Trans Res 2022;7:334-51.
3. Schimmel M, Katsoulis J, Genton L, Müller F. Masticatory function and nutrition in old age. Swiss Dent J 2015;125:449-54.
4. Preshaw PM, Walls AW, Jakubovics NS, Moynihan PJ, Jepson NJ, Loewy Z. Association of removable partial denture use with oral and systemic health. J Dent 2011;39:711-9.
5. Choong EK, Shu X, Leung KC, Lo EC. Oral health-related quality of life (OHRQoL) after rehabilitation with removable partial dentures (RPDs): A systematic review and meta-analysis. J Dent 2022;127:104351.
6. Jar AA, Khormi AA, Al-khamiss NA, Alnaim AA, Alharbi ZF, Holba HA. The effect of dentures on oral health and the quality of life. Int J Community Med Public Health 2023;10:5067-71.
7. Alalwani NN, Al-Kebsi AM, Mohammed BS, Okshah A, Al Ahmari NM, Gadah TS, et al. Impact of denture use on oral health-related quality of life in yemeni patients: a cross-sectional analysis. Med Sci Monit 2024;30:e944682-1.
8. Xie Q, Ding T, Yang G. Rehabilitation of oral function with removable dentures-still an option?. J Oral Rehabil 2015;42:234-42.
9. Cunningham DA, Paterson DH, Himann JE, Rechnitzer PA. Determinants of independence in the elderly. Can J Appl Physiol 1993;18:243-54.
10. Keyong E, Thitasomakul S, Tianviwat S. Effectiveness of an oral health promotion program for the elderly in Khiri Mat district, Sukhothai province: A randomized control trial. J Int Soc Prev Community Dent 2019;9:225-31.
11. Panthueng W, Pongpanich S, Sermsuti-Anuwat N. Factors associated with utilization of preventive dental services among elderly patients at a university dental hospital, Thailand. Clin Epidemiol Glob Health 2023;24:101434.
12. Chotivichien S, Rungtrakun L, Reanraengklin S, Therakomen V, Hyder SM. Less-sweet drink policy and campaign—Thailand's success story. Lancet Reg Health Southeast Asia 2025;38.
13. Chittinand P, Aswapakorn K, Jirathananun S, Chiewanich P, Sakulnee S, Thowprasert D. Evaluation of the royal denture project, Nonthaburi province, 2015 - 2019. Th Dent PH J 2024;29,112-29.
14. National Health Security Office (NHSO) [homepage on the Internet]. Bangkok: NHSO; 2024 [cited 2025 Aug 3]. Available from: https://www.nhso.go.th/th/
15. Teekayuphan S, Phadee P. Satisfaction in Prosthesis Denture campaign for the elderly to celebrate 80th Anniversary His Majesty's the King In Roi-Et Province under Universal Coverage Project Year 2006. Th Dent PH J 2008;13:88-96.
16. Chaiyaprasith J. Clinical factors affecting the success of dentures and the oral health-related impact on the quality of life of elderly patients after using complete dentures at Nakornping Hospital. J Nakornping Hosp 2024;15:362-76.
17. Bureau of Dental Health. The 7th Thailand National Oral Health Survey Report. Bangkok: Department of Health, Ministry of Public Health, Thailand; 2012.
18. Bureau of Dental Health. The 8th Thailand National Oral Health Survey Report. Bangkok: Department of Health, Ministry of Public Health, Thailand; 2018.
19. Bureau of Dental Health. The 9th Thailand National Oral Health Survey Report. Bangkok: Department of Health, Ministry of Public Health, Thailand; 2023.
20. Health Data Center (HDC) [homepage on the Internet. Nonthaburi: Ministry of Public Health; 2013 [cited 2025 Aug 3]. Available from: http://www.pcko.moph.go.th/hdc.html
21. Bureau of Dental Health. The denture and oral health promotion and prevention projects [homepage on the Internet]. Nonthaburi:

Department of Health, Ministry of Public Health; 2016 [cited 2025 Aug 3]. Available from: https://ppdental.anamai.moph.go.th/elderly/news_file/news2_1.pdf

22. Boothong K, Ployiam P. Situation and Trend of the Desirable Health Behavior of Working Age in Health Region 6, Year 2019-2021. JODPC8 2023;1,74-89 .
23. Fellows JL, Atchison KA, Chaffin J, Chávez EM, Tinanoff N. Oral health in America: implications for dental practice. J Am Dent Assoc 2022;153:601-9.
24. Dale V, Gutacker N, Bloor K. NHS Dental Charges and the Effect of Increases on Access: An Exploration; 2021.
25. Gnanamanickam ES, Teusner DN, Arrow PG, Brennan DS. Dental insurance, service use and health outcomes in Australia: a systematic review. Aust Dent J 2018;63:4-13.
26. Zaitsu T, Saito T, Kawaguchi Y. The oral healthcare system in Japan. Health 2018;6:79.