ORAL HEALTH SERVICE OF OLDER ADULTS IN LONG-TERM CARE FACILITIES

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ปรรฐวีร์ บารมีพิพัฒน์ : การจัดบริการด้านสุขภาพช่องปากในกิจการการดูแลผู้สูงอายุ. (ORAL HEALTH SERVICE OF OLDER ADULTS IN LONG-TERM CARE FACILITIES) อ.ที่ปรึกษาหลัก : รศ. ทพญ. ดร.อรพินท์ โคมิน, อ.ที่ปรึกษาร่วม : ผศ. ทพญ. ดร.ณฤดี ลิ้มปวงทิพย์

วัตถุประสงค์: เพื่อศึกษาการจัดบริการด้านสุขภาพช่องปากในกิจการการดูแลผู้สูงอายุ

วิธีการ: การศึกษาในกิจการการดูแลผู้สูงอายุ 50 แห่งในกรุงเทพฯ ที่ได้รับการขึ้นทะเบียนโดยกรมสนับสนุนบริการสุขภาพ โดยทั้ง 50 แห่งได้ยินยอมให้ข้อมูลผ่านทางโทรศัพท์ โดยเป็นข้อมูลทั่วไปของกิจการ ข้อมูลด้านการจัดบริการด้านสุขภาพ และข้อมูลด้านการจัดบริการด้านสุขภาพช่องปากในกิจการการดูแลผู้สูงอายุ

ผลการศึกษา: กิจการการดูแลผู้สูงอายุในกรุงเทพฯ มีความหลากหลายทั้งในด้านปีที่เปิดทำการ จำนวนเตียงที่ให้บริการ ค่าบริการรายเดือน รวมไปถึงการจัดบริการด้านสุขภาพ และการจัดบริการด้านสุขภาพช่องปาก พบว่าความแตกต่างในด้านค่าบริการ มีผลต่อการให้บริการในส่วนของการแช่ฟันปลอมแก่ผู้ที่อาศัยในกิจการ นอกจากนี้ยังพบว่าการให้ความสำคัญด้านการจัดบริการด้านสุขภาพ มากกว่าด้านการให้บริการด้านสุขภาพช่องปาก เห็นได้จากการจัดให้มีการตรวจสุขภาพร่างกายประจำ ในขณะที่การตรวจสุขภาพช่องปากพบในกรณีที่มีปัญหาเท่านั้น และพบกว่ามีบริการพาไปพบแพทย์มีถึง 76% ในขณะที่บริการพาไปพบทันตแพทย์พบเพียง 34%

สรุปผลการศึกษา: กิจการการดูแลผู้สูงอายุในกรุงเทพฯ มีการจัดบริการสุขภาพ และสุขภาพช่องปากแก่ผู้อยู่อาศัยที่แตกต่างกัน ซึ่งควรมีแนวทางข้อบังคับ หรือนโยบาย เพื่อเป็นมารตฐานในการจัดบริการด้านสุขภาพ และสุขภาพช่องปากในกิจการการดูแลผู้สูงอายุ ทั้งนี้ทันตแพทย์ หรือทันตบุคลากร ควรเป็นส่วนสำคัญในการในการกำหนดแนวทางการจัดบริการด้านสุขภาพช่องแก่ผู้ดูแล และผู้อยู่อาศัยในกิจการการดูแลผู้สูงอายุในประเทศไทย

สาขาวิชา	ทันตกรรมผู้สูงอายุและการดูแลผู้ป่วยพิเศษ	ลายมือชื่อนิสิต .....
ปีการศึกษา	2565	ลายมือชื่อ อ.ที่ปรึกษาหลัก .....
		ลายมือชื่อ อ.ที่ปรึกษาร่วม .....

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KEYWORD: Long-term care facilities, Oral Health, Oral health service

Puntawee Barameepipat : ORAL HEALTH SERVICE OF OLDER ADULTS IN LONG-TERM CARE FACILITIES. Advisor: Assoc. Prof. ORAPIN KOMIN, D.D.S., Ph.D. Co-advisor: Asst. Prof. NAREUDEE LIMPUANGTHIP, D.D.S., Ph.D.

Objective: To assess oral health service in long-term care facilities in Bangkok

Methods: A cross-sectional study was conducted in 50 licensed long-term care facilities in Bangkok. Informed consent was obtained from all participants before conducting phone interviews and administering the questionnaire. The questionnaire covered various aspects, including demographics, health services, and oral health services provided within the long-term care facilities.

Results: The study revealed variations in terms of operational years, service capacity, service expense per month, and provision of health services, including oral health services. It was found that the differences in service expenses impacted the provision of denture care for residents within the facility. Furthermore, it was observed that the importance placed on general health services predominated of oral health services, as regular physical health checkups were provided, while oral health checkups were only conducted when specific issues arose. Additionally, it was noted that 76% of the long-term care facilities had an additional service for residents to see a physician, whereas only 34% for visit a dentist.

Conclusions: There are variations in the provision of health services and oral health services among long-term care facilities for the older adults. It is essential to establish regulations or policies as a standard for providing comprehensive health services and oral health care within these facilities. Dentists or dental professionals should play a crucial role in defining guidelines for oral health service for both caregivers and residents within long-term care facilities.

Field of Study:	Geriatric Dentistry and Special Patients Care	Student's Signature .....
Academic Year:	2022	Advisor's Signature .....
		Co-advisor's Signature .....

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Puntawee Barameepipat

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CHAPTER I
INTRODUCTION

Background and rationale

The number of people who are 65 and older is rising more rapidly than ever before, especially in developing countries. The demographic shift toward older adults in the world's population is rapidly becoming one of the most significant difficulties impacting a variety of sectors, including health and social care, amongst others. The need for primary health care and care for older adults and the older adults in long-term care also grows.[1] Thailand is the developing nation with the fastest rate of population aging. An aging population in long-term care facilities (LTCFs) requires appropriate national policy and management of these challenges. The living situations of older adults have shifted from living with offspring and extended family to living alone or with only a spouse. Older adults with fewer children are less likely to live with an adult child, suggesting that the trend toward smaller families will continue to contribute to a decline in co-residence with offspring.[2] On December 31, 2020, older adults accounted for 17.57 percent of the population, according to the Department of Older Persons. Bangkok's population about 19.83% was comprised of older individuals, representing nearly 10 percent of Thailand's total population. [3] Consequently, the concentration of this study is on long-term care facilities in

Bangkok, which the highest proportion of older adults and the highest number of long-term care facilities.[4,5]

Long-term care facilities (LTCFs) can also help reduce the acute emergencies and helps families in avoiding terrible health care expenses.[6] Similarly, the prevalence of oral problems increases with age.[7] As people live longer with their natural teeth, the complexity and problems of their oral health concerns arise.[8] Poor oral health can lead to severe health issues such as respiratory infections[9], heart disease, and malnutrition. [10] It can also diminish the quality of life[11] for the older adults, who may suffer from low self-esteem and a sense of isolation as a result.[12]

The health and oral health services in long-term care facilities are influenced by several factors such as the operator, caregivers' skill, monthly expenses, etc. The physical health activities, nutritional concerns, or regular health checkup service are all aspects of health service in each long-term care facilities. The oral health service including frequency of oral care routine, denture care, and dentist checkup are differed from each long-term care facilities. The information of characteristics, health care service and oral health service were collected in this study. This study aimed to assess oral health services in long-term care facilities in Bangkok.

Research objectives

To assess oral health service in long-term care facilities in Bangkok.

Scope of research

This study was a cross-sectional study in long-term care facilities in Bangkok, Thailand. The participants were licensed by the Department of Health Service Support, a government organization in Bangkok.

The questionnaire included characteristics of long-term care facilities including operator, average age of their residents, the number of service capacity, and the resident' service expense in those long-term care facilities. The following section contained health care service including regular health checkups in long-term care facilities, physical health activities and nutritional concerns. In part of oral health service, there were questions of routine oral health care, denture care and dentist checkups.

All data on demographics, health care service and oral health service in long-term care facilities were presented in descriptive analysis.

Expected outcomes

- Improving health and oral health service in long-term care facilities
- Improved access to oral health services in long-term care facilities
- Improving better overall health outcomes, such as a reduced risk of infections, improved nutrition, and better quality of life of residents in long-term care facilities

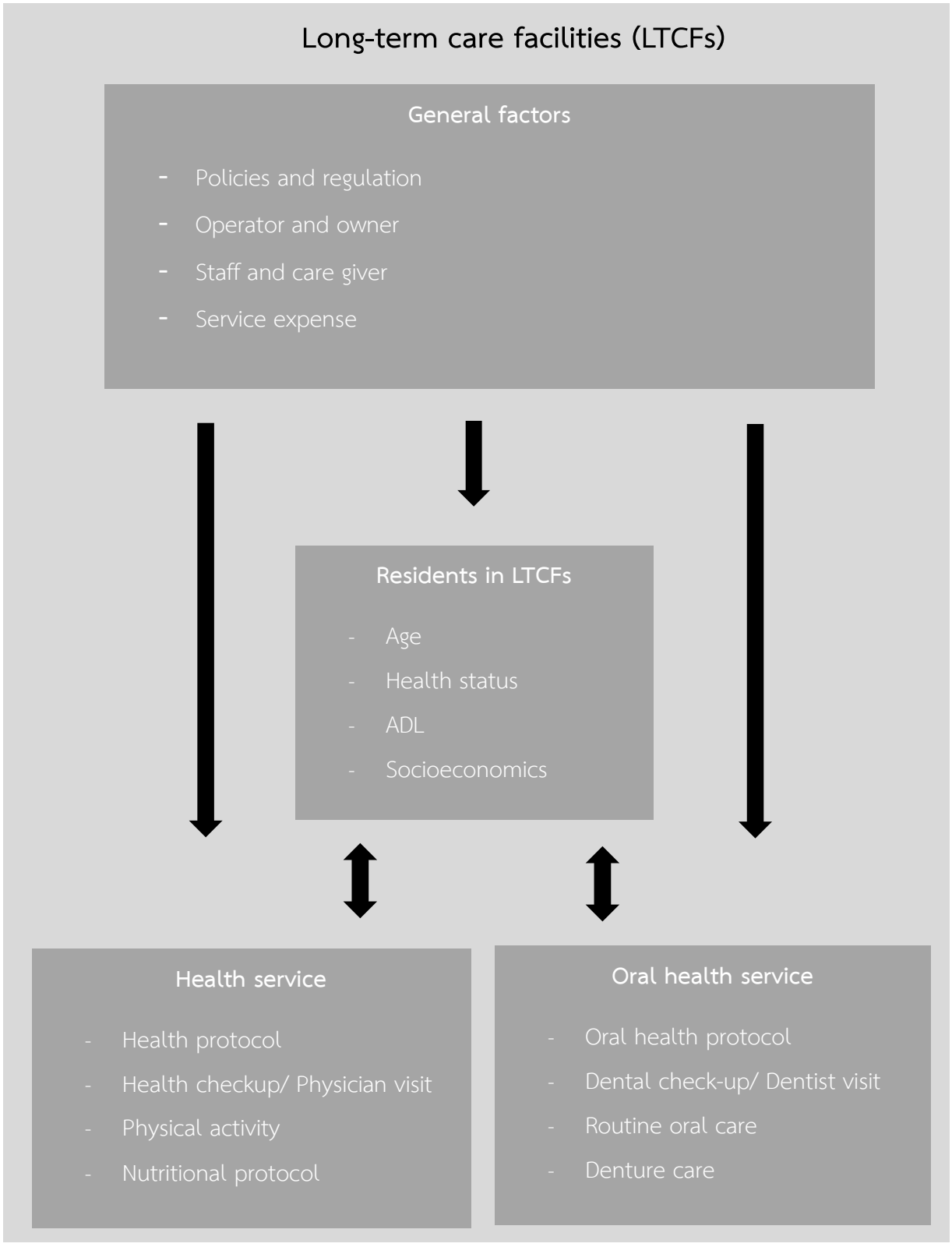
Keywords

Health service, Long-term care facilities, Oral health, Oral health service,

Type of research

Cross-sectional descriptive study

Figure 1 ***Conceptual framework***



CHAPTER II
LITERATURE REVIEW

Ageing demographic and Thailand ageing population

Increasing numbers and proportions of individuals aged 60 and older are present in the population. This increase is occurring at an unprecedented rate and will accelerate over the next several decades, particularly among developing countries.[13] Thailand is among the nations with the highest rate of population ageing. According to the most recent national statistics estimate, of Thailand's 67 million people, 12 million are elderly. Since 2005, the country has been recognized as an "aged society" because 10% of the population is aged 60 or older. Thailand is anticipated to become a "super-aged society" by the end of the next decade, with the elderly population reaching 28%.[14] Despite the fact that this demographic transition reflects improvements in the economy, society, and healthcare, it also introduces great challenges. Recognizing these demographic shifts and challenges, policymakers and other stakeholders in the South-East Asia Region have, over the years, worked to reform policies and initiatives to address the barriers to the well-being of older adults. [14]

Thailand has entered into the structure transitions in the area of demography and epidemiology, developing from high fertility and high mortality to low fertility

and mortality. Lower rate of fertility and mortality have had significant impact to social security, health care costs and equity. These problems need proper National policy and management for long-term care service for ageing population.[15]

The Situation of older adults in Thailand, greater proportion of older adults will be better educated. The living of older adults will be changed from living with child and family to living alone or with only the spouse. Older adults with fewer children are less likely to live with an adult child, suggesting that the trend toward smaller families, combined with the greater dispersion of children, will contribute to a continuing decline of co-residence with children. At past the income among older adults have been supported from their children, spouse, or relatives. But in the future older adults will be still working and support as main pensions.[2]

Thailand's older adults' demographics According to the Department of older persons, the older adults accounted for 17.57 percent of the overall population as of December 31, 2020. Bangkok has the older adults, accounting for 19.83 percent of the province's population, or 9.53 percent of all Thai older adults, followed by Nakhon Ratchasima and Chiang Mai.[3]

Geriatric health and Long-term care

Apart from biological perspective, aging can also be caused by other transitions in life, such as retirement, housing relocation, and the death of friends and partners. To develop a public-health response to aging, it is essential to concentrate on approaches that address the challenges of older age and promote recovery, adaptation, and psychosocial growth. Additionally, certain complex health conditions that tend to arise in later stages of life, not fitting into specific disease categories, can be attributed to older age. These are generally referred to as geriatric syndromes. They are often the consequence of multiple underlying factors, including frailty, urinary incontinence, falls, delirium and pressure ulcers.[16]

A significant number of individuals perceive older adults as weak, dependent, and burdensome to society. It is crucial for public health and society as a whole to confront these ageist attitudes, which have the potential to result in discrimination, and to establish supportive policies that enable older adults to experience healthy ageing. The lives of older adults are directly and indirectly influenced by globalization, technological advancements, urbanization, migration, and shifting gender norms. Policy makers in countries, regions, and institutions need to have strong leadership and commitment to initiate and implement policies that support older people. Policies for ageing and health are often uncoordinated, fragmented or non-existent. Meanwhile, ageism and ageist attitude can be powerful barrier to the

development of good policy and practice. [16]

Health services are often designed for acute symptoms and are prone to manage health issues in disconnected ways that have insufficient coordination across care providers, settings and time. [17] Health systems need to be transformed so that they can ensure affordable access to evidence-based medical interventions that correspond to the requirements of older people and are able to minimize care dependency later in life.[15]

Long-term-care facilities enable older adults to receive the care and support from others in consistent with their basic rights, fundamental freedoms and human dignity. The long-term care services can also help reduce the inappropriate use of acute health-care services, help families avoid catastrophic care expenditures.[18]

A long-term-care facility is an accumulation of older adults that serve to the biological and psychological needs of the people who have self-care troubles. Infections are the main cause of death in long-term care facilities.[19] Pneumonia is a common infection among residents in long-term-care facilities. The risk factors for pneumonia among residents of long-term care facilities are a severe disability, bedridden state, urinary incontinence, difficulty swallowing, malnutrition, tube feedings, contractures, and use some medications. Minimizing the risk of aspiration is a concept for preventing pneumonia. Oral hygiene and dental care are the factors to reduce the risk of pneumonia in long-term care facilities.[20]

Long-term care facilities (LTCFs) in Thailand

The public usually perceives long-term care facilities, especially nursing home and residential home, but not the shelter service nor the community/home care. Most Thai older adults thus rely on informal care in the communities more than long-term care facilities; however, it is certain that will be more demand for formal care services. It becomes an important issue of how to support the informal care system, so that older adults should be able to receive long-term care when needed. It is also, important to assure those families and relatives can provide adequate care to older adults. The formal long-term care facilities in Thailand have begun with institutional services called “Home for Older Persons” which was established in 1956 (Department of Social Welfare, 2001). It provides service for the low-income older adults who are unable to stay with their families or do not have any relative to stay with. In order to be eligible for “Home for older persons”, the older adults must be able to take care of themselves and do not require nursing care. Nowadays, there are 20 residential homes (Home for Older Persons) nationwide under the supervision of the Department of Social Welfare.

Over the last decade, both non-profit and for-profit private sectors (mainly private hospitals and religion-linked non-government organizations) have been the major contributors for long-term care facilities, so quality accreditation of long-term care facilities is becoming important. For a decade, the concept of home/community

care in the sense of long-term care facilities has gained interest and become study topic, as a result, many models of community services in health and social care were studied.[21]

Classification of Long-term facilities in Thailand based upon the level of care and types of services provided

1. Residential home – Residential home is a place for older adults with physical independent that help for their activities of daily living. Residential home provided by public for older adults who are poor, no relative, or cannot live with his own family. Residents will stay in the same place even though they may become more dependent in later life.

2. Assisted living care – Assisted living care is a place for older adults with physical dependence or disabilities who need help for some activities of daily living. Residents do not require medical care or nursing health care in normally but an emergency call service is always available.

3. Nursing home – Nursing home is a place for older adults with chronic disease and people with physical and/or cognitive impairment. Their facility provides skilled nursing care 24 hours/day, including activities for daily living among older adults with physical and/or cognitive impairment.

4. Long-term care hospital - Long-term care hospital is a place for stay at least three Months or longer. They provide general nursing and facility for those individuals

needing care beyond the hospital stays.

5. Hospice care – Hospice care is a provides care for end of life that aims at pain relief, comfort care and to have a good death with their family and friends.

The Ministry of Public Health released Ministerial Regulations on Care for the Elderly or Dependents on July 20, 2020. The Ministerial Regulations states that long–term care facility for the older adults or dependents is a separate facility from the other health-care facility.[22] According to ministerial regulation 2020, long-term care facility in term of facility for older adults and dependents have to register to licensor in 3 types and control the safety and environment standard. The 3 types of long-term care facilities are

1. Day care: long-term care facility for older adults or dependents who have several activities to support, promote and restore good health of older adults or dependents without overnight stay
2. Residential home (Independent living): long-term care facility for older adults who have health supporting and promoting activities with accommodation
3. Nursing home (Assisted living): long-term care facility and palliative care for older adults or dependents who have health rehabilitation, health supporting and promoting activities with accommodation.[22]

As the Ministerial Regulation, the Department of Health Service Support is responsible for granting licenses to operators of long-term care facilities. Prior to commencing operations of a long-term care facility catering to older adults or dependents, the operator must obtain a valid license. Individuals who have completed five health science courses, including medicine, nursing, dentistry, public health, and physical therapy, are eligible to apply for an operator license for long-term care facilities. They need to undergo a competency test as part of the application process. [23] Moreover, individuals with other degrees are required to successfully complete the 130-hour Elderly or Dependency Care Operator course certified by the Department of Health Services. Following the completion of the course, they must pass a competency exam to obtain an operator license for long-term health facilities. [24]

Health financing schemes in Thailand

The Ministry of Public Health (MOPH) is the national health authority managing, formulating and implementing health policy. Currently, there are three main financing schemes in Thailand. [25]

1. Universal coverage scheme: It provides coverage to people in the informal sector who cannot obtain financing from the Civil servant medical benefit scheme, neither from state enterprise benefit nor social security scheme. The universal coverage fund earns revenue from tax revenue and public provision. The

Office of Health Insurance is responsible for management of the universal coverage fund.

2. Social security scheme: It provides coverage to all employees working for private organizations and those who are not eligible for public insurance. The social security fund obtains funding from both employees and government. Hence, it requires employees to contribute 3 percent of their earnings (wage or salary) to the fund and the government to top up another 2 percent of the employees' earnings to the fund. The fund is managed by the Social Security Office and provides 6 following types of benefits as for the contingencies of non-work related to insured persons: sickness or injuries benefits, maternity benefits, invalidity benefits, death benefits, child allowance benefits and old-age pension benefits.

3. Civil servant medical benefit scheme and state enterprise benefit: the Civil servant medical benefit scheme and state enterprise benefit are fully sponsored by the government and state enterprises. The Ministry of Finance is responsible for the Civil servant medical benefit scheme and the state enterprises are responsible for the medical expenditures of their employees. [25]

Significant of oral health

Oral health (such as dental caries, periodontal disease, tooth loss, oral cancer, oral manifestations of HIV infection, Oro-dental trauma and birth defects) is highly correlated to the status of overall health, well-being and quality of life. Many

oral disease and conditions are the risk factors of noncommunicable diseases at the world level. The risk factors as smoking, drinking and high sugar diets are the risk factors of cardiovascular diseases, cancer, chronic respiratory diseases and diabetes.

Poor oral health can affect people in devastating pain and financial burden for society. And psychosocial impact of many oral diseases significantly reduces the quality of life. Oral diseases disproportionally affect the poor and socially-disadvantaged members of society. There is a very strong and consistent correlation between socioeconomic status (Income, occupation and educational level) and the prevalence and severity of oral diseases. In high-income countries, oral health-care treatment is costly at about 20% of out-of-pocket health expenditure while people in most low- and middle-income countries are unable to afford cost of oral health-care treatment. [26]

Oral health in long-term care facilities

Oral health affects people in daily life activities such as eating, talking and behaves personality.[27] It is related to illness such as diabetes mellitus, atherosclerosis, pneumonia and endocarditis. So oral hygiene is important to maintain overall health and oral health. [28] However, international studies show that oral health care of long-term care facilities for older adults is inadequate including cleanness of remaining teeth and unhygienic dentures.[29] A study conducted in Japan uncovered a significant link between poor oral hygiene in long-term care residents

and an increased risk of pneumonia as well as a higher number of febrile days.[30] Another Japanese research study, specifically targeting long-term care facilities residents, showcased the effectiveness of comprehensive oral care, including regular sessions with hygienists and dentists as needed, in substantially reducing the likelihood of developing pneumonia or experiencing fatal outcomes associated with the disease.[31] Nurses, nurse assistants or caregivers are in the major responsible in caring of older adults and dependents in long-term care facilities including oral health care but not in obvious standard or protocols. They have various protocols depending on long-term care facilities. Nevertheless, the oral hygiene and the oral health care of older adults and dependent people in long term care facilities are insufficient.[29]

Older adults in long-term care facilities also do not receive adequate dental care because of many problems such as covered insurance, fear of dental treatment and cost of treatment. Furthermore, sociodemographic problems, such as educational basis, strongly relate to oral care and treatment decision. Now, older adults with remaining natural teeth usually have good quality of health, so access to prevention and early intervention must be continually improved.[32]

The major conditions of oral diseases among older adults are tooth loss, dental caries, periodontitis, dry mouth and oral pre-cancer/cancer.[33]

Tooth loss varies from the most frequent gradual loss of teeth that occurs in the whole of adulthood to edentulism(the state of having lost all natural teeth). The

causes of edentulism are both health - related and social, as evidenced by well-documented worldwide differences in the condition's prevalence. People who are edentulous have been reported to have poor diets and nutrition than those who have natural teeth. Not only are there nutritional problems to being edentulous, but having no teeth or wearing poor dentures may have an impact on edentulous people's daily life – particularly in chewing and eating.[33]

Periodontal disease, which is the most oral disease found in older adults and dependents, may be positively correlated to an increased risk of systemic disease. Colonization of bacteria from periodontal disease are associated with increased risk of heart disease, stroke, and respiratory infections. To solve these problems, government regulations must have clear standards and goals in the long-term care environment in order to achieve optimal health and oral health care.[32]

Older adults in long-term care facilities require varying degrees of oral care support. Some older adults are independent and can take care of their own oral hygiene, while totally dependents are on skilled nursing assistants for oral care. The capacity to perform oral self-care may be compromised in these dependents due to cognitive and motor impairments. Residents in long-term care facilities may be unable to physically insert a toothbrush into the oral cavity due to motor planning issues. Because of cognitive impairments, these dependents may be unaware of the effects and necessity of oral hygiene.[34] Oral pain and diseases commonly affect the poor largely as a result of inadequate oral health care. Disease prevention and oral

health promotion are generally neglected in the public health field and the association between oral health and frailty has not been thoroughly explored.[35]

Healthcare professionals should focus on oral hygiene protocols for frail and dependent elderly individuals. Daily removal of bacterial plaque from the teeth or dentures, cleansing of the oral mucous membranes, and maintaining hydration of the oral mucosa are essential aspects of oral health protocols. The use of electric toothbrushes and products like chlorhexidine, fluoride toothpastes, dry mouth rinses, or oral moisturizers can facilitate these activities. This approach should involve regular engagement with dental professionals and provide an ongoing training program for nurses regarding oral health issues. Priority should be given to oral health in healthcare policies and procedures for elderly individuals with significant functional dependency. Despite recognizing the significant impact of poor oral hygiene on morbidity rates, especially among the elderly, caregivers often neglect oral hygiene routines. Protocols in long-term care facilities should not be developed in isolation; instead, they should consider the available human and material resources, as well as the level of patient cooperation, in order to establish standardized and consistent procedures.[36]

CHAPTER III
RESEARCH METHODOLOGY

Participants and study design

The inclusion criteria for this study were licensed long-term care facilities located in Bangkok who were willing to participate via phone calls interview. Exclusion of the study were licensed LTCFs that refused to participate, declined to provide information via phone calls, could not be contacted via phone calls and incomplete data in all interviews.

This study was a cross-sectional study in long-term care facilities in Bangkok, Thailand. The participants were private long-term care facilities licensed by the Department of Health Service Support, a government organization in Bangkok. The study was approved by the Ethics Committee of the Faculty of Dentistry, Chulalongkorn University (IRB No: HREC-DCU 2021-103).

After the announcement of the "Ministerial Regulations on Care for the Elderly or Dependents on July 20, 2020, up to March 7, 2022, there were 137 long-term care facilities registered with the Department of Health Service Support.[4] All the data has been authorized by the Department of Health Service Support for research purposes, as seen in the appendix.

All 137 long-term care facilities were made a phone call until December 2022. Informed consent was obtained from the 50 long-term care facilities that were

willing to provide information, prior to the administration of the questionnaire accounting for 36.5% of the total licensed long-term care facilities in Bangkok.

Among the remaining 87 LTCFs that did not participate, the reasons for non-participation can be categorized as follows: 9 LTCFs were unreachable using the phone numbers in social channel, 42 LTCFs declined to provide information via phone called interviews or rejected to participate in the study and 36 LTCFs didn't complete the all questionnaire.

Phone call interview and Questionnaire

The respondents comprised owners, operators, or caregivers in each long-term care facility. The study will be initiated with a patterned interview approach. The introduction will encompass an overview of the study, ensuring that participants are fully informed about the purpose and objectives of the research, with an emphasis on the significance of their involvement. Prior to proceeding, consent will be requested from the participants to participate in the study. The utilization of this patterned interview approach aims to maintain consistency and reliability in data collection, thereby facilitating rigorous analysis and interpretation of the research findings. The questionnaire included characteristics of long-term care facilities including type of long-term care facilities, operating years, average age of their residents, the number of service capacity, and the resident' service expense and operator in those long-term care facilities. The following section contained health

care service including regular health checkup, physician visit, physical health activity and nutritional concern in long-term care facilities. In part of oral health care service, there were questions about routine oral health care, denture care, dental checkups and dentist visit. The questionnaire is presented in the image below. (Figure2)

All the data in this study were presented descriptively, including the mean with standard deviation (SD), maximum, and minimum values. To assess the normality of the data, the Shapiro-Wilk test was conducted when the sample size (N) was less than 50. The statistical analysis employed in this study consisted of descriptive analysis, Mann-Whitney U test, chi-square test, and Spearman correlation. A significance level of 0.05 (P-value < 0.05) was chosen to determine statistical significance All statistical data will be performed by IBM SPSS for windows version 29.0 (IBM, Armonk, NY).

Figure 2 Questionnaire

แบบสำรวจกิจการการดูแลผู้สูงอายุ

ชื่อ สถานดูแลผู้สูงอายุ.....เขต.....

วันที่ให้ข้อมูล.....

ตำแหน่ง.....เบอร์ติดต่อ.....

ตอนที่ 1 ข้อมูลกิจการการดูแลผู้สูงอายุ (Characteristics of LTCFs)

1. ประเภทจดทะเบียน ☐ [1] Day care ☐ [2] Residential home ☐ [3] Nursing home
2. เปิดกิจการเมื่อปี.....จำนวนปี (ถึง 2022).....
3. ผู้ดำเนินการ(Operator).....

☐ [1] หลักสูตรแพทยศาสตร์ ☐ [2] หลักสูตรทันตแพทยศาสตร์ ☐ [3] หลักสูตรสาธารณสุขศาสตร์

☐ [4] หลักสูตรกายภาพบำบัด ☐ [5] หลักสูตรการพยาบาลศาสตร์หรือการพยาบาลและผดุงครรภ์ชั้นสูง

☐ [6] หลักสูตรผู้ดำเนินการดูแลผู้สูงอายุและผู้มีภาวะพึ่งพิง 130 ชม. ระบุอาชีพ.....

4. อายุเฉลี่ยของผู้รับบริการ.....
5. จำนวนผู้รับบริการ/จำนวนเตียง.....
6. ค่าใช้จ่ายเริ่มต้นต่อเดือน (Service capacity) ระบุ.....

ตอนที่ 2 บริการด้านสุขภาพ (Health service in LTCFs)

7. การตรวจสุขภาพเป็นประจำ (Health checkup)

☐ [1] Regular/Patient appointment ☐ [2] Emergency/Chief complaint

8. การไปพบแพทย์ (Physician visit)

☐ [1] By Resident's family ☐ [2] By LTCFs staff (additional cost)

9. Physical activity

☐ [1] ไม่มี ☐ [2] มี ระบุ.....

10. Nutritional concern

☐ [1] ไม่มี ☐ [2] มี ระบุ.....

ตอนที่ 3 บริการด้านสุขภาพช่องปาก (Oral Health service in LTCFs)

11. การทำความสะอาดช่องปาก และฟันปลอม (Routine oral and denture care).....

☐ [1] None ☐ [2] Daily ☐ [3] อื่นๆ ระบุ.....

12. การแช่ฟันปลอม (Denture immerse).....

☐ [1] Tap water ☐ [2] Denture cleansing tablet

13. การตรวจสุขภาพช่องปากเป็นประจำ (Oral Health checkup)

☐ [1] Regular/Patient appointment ☐ [2] Emergency/Chief complaint

14. การไปพบทันตแพทย์ (Dentist visit)

☐ [1] By Resident's family ☐ [2] By LTCFs staff (additional cost)

CHAPTER IV
RESULTS

There are three distinct categories of long-term care facilities, with nursing homes being the most frequently registered with the Department of Health Service Support. It was observed that all private long-term care facilities licensed before March 7, 2022, were classified as nursing homes. Additionally, until June 2023, no day care or residential homes were registered with the Department of Health Service Support. At present, there are a total of 266 licensed long-term care facilities in Bangkok, all of which fall under the classification of nursing homes. This indicates that the long-term care facilities population in Bangkok consists of all nursing homes. Therefore, the 50 samples used in this study represent the nursing home type of registered facilities.

Table 1 presents the characteristics of the long-term care facilities included in this study, showcasing the mean, minimum, and maximum values. Regarding the operational years of these facilities, the duration was calculated from the first year of operation until the year 2022, based on available data. The average operational years were found to be 8.10 ± 7.49, with a minimum of 1 year and a maximum of 50 years. The study also revealed the average age of residents in each long-term care facility. The mean age was determined to be 70.22 ± 6.88, with the minimum recorded residential age being 60 years and the maximum being 80 years. Furthermore, it was

observed that long-term care facilities in Bangkok have varying capacities, with the number of beds ranging from 6 to over 80. The average number of service beds was calculated to be 27.90 ± 18.26. Additionally, the monthly service expenses of long-term care facilities exhibited variation, with costs ranging from 15,000 THB to 30,000 THB. The mean service expense was approximately 19,000 THB.

Table 1 Descriptive statistics of the characteristic of LTCFs

Variables	Mean ± SD	Minimum	Maximum
Operating years: years	8.10 ± 7.49	1	50
Average age: years	70.22 ± 6.88	60	80
Service capacity: beds	27.90 ± 18.26	6	80
Service expense: THB	19000±4571.43	15000	30000

SD = Standard division

Table 2 presents the characteristics of the long-term care facilities included in this study. The findings reveal that 46% of operators had graduated from the Nursing Science Program. Following closely behind, 44% had completed a 130-hour Elderly or Dependency Care Operator course. Moreover, 6% held a Doctor of Medicine degree, and 4% possessed a Bachelor of Public Health degree. However, it is noteworthy that no operators in the sample had graduated from the Doctor of Dental Surgery Program or the Bachelor of Science Program in Physical Therapy.

According to research, most residents have an average age of over 65 years, representing 66%, twice the average age of less than 65 years. In terms of service capacity, bed allocation in community hospitals in Thailand. It was found that the majority of these long-term care facilities have small-sized capacities with less than 30 beds, accounting for 64%. Long-term care facilities with bed capacities ranging from 30 to 60 beds accounted for 28%. Furthermore, it was observed that long-term care facilities with large bed capacities exceeding 60 beds or equivalent to large community hospitals accounted for 8%. The service expenses start at 15,000 THB, and it was found that 80% of long-term care facilities have prices below 20,000 THB. The remaining 20% have prices higher than 20,000 THB.

Table 2 Characteristic of LTCFs

Characteristic in LTCFs	**N**	**(%)**
LTCFs Operator		
Doctor of Medicine Program	3	(6%)
Doctor of Dental Surgery Program	0	
Bachelor of Public Health	2	(4%)
Bachelor of Science Program in Physical Therapy	0	
Master of Nursing Science Program	23	(46%)
130-hour Elderly or Dependency Care Operator course	22	(44%)
Resident age: years		
≤ 65	17	(34%)
> 65	33	(66%)
Service capacity: beds		
≤ 29	32	(64%)

30-59	14	(28%)
≥ 60	4	(8%)
Service expense: THB		
≤ 20,000	40	(80%)
> 20,000	10	(20%)

Table 3 presented the healthcare service available in long-term care facilities, whereby all residents obtain routine health checkups via their physician appointments. The long-term care facilities also provided physical activities to ensure the residents' health is maintained, and individualized nutritional concerns were implemented to address the health and oral care condition of each resident. Through a phone called interview, it was discovered that 72% of the long-term care facilities provided extra services at a fee for residents requiring physician visit by the long-term care facilities staff, while the remaining long-term care facilities attended physician visit with their resident' families.

Table 3 Health service in LTCFs

Health Service	N	(%)
Health checkup		
Regular/Patient appointment	50	(100%)
Emergency/Chief complaint	0	
Physician visit		

Resident's family	12	(24%)
LTCFs staff (additional cost)	38	(76%)
Physical activity and Nutritional concern		
Yes	50	(100%)

Table 4 presented the oral health services available at long-term care facilities, indicating that all long-term care facilities offered daily oral health service to their residents and were concerned about their denture as part of their oral care routine. Among long-term care facilities, 12% used denture cleansing tablets for all residents with dentures, while 88% used tap water for immersion, except in cases where families brought their own. Regarding dental check-ups, this study found that long-term care facilities only provided them to residents who had oral health problems. For dentist visits, it was discovered that 34% of long-term care facilities offered a transportation service for their residents to see dentists, while 66% relied on their families' support.

Table 4 Oral health service in LTCFs

Oral Health Service	N	(%)
Routine oral and denture care		
Daily	50	(100%)
Denture immerse		
Immerse with tap water	44	(88%)
Immerse with Denture cleansing tablet	6	(12%)
Dental checkup		
Regular/Patient appointment	0	
Emergency/Chief complaint	50	(100%)
Dentist visit		
Resident's family	33	(66%)
LTCFs staff (additional cost)	17	(34%)

In addition, the Spearman correlation analysis in Table 5 revealed significant relationships between the operating years of long-term care facilities, ranging from 1 to 50 years, and service capacity. It was found that there was a statistically significant correlation with service capacity, as indicated by a correlation coefficient of 0.284 and a p-value of 0.046. This suggests that long-term care facilities that have been in operation for a longer duration tend to have a greater number of available beds for

service capacity. This finding may be indicative of the experience or expansion of the respective LTCFs' businesses. Furthermore, this table also revealed a significant Spearman correlation value of 0.342 at p-value=0.015 between the service capacity and the service expenses. This indicates that as the service bed capacity increases, the monthly expenses also tend to be higher.

Table 5 Spearman correlation of characteristics in LTCFs

	Service capacity: beds	Service expense: THB	Operating years: years
Service capacity: beds		ρ = 0.342* P-value = 0.015*	ρ = 0.284* P-value = 0.046*
Service expense: THB	ρ = 0.342* P-value = 0.015*		ρ = -0.160 P-value = 0.268
Operating years: years	ρ = 0.284* P-value = 0.046*	ρ = -0.160 P-value = 0.268	

ρ *=correlation coefficient*

**Correlation is significant at the 0.05 level (2-tailed).*

In the context of LTCF operators, it is a requirement that graduates from all five health science fields are eligible to apply for a license to operate in LTCFs. Individuals without these degrees have the option to complete a 130-hour operator course in order to obtain the license. However, when examining health services and

oral health services among operators, no significant differences were found. This finding was determined using a chi-square test in the Table 6.

Table 6 Descriptive statistics of the LTCFs operator and service in LTCFs

Variables	**Operator** p-value
Physician visit Resident's family LTCFs staff (additional cost)	0.809
Dentist visit Resident's family LTCFs staff (additional cost)	0.815
Denture immerse Tap water Denture cleansing tablet	0.085

Analyze by Chi-square test.

Statistically significant difference ($p < 0.05$).

From the data collected in Table 7, it was found that *long-term care facilities* differ in terms of services provided, specifically in physician visits, dentist visits, and denture immersion. When examining the relationship between these services and the characteristics of *long-term care facilities*, such as the number of years in operation, difference in LTCFs operator and the service expenses , it was discovered that the operating years of *long-term care facilities* did not have an impact on the services provided. However, the expenses were found to influence the services offered in the following ways. Next, the Mann-Whitney U test was conducted to examine the relationship between prices and services, specifically regarding physician visits. The results revealed no significant correlation between the price and the service of physician visits. Similarly, the Mann-Whitney U test was performed to assess the relationship between expense per month and dentist visits. The findings indicated that there was no significant correlation between the price differences among long-term care facilities and the additional service of dentist visits by LTCFs staff. In terms of service expenses and the utilization of denture cleansing tablets, a statistically significant association was found. The obtained P-value of 0.005 indicates a significant relationship between the use of denture cleansing tablets and higher service expenses in *long-term care facilities*. The median service expense for tap water services was calculated to be 17,000 Baht, while the median service expense for denture cleansing tablet services was found to be 20,000 Baht.

Table 7 Descriptive statistics of the characteristic of LTCFs and service in LTCFs

Variables	Operating years: years		Service expense: THB	
	Median (IQR)	P-value	Median (IQR)	P-value
Physician visit				
Resident's family	4.5 (3.25-12.0)	0.793	16000 (15000-19500	0.123
LTCFs staff (additional cost)	7.0 (4.0-10.25)		18000 (16000-20000)	
Dentist visit				
Resident's family	6.0 (4.0-11.0)	0.600	18000 (15500-20000)	0.779
LTCFs staff (additional cost)	7.0 (4.0-10.0)		18000 (15000-21500)	
Denture immerse				
Tap water	7.0 (4.0-10.75)	0.642	17000 (15000-19750)	0.005*
Denture cleansing tablet	7.5 (4.25-12.5)		20000 (20000-30000)	

Analyze by Man-Whiney U-test, IQR = Interquartile range

Statistically significant difference (p <0.05

CHAPTER V
DISCUSSION

To summarize the main findings of the study in relation to the objectives, the study revealed that long-term care facilities (LTCFs) in Bangkok display diversity in their characteristics, health services, and oral health services. There were notable discrepancies in the frequency of checkups between oral health and general health. While daily oral health care was provided in all long-term care facilities, variations were observed in the approaches to denture care, such as brushing and immersing. The utilization of denture cleansing tablets was found to be significantly associated with service expenses, as mentioned earlier. These findings are in line with the objectives of the research.

Before 7 March 2022, the Department of Health Service Support licensed a total of 137 private long-term care facilities. For this study, 50 long-term care facilities located in Bangkok agreed to participate by answering a questionnaire through phone calls. The Ministerial Regulations stipulate that all long-term care facilities must be equipped to provide life support and rehabilitation for their residents' health needs. It was found that the registration of long-term care facilities (LTCFs) in Bangkok, as well as in other areas of Thailand, is currently dominated by nursing homes compared to day care and residential homes. On 30 June 2023, data revealed that

there were 721 registered nursing homes in Thailand, with 266 of them located in Bangkok, accounting for 37% of the total. Despite being this type with higher fees and stricter regulations, nursing homes are chosen because they have the capacity to accommodate a larger number of services compared to the other two types. Therefore, it is the preferred type for businesses to register. As for the operators of these long-term care facilities, those who have graduated from any of the 5 health science fields are eligible for a license to operate in LTCFs. For those who do not hold such degrees, they must complete a 130-hour training program in Elderly or Dependency Care Operation before they can apply for a license. It is crucial for health science graduates to have a sufficient understanding of healthcare to qualify for a license without additional training. These findings have important implications for the provision of health and oral health services in long-term care facilities, which need further study.

The study found that the average age of residents in long-term care facilities is over 65 years, which is consistent with global trends, as the elderly population and demand for long-term care facilities continue to grow.[1] Consequently, the study discovered that long-term care facilities include residents who are 65 years and younger. This indicates that the services provided by long-term care facilities are diverse and not exclusively intended for older adults or dependents. Interviews with

residents revealed that there are individuals who require rehabilitation services for a better quality of life after surgery or during illness.

In terms of service capacity in long-term care facilities, if classified based on the criteria used for community hospitals in Thailand, small community hospitals have beds ranging from 10 to less than 30, medium-sized community hospitals have beds ranging from 30 to less than 60, and large community hospitals have beds ranging from 60 and above. It was found that long-term care facilities in Bangkok have diverse sizes, with the majority having fewer than 30 beds. Only a small portion of long-term care facilities have more than 60 beds available for service. In terms of service capacity in long-term care facilities, if classified based on the criteria used for community hospitals in Thailand[37], small community hospitals have beds ranging from 10 to less than 30, medium-sized community hospitals have beds ranging from 30 to less than 60, and large community hospitals have beds ranging from 60 and above.[37] It was found that long-term care facilities in Bangkok have diverse sizes, with the majority having fewer than 30 beds. Only a small portion of LTCFs have more than 60 beds available for service.

The monthly service expenses of long-term care facilities indicate a range from 15,000 to 30,000 THB, depending on the scope of services offered. It is important to note that these expenses vary based on the level and extent of services provided by the facility. As the level of dependency among residents

increases, the required level of care also increases, resulting in higher service expenses. According to data from the National Statistical Office, the average monthly income of Thai people in 2021 was approximately 27,352 THB.[38] A report from the Bank of Thailand in 2022[39] highlighted that individuals with a bachelor's degree could earn a minimum of about 24,026.42 THB per month, while those without a degree could still earn up to 15,621.56 THB monthly. However, it is worth noting that many non-degree holders may face challenges in increasing their earnings compared to college graduates. According to a survey conducted by the National Statistical Office in Thailand in 2021[40], it was found that a significant number of older adults in the country are still actively working, with approximately 32.4% of them deriving the majority of their income from employment. This is closely followed by 32.2% who receive income from their children. Other sources of income were also observed. Additionally, it was found that a majority of older adults have limited or no formal education. The average annual income of the majority of older adults is in the range of 10,000 to 29,999 THB, accounting for 25% of the older adult population. This is followed by those with an annual income of 30,000 to 49,999 THB. Additionally, it was found that the majority of older adults receive financial support from their children, with the amounts typically ranging from 1,000 to 4,999 baht within the past year.[40] Consequently, it is imperative for the total monthly income of the family to be sufficient to support the family members who are anticipated to reside in long-term care facilities for an extended period.

Regarding health care services, older adults residing in long-term care facilities exhibit high degrees of physical dependency, cognitive impairment, multiple morbidity and polypharmacy.[41] The research reveals that long-term care facilities in Bangkok concentrate on and manage the physical health of residents by conducting regular checkups with physicians. Moreover, in 76% of all long-term care facilities, there is an additional service that allows residents to visit a physician at an extra cost. On the other hand, in 24% of long-term care facilities, the responsibility of taking the residents for regular checkups depends on their family members.

Engaging in physical activity has been shown to have a positive impact on various aspects of well-being in LTCFs residents.[42] These benefits include improved cognitive performance, executive functions, physical endurance, and a reduction in depressive mood.[42] Malnutrition, weight loss, and low body mass index (BMI) are commonly observed issues in long-term care facilities. Notably, low BMI and weight loss have been associated with higher mortality rates.[43] This study reveals that all long-term care facilities examined provided activities for their residents, encompassing a range of physical exercises such as walking, dancing, and drawing, among others. Moreover, nutritional concerns were addressed by all long-term care facilities, ensuring the physical and oral health of each resident. However, further investigation is needed to delve into the specific causes and effects of physical activities and nutritional concerns in long-term care facilities. This additional research

would provide a more comprehensive understanding of these interventions and their impact on the well-being of residents.

The study demonstrates that residents in long-term care facilities receive daily oral health care, including routine denture care for those who wear dentures, involving brushing and immersing. Consistent with research conducted in the USA, it is recommended that older adults who depend on caregiver should engage in daily oral health practices and undergo regular dental checkups by a dentist.[44] It is crucial to educate both caregivers in long-term care facilities and older adults themselves about the importance and proper procedures of oral health care.[44]

According to the study conducted by Y. Nishi et al., it was found that brushing and cleaning removable dentures with denture cleanser can effectively reduce the number of microorganisms on their surface.[45] Another study by L. Gendreauhe and Z.G. Loewy revealed that poor denture cleanliness is a risk factor for denture stomatitis, and there is a direct correlation between denture cleanliness and a higher risk and prevalence of this condition.[46] Furthermore, research supports the use of denture cleansing tablets, as they significantly reduce the candida count and bacterial load on denture surfaces.[47, 48] In this particular study, two methods of denture immersion were examined: immersion with tap water as the primary method, and immersion with denture cleansing tablets. Denture cleansing tablets were used in 20% of the samples, while tap water accounted for the remaining 80%,

except for cases where residents' families provided alternative solutions or tablets. The findings suggest the need for guidelines or standards for oral health care services in long-term care facilities, which would be beneficial in ensuring consistent and effective oral health care practices.

Regarding dental care, the study found that dental checkups with a dentist were only sought in cases of problems or emergencies. Approximately 66% of the sampled long-term care facilities relied on informing the residents' family or relatives to take them to the dentist, while only 34% offered services to facilitate residents' visits to the dentist at an additional cost. These findings align with the results of a similar study conducted in Germany.[49] Older adults residing in long-term care facilities typically do not receive routine dental checkups and can only visit a dentist when they experience discomfort or have oral health issues. Unfortunately, oral health often becomes neglected among individuals with chronic illnesses and age-related impairments.[44] Regular dental checkups are essential for early detection of oral problems, enabling timely and appropriate treatment while also leading to potential cost savings. Dentists should actively establish and maintain oral health care services and procedures within long-term care facilities (LTCFs). This study supports the recommendations provided to assist operators and caregivers in developing oral health care protocols or guidelines specific to their LTCFs.[50]

The study also found that various services, including oral health services, were correlated with monthly costs in LTCFs. It was observed that the cost of denture care services was higher in LTCFs, and this finding is consistent with the research conducted by David[51], which examined the prices of private long-term care facilities in the United States. David's study revealed that higher prices were associated with better health services. Therefore, it can be inferred that in LTCFs, higher costs are linked to better quality of healthcare services, including oral health services. This suggests that residents in LTCFs with higher service expense may receive superior oral health service compared to those in facilities with lower expense.

It has been found that Thailand currently lacks a policy or guidelines for the integration of public and private healthcare services, specifically in the context of long-term care facilities. Furthermore, health insurance in Thailand does not cover the provision of healthcare services within long-term care facilities. In contrast, Japan has taken proactive measures to address the challenges posed by its rapidly aging population. In April 2000, Japan implemented the "long-term care insurance system," which includes coverage for oral health services for individuals residing in long-term care facilities. Public oral health services are tailored to different life stages and are primarily delivered by private dental practitioners under contracts with local governments. The number of dental facilities has increased, and the health insurance

system ensures easy access to dental treatment at a reasonable cost. [52]This serves as a good model that can be considered for implementation in Thailand in the future.

The strength of this study lies in its pioneering investigation of oral health services in long-term care facilities, being the first of its kind. It sheds light on the impact of prices on specific services offered by private long-term care facilities and highlights the inadequate focus on oral health care. The findings from this research can serve as valuable insights for shaping collaborative policies in the healthcare profession, aiming to enhance the overall health of individuals residing in long-term care facilities.

In terms of limitations in this research, the first limitation is that the study commenced during the COVID-19 pandemic in early 2021. As a result, the proposal plan to collect data on-site, including information from operator, caregivers and residents in long-term care facilities (LTCFs) along with oral status examinations, had to be restricted to only partial data collection via telephone. This led to a limitation in the subsequent aspect, which is the use of phone call interviews with respondents, including owners, operators, and caregivers. It was commonly observed that several LTCFs had the same person serving as both the owner and operator, and in some cases, as a caregiver as well. This may result in better responses from LTCFs compared to respondents who are solely owners or operators without direct patient care responsibilities. Conducting further studies with on-site data collection to

determine respondents for various questionnaire sections would yield clearer information. Moreover, regarding complex issues such as personnel-related matters or data related to taxation and regulations, telephone data collection was less effective compared to on-site data collection. Additionally, it was found that data collection during the COVID-19 outbreak might affect the specificity of dentist checkup related questions, limited only to emergency situations.

In the future study in Long-Term Care Facilities (LTCFs) in Thailand, there are several areas that warrant further investigation. Firstly, it is crucial to expand the study to encompass other provinces in Thailand. Consequently, this expansion allows for the generalization of the findings to a broader population, thereby enhancing their applicability and relevance. Secondly, to ensure more robust results and enhance the statistical power of the study, it is recommended to increase the sample size. This will provide a more comprehensive representation of the population under investigation. Additionally, including different types of LTCFs such as nursing homes, residential homes and day care will offer a broader perspective and deeper insight into the oral health services within these diverse settings. On-site interviews with both residents and staff members should be conducted to gather qualitative data, enabling a comprehensive understanding of their experiences and perspectives. This qualitative data will complement the quantitative findings, providing a holistic understanding of the oral health service within LTCFs.

Furthermore, collecting data on the availability, accessibility, and quality of health and oral health services provided within LTCFs is crucial for evaluating the current state of care. This information will aid in identifying any gaps or areas for improvement in service delivery. Moreover, it is essential to assess the oral health status of residents in LTCFs to identify potential oral health issues that may require immediate attention. Based on these assessments, appropriate interventions and preventive measures can be implemented to address the oral health needs of the residents effectively. Lastly, investigating the role of caregivers in LTCFs and examining their knowledge, attitudes, and practices related to oral health care for residents is imperative. Understanding the perspectives and behaviors of caregivers will shed light on their role in promoting oral health among the residents. This knowledge can be utilized to develop targeted training programs and educational initiatives, ensuring that caregivers possess the necessary skills and knowledge to provide optimal oral health care to residents in LTCFs.

CHAPTER VI
CONCLUSION

In conclusion, the findings of this research indicate that long-term care facilities in Bangkok offer oral health services to their residents. However, it is noteworthy that there is a lack of established guidelines or protocols for effectively addressing oral health issues within these facilities. Therefore, it is highly recommended that dentists and dental professionals assume a crucial role in advising long-term care facilities on proper oral health care practices and actively evaluating the oral health status to the caregivers and residents.

REFERENCES

1. He W, Goodkind D, Kowal PR. An aging world: 2015: U.S. Census Bureau Washington, DC; 2016 [cited 2022 15 Aug]. Available from: https://www.researchgate.net/profile/Paul-Kowal/publication/299528572_An_Aging_World_2015/links/56fd4be108ae17c8efaa1132/An-Aging-World-2015.pdf.

2. Bank AD. Country diagnostic study on long-term care in Thailand: Asian Development Bank; 2020 [cited 2022 15 Aug]. Available from: https://www.adb.org/sites/default/files/publication/661736/thailand-country-diagnostic-study-long-term-care.pdf.

3. Statistics of the older persons in Thailand, 77 provinces as of December 31, 2020 [Internet]. Department of Older Persons. 2021 [cited 2022 15 Aug]. Available from: https://www.dop.go.th/th/know/side/1/1/335.

4. Number of Long-term care facilities in Thailand with a valid license [Internet]. 2023 [cited 2023 30 Jun]. Available from: https://esta.hss.moph.go.th/index.php.

5. Sasat S, Choowattanapakorn T, Pukdeeprom T, Lertrat P, Aroonsang P. Long-term care institutions in Thailand. J Health Res. 2013;27(6):413-8.

6. Dyer S, Valeri M, Arora N, Ross T, Winsall M, Tilden D, et al. Review of international systems for long-term care of older people: report prepared for the royal commission into aged care quality and safety: research paper 2: Flinders University; 2019. 134 p.

7. Ettinger RL. Oral health and the aging population. J Am Dent Assoc. 2007;138 Suppl:S5-6.

8. Thomson WM, Ma S. An ageing population poses dental challenges. Singapore Dental J. 2014;35C:3-8.

9. Zuanazzi D, Souto R, Mattos MB, Zuanazzi MR, Tura BR, Sansone C, et al. Prevalence of potential bacterial respiratory pathogens in the oral cavity of hospitalised individuals. Arch Oral Biol. 2010;55(1):21-8.

10. Dietrich T, Sharma P, Walter C, Weston P, Beck J. The epidemiological evidence behind the association between periodontitis and incident atherosclerotic cardiovascular disease. J Clin Periodontol. 2013;40 Suppl14:S70-84.

11. Van Lancker A, Verhaeghe S, Van Hecke A, Vanderwee K, Goossens J, Beeckman D. The association between malnutrition and oral health status in elderly in long-term care facilities: a systematic review. Int J Nurs Stud. 2012;49(12):1568-81.

12. Donnelly LR, Clarke LH, Phinney A, MacEntee MI. The impact of oral health on body image and social interactions among elders in long-term care. Gerodontology. 2016;33(4):480-9.

13. WHO. Ageing 2021 [cited 2021 July]. Available from: https://www.who.int/health-topics/ageing#tab=tab_1.

14. Thailand's leadership and innovations towards healthy ageing [Internet]. 2023 [cited 5 March 2023]. Available from: https://www.who.int/southeastasia/news/feature-stories/detail/thailands-leadership-and-innovation-towards-healthy-ageing.

15. WHO. Health systems that meet the needs of older people 2021 [cited 2021 July]. Available from: https://www.who.int/ageing/health-systems/en/.

16. WHO. Ageing and health: 5 February 2018; 2018 [cited 2021 July]. Available from: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health.

17. WHO. Age-friendly environments 2021 [cited 2021 July]. Available from: https://www.who.int/ageing/age-friendly-environments/en/.

18. WHO. Long-term-care systems 2021 [cited 2021 July]. Available from: https://www.who.int/ageing/long-term-care/en/.

19. Strausbaugh LJ, Joseph CL. The burden of infection in long-term care. Infection Control & Hospital Epidemiology. 2000;21(10):674-9.

20. Marrie TJ. Pneumonia in the Long-Term-Care Facility. Infection Control & Hospital Epidemiology. 2002;23(3):159-64.

21. WHO. The Kingdom of Thailand health system review. Manila: WHO Regional Office for the Western Pacific; 2015.

22. The Ministerial Regulation regulates that the long-term care facilities for the elderly or the dependent is another business in the health business establishment,

B.E. 2020. [Internet]. Royal Thai Government Gazette. 2020, 31 Jul [cited 2022 15 Aug]. Available from: https://ratchakitcha2.soc.go.th/pdfdownload/?id=17137702.

23. กระทรวงสาธารณสุข. ประกาศคณะกรรมการสถานประกอบการเพื่อสุขภาพ เรื่อง หลักเกณฑ์การรับรองวุฒิบัตรหรือประกาศนียบัตรที่ผู้ดำเนินการการดูแลผู้สูงอายุหรือผู้มีภาวะพึ่งพิงได้รับในหลักสูตรด้านวิทยาศาสตร์สุขภาพ พ.ศ. 2563. 2563. p. 34.

24. Announcement of the Board of Health Enterprises Re: Criteria for Testing and Evaluation of Knowledge and Competencies of Persons Taking Care of the Elderly or People with Dependency B.E. 2020 [Internet]. Royal Thai Government Gazette. 2021, 6 Jan [cited 2022 15 Aug]. Available from: http://www.ratchakitcha.soc.go.th/DATA/PDF/2564/E/005/T_0035.PDF.

25. WHO. Older Population and Health System: A profile of Thailand.

26. Petersen PE, Yamamoto T. Improving the oral health of older people: the approach of the WHO Global Oral Health Programme. Community dentistry and oral epidemiology. 2005;33(2):81-92.

27. Sheiham A. Oral health, general health and quality of life. SciELO Public Health; 2005.

28. Coleman P. Improving oral health care for the frail elderly: a review of widespread problems and best practices. Geriatric Nursing. 2002;23(4):189-98.

29. Weening-Verbree L, Huisman-de Waal G, van Dusseldorp L, van Achterberg T, Schoonhoven L. Oral health care in older people in long term care facilities: A systematic review of implementation strategies. International Journal of Nursing Studies. 2013;50(4):569-82.

30. Abe S, Ishihara K, Adachi M, Okuda K. Oral hygiene evaluation for effective oral care in preventing pneumonia in dentate elderly. Archives of gerontology and geriatrics. 2006;43(1):53-64.

31. Yoneyama T, Yoshida M, Ohrui T, Mukaiyama H, Okamoto H, Hoshiba K, et al. Oral care reduces pneumonia in older patients in nursing homes. Journal of the American Geriatrics Society. 2002;50(3):430-3.

32. Haumschild MS, Haumschild RJ. The importance of oral health in long-term care. Journal of the American Medical Directors Association. 2009;10(9):667-71.

33. Murray Thomson W. Epidemiology of oral health conditions in older people. Gerodontology. 2014;31:9-16.

34. Boczko F, McKeon S, Sturkie D. Long-term care and oral health knowledge. Journal of the American Medical Directors Association. 2009;10(3):204-6.

35. Castrejón-Pérez RC, Borges-Yáñez SA, Gutiérrez-Robledo LM, Ávila-Funes JA. Oral health conditions and frailty in Mexican community-dwelling elderly: a cross sectional analysis. BMC public health. 2012;12(1):1-12.

36. Gil-Montoya JA, de Mello ALF, Cardenas CB, Lopez IG. Oral health protocol for the dependent institutionalized elderly. Geriatric Nursing. 2006;27(2):95-101.

37. กระทรวงสาธารณสุข ก. คู่มือหลักเกณฑ์การจัดตั้งและการปรับระดับศักยภาพของหน่วยบริการสุขภาพ ปีงบประมาณ 2565. https://r8way.moph.go.th/r8wayNewadmin/page/upload_file/20221108041847.pdf2022 [cited 2023 30 June]. Available from: https://r8way.moph.go.th/r8wayNewadmin/page/upload_file/20221108041847.pdf.

38. Average monthly income/household (2021) [Internet]. National Statistical Office Thailand. 2022 [cited 2022 15 Aug]. Available from: http://www.nso.go.th/sites/2014en.

39. Average wage classified by level of education [Internet]. 2021 [cited 30 Jun 2023]. Available from: https://app.bot.or.th/BTWS_STAT/statistics/BOTWEBSTAT.aspx?reportID=666&language=ENG.

40. National statistical office MoDeas. The 2021 Survey of The Older Persons in Thailand 2021 [cited 2023 30 June]. Available from: http://www.nso.go.th/sites/2014en/Survey/social/domographic/OlderPersons/2021/fullreport_64.pdf.

41. Gordon AL, Franklin M, Bradshaw L, Logan P, Elliott R, Gladman JR. Health status of UK care home residents: a cohort study. Age Ageing. 2014;43(1):97-103.

42. Ruuskanen J, Parkatti T. Physical activity and related factors among nursing home residents. Journal of the American Geriatrics Society. 1994;42(9):987-91.

43. Kiely D, Flacker J. Resident characteristics associated with mortality in long-term care nursing homes: is there a gender difference? J Am Med Dir Assoc. 2000;1(1):8-13.

44. Kiyak HA, Grayston MN, Crinean CL. Oral health problems and needs of nursing home residents. Community Dent Oral Epidemiol. 1993;21(1):49-52.

45. Nishi Y, Seto K, Kamashita Y, Take C, Kurono A, Nagaoka E. Examination of denture-cleaning methods based on the quantity of microorganisms adhering to a denture. Gerodontology. 2012;29(2):e259-66.

46. Gendreau L, Loewy ZG. Epidemiology and etiology of denture stomatitis. J Prosthodont. 2011;20(4):251-60.

47. Shetty PJ, Hegde V, Gomes L. Anticandidal efficacy of denture cleansing tablet, Triphala, Aloe vera, and Cashew leaf on complete dentures of institutionalized elderly. J Ayurveda Integr Med. 2014;5(1):11-4.

48. Duyck J, Vandamme K, Krausch-Hofmann S, Boon L, De Keersmaecker K, Jalon E, et al. Impact of denture cleaning method and overnight storage condition on denture biofilm mass and composition: a cross-over randomized clinical trial. PLoS One. 2016;11(1):e0145837.

49. Knabe C, Kram P. Dental care for institutionalized geriatric patients in Germany. J Oral Rehabil. 1997;24(12):909-12.

50. Brattebo Yamagata PA, Sue C, Stiefel DJ. Use of dental service in a nursing home. Spec Care Dentist. 1985;5(2):64-7.

51. Grabowski DC. A longitudinal study of Medicaid payment, private-pay price and nursing home quality. International journal of health care finance and economics. 2004;4:5-26.

52. Zaitsu T, Saito T, Kawaguchi Y, editors. The oral healthcare system in Japan. Healthcare; 2018: MDPI.

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