# Long - Term Care Model for the Elderly in the Industrial Area
# รูปแบบการดูแลระยะยาวสำหรับผู้สูงอายุในพื้นที่อุตสาหกรรม

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## Abstract

This research is a mixed methods research composed of quantitative and qualitative research. The objectives are to study the situation, needs, and problems of long-term care (LTC), analyze policy, plan, mechanism and present LTC model for the elderly in the industrial area. The sample population is 3,130 elderly people who are dependent on Samutprakarn Province and 355 people randomly selected, collect data by using questionnaires along with in-depth interviews with those involved in LTC 31 people, analyzed by descriptive statistics and content analysis.

The study found that the situation, needs, and problems of LTC, 70.1% of the dependent elderly who had the Barthel Activities of Daily Living: ADL score of 5-11, while 29.9% of elderly at ADL score equal or less than 4, 98.6% of the elderly were sick and most was non-communicable diseases, 42.3% needed someone to take care all the time, 41.4% had cared for an uncertain period and 16.3% were left alone. The dependent elderly who need LTC service was at a high level (mean 3.47) ranging from community service (mean 3.70) followed by the home service (mean 3.43) and Institutional services (mean 3.11) respectively. The overall problem of LTC was at a high level (mean 3.63). Performance in the years 2016 - 2019, 22 local administrative organizations were participating in the LTC program for a total of 48 locations. There were 79 care managers (CM), caregivers (CG) of 477 people, conducted a care plan of 1,423 cases, disbursed 70.77%. According to the findings, the researcher presents the LTC model by dividing the elderly into 3 groups. Group 1: 40-59 years old should focus on promoting health and preventing chronic infectious diseases (non-communicable diseases: NCDs). Group 2: 60 or older should be prepared to enter the LTC system. Group 3: older people who can help themselves should promote health

and prevent disease. Classification of the elderly should assess ADL together with family and community because in the industrial area there is a problem with limited time in caring for the elderly and being an urban society. In service, emphasizing community service and home services, management of local administrative organizations to prepare a memorandum of cooperation with relevant agencies so that all sectors are involved in caring for the elderly and developing a sustainable system.

**Keywords :** long-term care model, dependent elderly, industrial Area

**บทคัดย่อ**

การวิจัยนี้เป็นแบบผสมผสานทั้งเชิงปริมาณและเชิงคุณภาพ มีวัตถุประสงค์เพื่อศึกษาสถานการณ์ ความต้องการและปัญหาการดูแลระยะยาว, วิเคราะห์ นโยบาย แผน กลไกและนำเสนอรูปแบบการดูแลระยะยาวสำหรับผู้สูงอายุในพื้นที่อุตสาหกรรม ประชากรกลุ่มตัวอย่างเป็นผู้สูงอายุที่มีภาวะพึ่งพิงในจังหวัดสมุทรปราการ จำนวน 3,130 คน และสุ่มกลุ่มตัวอย่าง 355 คน เก็บรวบรวมข้อมูลโดยใช้แบบสอบถามควบคู่ไปกับการสัมภาษณ์เชิงลึกกับผู้ที่มีส่วนเกี่ยวข้องกับการดูแลระยะยาว จำนวน 31 คน วิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณาและวิเคราะห์เชิงเนื้อหา

ผลการศึกษา พบว่า ด้านสถานการณ์ ความต้องการและปัญหาการดูแลระยะยาว ผู้สูงอายุที่มีภาวะพึ่งพิงที่มีคะแนนดัชนีบาร์เธลความสามารถในการดำเนินชีวิตประจำวัน ในช่วง 5-11 คะแนน มี 70.1% ในขณะที่ผู้สูงอายุที่มีคะแนนความสามารถในการดำเนินชีวิตประจำวัน เท่ากับหรือน้อยกว่า 4 คะแนน มี 29.9% ผู้สูงอายุส่วนใหญ่เจ็บป่วย 98.9% และส่วนใหญ่เป็นโรคไม่ติดต่อเรื้อรัง ผู้สูงอายุมีคนดูแลตลอดทั้งวัน 42.3% ที่เหลืออีก 41.4% มีคนดูแลบางช่วงเวลาและมีผู้สูงอายุอยู่ตามลำพัง 16.3% ผู้สูงอายุที่มีภาวะพึ่งพิงมีความต้องการดูแลระยะยาวในภาพรวมอยู่ในระดับมาก (ค่าเฉลี่ย 3.47) ซึ่งสามารถเรียงตามลำดับดังนี้ บริการชุมชน (ค่าเฉลี่ย 3.70) รองลงมาบริการที่บ้าน (ค่าเฉลี่ย 3.43) และบริการในสถาบัน (ค่าเฉลี่ย 3.11) ปัญหาการดูแลระยะยาวโดยภาพรวมอยู่ในระดับมาก (ค่าเฉลี่ย 3.63) ผลการดำเนินงานในปี 2559-2560 มีองค์กรปกครองส่วนท้องถิ่นเข้าร่วมโครงการการดูแลระยะยาว จำนวน 22 แห่ง จากทั้งหมด 48 แห่ง มีผู้จัดการดูแลระยะยาว (CM) จำนวน 79 คน ผู้ดูแลผู้สูงอายุ (CG) จำนวน 477 คน ดำเนินการจัดทำแผนการดูแล (Care plan) จำนวน 1,423 ราย เบิกจ่ายเงินไปแล้ว ร้อยละ 70.77 จากข้อค้นพบผู้วิจัยนำเสนอรูปแบบการดูแลระยะยาวสำหรับผู้สูงอายุในพื้นที่อุตสาหกรรม โดยแบ่งกลุ่มเป้าหมายออกเป็น 3 กลุ่ม กลุ่มแรก อายุ 40-59 ปี เน้นการส่งเสริมสุขภาพและป้องกันโรคไม่ติดต่อเรื้อรัง (NCDs) กลุ่มที่ 2 คือผู้ที่มีอายุ 60 ปีหรือมากกว่านั้นควรเตรียมพร้อมเข้าสู่ระบบการดูแลระยะยาว และกลุ่มที่ 3 คือผู้สูงอายุที่สามารถช่วยตัวเองได้ ควรเข้าสู่การส่งเสริมสุขภาพและป้องกันโรค การจำแนกผู้สูงอายุควรประเมินความสามารถในการดำเนินชีวิตประจำวันครอบครัวและชุมชนร่วมด้วย เนื่องจากในพื้นที่อุตสาหกรรมมีปัญหาเกี่ยวกับเวลาที่จำกัดในการดูแลผู้สูงอายุและเป็นสังคมเมือง ด้านการบริการเน้นบริการในชุมชนและการบริการที่บ้าน ด้านการบริหารจัดการให้องค์กรปกครองส่วนท้องถิ่นจัดทำบันทึกความร่วมมือกับหน่วยงานที่เกี่ยวข้องเพื่อให้ทุกภาคส่วนมีส่วนร่วมในการดูแลผู้สูงอายุและพัฒนาระบบให้เกิดความยั่งยืน

**คำสำคัญ :** รูปแบบการดูแลระยะยาว ผู้สูงอายุที่มีภาวะพึ่งพิง พื้นที่อุตสาหกรรม

## Introduction

In 2015, Thailand with the elderly proportion of 15.8 % was at the second rank among ASEAN member countries, following Singapore of 17.0%.[1] Thailand population structure at that time was 65.1 million population, with people aged 60 years and over about 11 million or 16 % of the total. Looking at a dynamic population structure, it was found that Thailand has entered the aging society since 2005. [2] Therefore the concerned agencies of the country were aroused by awareness of the elderly care and the problems that would occur in the future. Until the year of 2013, the strategic plan for the long- term care (LTC) system for the elderly in dependency 2014 - 2018 had been signed as a memorandum of cooperation of 4 agencies; 1) Ministry of Public Health 2) National Municipal League of Thailand 3) Sub-district Administration Organization Association of Thailand and 4) National Health Security Office to support local administrative organizations to organize the LTC system for elderly people. In the initial stage, the management of 100,000 elderly people with dependency status covered an area of approximately 1,000 local administrative organizations (10%) and would be increased to include Bangkok in 500,000 (50%) covering 5,000 areas and finally target 1 million (100%) covering every district throughout the country in 2017-2018.[3] Samutprakarn is an area of interest in this study due to the context of the area being an urban society, an industrial area of 7,489 industrial factories[4], family members have limited time to care for the elderly. LTC for elderly people with dependency started its implementation since 2016 which is particularly interesting to study in specific areas.

## Objectives

1. To study the situation, needs, and problems of long-term care for the elderly in the industrial area.
2. To study and analyze policy, plan and mechanisms of long-term care for the elderly in Thailand.
3. To present long-term care model for the elderly in the industrial area.

## Methods

Mixed methods research (quantitative & qualitative methodology) was used for the population of 3,130 dependent elderly people in Samutprakarn Province, samplings of 355 people were drawn according to Taro Yamane formulas [5] and data were collected by questionnaires. For qualitative research: In-depth interviews from a purposive sampling of selected informants involved in elderly LTC. Focus areas were selected under the following criteria: 1) The district with the highest number of industrial factories. 2) Local administrative organizations that applied to participate in long-term public health care of the National Health Security Office. 3) The key informants must be the principal contributors involved in the LTC, with a total amount of 31 people. Also, the researcher has compiled documents relating to long-term care as information in this study. Descriptive statistics and content analysis were used respectively for data analysis.

## Results

**The situation, needs, and problems of long-term care for the elderly in the industrial area. (Samutprakarn Province)**

**1. Personal information.** The elderly dependent who had Activities of Daily Living (ADL) score of 5-11, (able to do some movement, can do some self-help, need some help from somebody) were at 70.1%, while elderly at ADL score equal or less than 4 (can't move, can't help themselves or with disability who need 100% help) were at 29.9%. The elderly had an average income less than 5,000 Baht per month 88.2%. The elderly with someone taking care all day was 42.3%, the remaining 41.4% had been cared for an uncertain period, while the elderly who were left alone was 16.3%.

**2. Long-term care situation for elderly in the industrial areas.**

**2.1 Caregiver/family member.** The elderly who had a caregiver was 90.4%. Caregivers are female, 68.7% and male 21.7%, mostly aged 41-60 years at 43.9%, completed primary school 35.5%, secondary school 19.7%, caregivers without the training of the elderly care program 80.6%, without experience 74.1%.

**2.2 Health and chronic disease.** The elderly were mostly sick 98.9% out of the total, respectively from 1) hypertension 2) diabetes 3) partial paralysis 4) osteoarthritis, bone pain, coccyx arthritis, 5) total paralysis 6) heart disease 7) stroke 8) dementia 9) limb weakness 10) kidney disease.

**2.3. National Health Insurance System and Social Services.** The elderly with the gold card was 78.9% [health insurance card of National Health Security Office (NHSO)], with civil servant/state enterprise health system was 10.7%, with Social Security insurance was 7.9%. The elderly outside of the long-term care system was 55.2%, while in the system was 44.8% (Thailand started long-term care system in 2015, some elderly people did not get long-term care service because they did not use a gold card).

**3. Long-term care needs for the elderly**. The needs for LTC services for the dependent elderly was totally at a high level (mean 3.47). The community service was at a high level (mean 3.70), followed by the home service at a high level also (mean 3.43) and institutional services at moderate levels (mean 3.11).

**4. Long-term care problems for dependent elderly.** The overall problem score was at a high level (mean 3.63). Considering the sequence from the most severe problems with the least respectively; (1) The difficulties of the elderly in bed in going to the hospital (2) Low income or insufficient financial status (3) Difficulty in caring the elderly with chronic and repetitive disease (4)

Lack of community support in caring for dependent elderly and (5) Lack of integration among government agencies to provide support for dependent elderly.

**Analysis of policy, plan, and mechanisms of long-term care for the elderly in Thailand.**

Thailand enters an aging society, therefore the government has the policy to care for the elderly, there is a strategic plan for the implementation of the long-term care system for the elderly who are in the dependency period, 2014 - 2018 [6] with the goal of allowing people families and communities are encouraged to have the ability to care for the elderly so that they can live with dignity in their families and communities by linking to the service system Health and social services effectively. The main idea is to develop existing social and resource costs by allowing local administrative organizations to be the main mechanism for integrating various services into the community and allowing other agencies to support operations. At present, the operation is in the range of developing a suitable model for caring for elderly people with dependency. Therefore, in all areas, there is the same pattern of management. Emphasizing the use of the community as a base, with 4 important principles: 1) focusing on the integration of public health services and social services at the area level (Sub-district/village/family) 2) Considering the sustainability and the possibility of a long-term budget in the future 3) Supporting participation by allowing local administrative organizations to be the main host in the system administration under the support of the primary care unit network in the area and 4) Expanding the long-term care service system for elderly people with dependency in the area. [6] Regarding the operational mechanism, there is a memorandum of cooperation of 4 agencies, which defines the roles and obligations of all 4 parties. 1) The Ministry of Public Health is responsible for promoting and providing service units the effective management of long-term care to cooperate with the local government. 2) The National Health Security Office promotes the participation process, establish rules for local administrative organizations to establish long-term care systems in the area and be able to manage according to the objectives and budget allocation 3) the National Municipal League of Thailand and 4) Sub-district Administration Organization Association Thailand to promote the implementation of local administrative organizations to be able to manage long-term care systems effectively to meet the needs of its people and the specific characteristics of each area. The results of the long-term care system operation showed that 80,826 elderly care was provided under the national health insurance system from 100,000 targeted goals or 80% of the target, budget disbursement issues. The report of the National Health Security Office found that the results of operations in the fiscal year 2016 as of May 2017, there were 71% of the local long-term care plans and 43% of the funds were transferred to the service units. Found that 63.8% of the local administrative organizations participating in the project. [7]

**Analysis of policy, plan and mechanisms of long-term care in Samutprakarn Province.**

This research found that Samutprakarn province is an industrial area with different characteristics from 4 other areas: 1) Most people work in industrial plants or establishments. This makes family members of the elderly have a limited amount of time to care for the elderly or have some time care. 2) There are a large number of latent and immigrant populations. The relationship of people in the community is not intimate, living separately, is a characteristic of urban society. 3) There is a problem of crime and narcotics, resulting in security risks in life and property and 4) Some areas have environmental problems such as solid waste, dust, water pollution, etc. The 4 issues affect the care of the elderly directly and indirectly. Analyze policy, plan and operational mechanism, Samutprakarn Province participate in the long-term care program for the elderly by the government's policy. The operation is in accordance with the announcement of the National Health Security Committee on the formulation of criteria to support local administrative organizations to operate and manage the health security fund at the local level or area, 2014 (Issue 1) and the announcement (No. 2 attached), 2016 and annexes on the set of benefits and compensation rates for public health services for dependent elderly, which is a financial law relating to benefits that have recently been issued under the authority of the board of directors authorized by the National Health Security Act. The service is divided into 5 categories as follows:

1) Assessment, before providing services and planning for long-term health care (Care Plan), is an activity used to assess the physical and mental health of dependent elderly people before making plans for care by a family doctor team and staff. This activity is directly related to the plan and operation mechanism due to the budget disbursement from the National Health Security Office, which states that there must be a care plan to be able to be disbursed. Also, it was found that in the preparation of the care plan, the lack of family and community assessment for participation in caring for the elderly, mostly assessed the physical aspects of the elderly only.

2) Providing long-term health care services by public health personnel (family doctor team) The service activities and service frequency depend on the problem of dependency elderly, including home service/community service/ provide advice and training to relatives and other aspects of care as required. Important findings found that the frequency of service does not correlate with the needs of the elderly, such as the regulations to provide services to the elderly who are unable to move (bed bound elder- end of life) 4 times per month, the elderly with chronic and can move but need help (homebound elder) 2 times per month. The elderly who are on the bed cannot move, cannot do anything other than symptomatic care. The staff does not

need to go to take care every day, but they will advise relatives in the care, but some elderly have to do physical therapy continuously, so it is necessary to go every week. Therefore, the frequency of service should be based on the physical and mental condition of the elderly.

3) Home service/community service and advice to relatives, caregiver or other health networks or volunteers, primary health services, both nursing, rehabilitation, physical therapy, pharmaceutical care, nutrition care, include measuring vital signs, health screening, blood sugar test, and first aid, etc. In actual operation, doctors, nurses and public health officials are not able to enter the area at all times because of the burden of routine tasks requiring care for patients in the hospital. Therefore, in many areas of Samutprakarn Province, the elderly caregivers are the healthy volunteers, which they can only provide primary health services. If in-depth medical care is provided, notify the long-term care manager to handle cases or forward them to the hospital.

4) Supply medical equipment and necessary auxiliary equipment such as air mattresses, oxygen sets, adjustable beds sputum/fluid set. The results of the research found that the provision of various equipment in helping the elderly, there is a joint operation between government agencies, private sectors, and communities such as Rotary Club, South Bangkok Power Plant, Toyota Company, community, etc. They donate money to purchase equipment or donate things for the elderly.

5) Evaluate the care and adjustment of service plans by health personnel or long-term care system managers. Most long-term care managers are nurses at the Tambon Health Promotion Hospital. They have an important duty to evaluate and adjust the care plan for the elderly. They have regular workloads and are unable to work proactively, they can only provide home visits once a month, and in some areas, there is no long-term care manager due to resignation or relocation, budget disbursements delayed due to a shortage of personnel in the operation.

From the findings, the researcher presented the long-term care model for the elderly in the industrial area as follows.

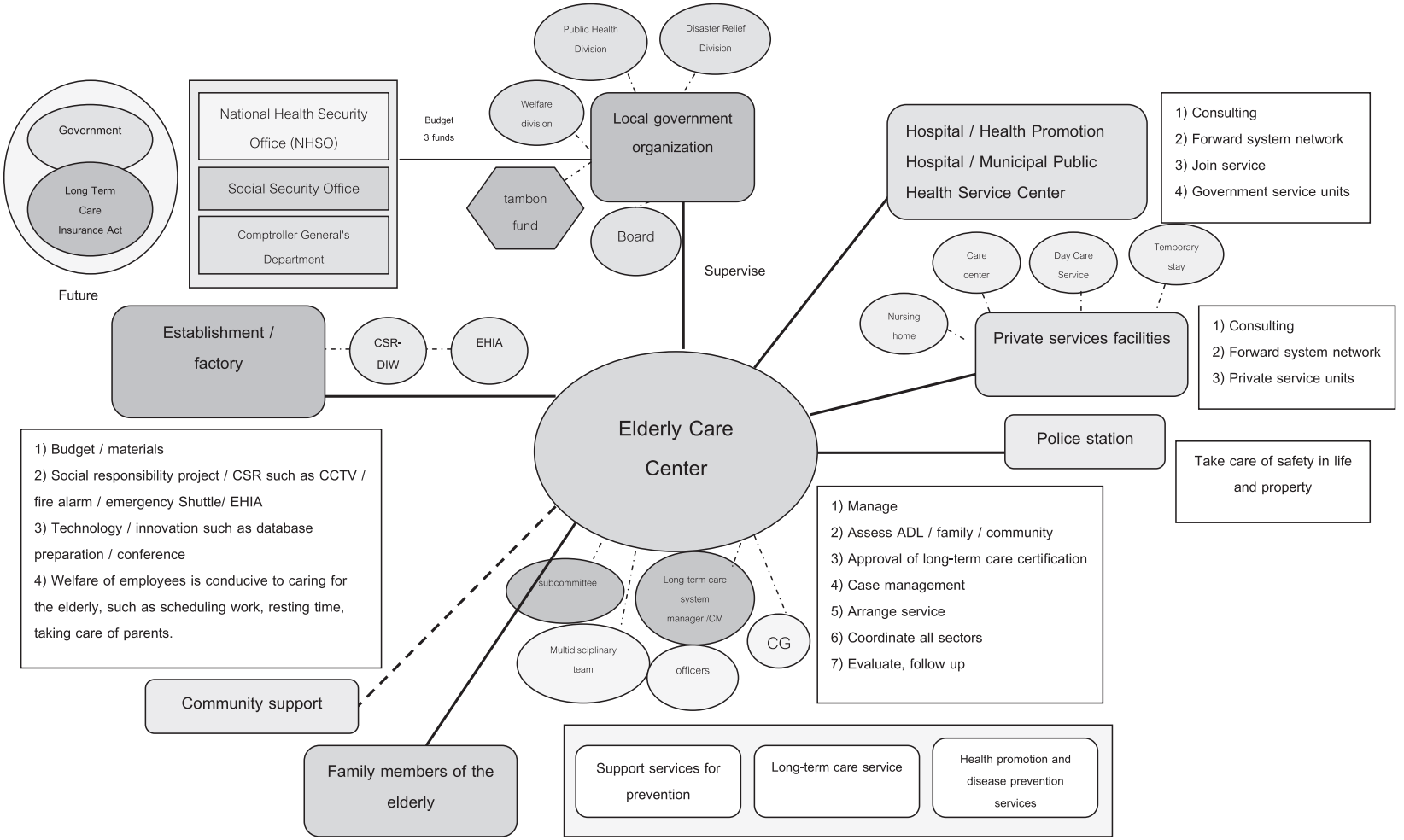
**1. The long-term care model in the industrial area** should establish an *elderly care center*, separated from the normal system, but under the supervision of the local administrative organization so that management is flexible, proactive, with 7 main tasks: 1) Administer manage the elderly care center 2) Assess ADL / family/ community 3) Approval of long-term care certificate and 4) Case management for the elderly 5) Service arrangement 6) The cooperation of all sectors and 7) monitoring and evaluation. Local administrative organizations should coordinate with industry and enterprises to participate in caring for the elderly as shown in figure 1.

**2. Long-term care service system for the elderly**

**2.1 The target group** divides the elderly into 3 groups. Group 1: 40-59 years old should focus on promoting health and preventing chronic infectious diseases (non-communicable diseases: NCDs). Group 2: 60 or older should be prepared to enter the LTC system. Group 3: older people who can help themselves should promote health and prevent disease.

**2.2 Classification of the elderly.** Individuals aged 60 years are categorized by assessing their activities of daily living, physical and mental conditions, visit the house to evaluate the family and the community, bring all the information to the committee of the elderly care center to consider approving the issuance of long-term care certificates.

**2.3 The service arrangement** should be consistent with the classification of the elderly as follows. 1) Support services for prevention include home visits, nursing home, physical rehabilitation such as physical therapy, occupational therapy, Thai traditional medicine/alternative medicine, providing advice, counseling, knowledge about diseases or illnesses dementia prevention, fall prevention, assessment and prevention of depression, pharmaceutical care, nutrition care, service at the institute in the daytime, community support services, and other services as necessary for groups that need support for protection level 1-2. 2) Long-term care services such as nursing homes, care facilities, elderly care centers, institutional care, long-term care services, including medical services, home visits, physical rehabilitation, physical therapy, nutrition care, pharmaceutical care, medical equipment supply and necessary equipment, palliative care / end-of-life care services Life, consultation with relatives, community support services and other services as necessary for groups that require long-term care at level 1-3. 3) Health promotion and disease prevention services such as exercise, tai chi, fitness, recreation, inventions, occupation, disease education, and health care, elderly clubs, self-help groups, does not require long-term care and 40-59-year-old individuals are health promotion and disease prevention groups as shown in figure 2.


Public Health Division
Disaster Relief Division
Welfare division
Local government organization
Government
Long Term Care Insurance Act
National Health Security Office (NHSO)
Social Security Office
Comptroller General's Department
Budget 3 funds
tambon fund
Board
Future
Supervise
Hospital / Health Promotion Hospital / Municipal Public Health Service Center
1) Consulting
2) Forward system network
3) Join service
4) Government service units
Care center
Day Care Service
Temporary stay
Nursing home
Private services facilities
1) Consulting
2) Forward system network
3) Private service units
Establishment / factory
CSR-DIW
EHIA
Elderly Care Center
Police station
Take care of safety in life and property
1) Budget / materials
2) Social responsibility project / CSR such as CCTV / fire alarm / emergency Shuttle/ EHIA
3) Technology / innovation such as database preparation / conference
4) Welfare of employees is conducive to caring for the elderly, such as scheduling work, resting time, taking care of parents.
subcommittee
Long-term care system manager /CM
CG
Multidisciplinary team
officers
1) Manage
2) Assess ADL / family / community
3) Approval of long-term care certification
4) Case management
5) Arrange service
6) Coordinate all sectors
7) Evaluate, follow up
Community support
Family members of the elderly
Support services for prevention
Long-term care service
Health promotion and disease prevention services

Local government organization
Elderly Care Center
Elderly people
Home visit
Assessment officer ADL / physical and mental condition and assess the readiness of the family at home
Doctor's opinion
Hospital doctors who maintain regular / hospital / health promotion hospitals / doctors, municipal health service centers to see the symptoms of the disease
Committee of the elderly care center
Approval and issuance of long-term care certificates
Care managers and long-term and staff teams
Consultation about various services
Participation in caring for the elderly
Establishments / factory
Private services
Community support
Hospital / health promotion hospitals / municipal Public health service center
Related government agencies such as police stations, provincial industrial offices, provincial offices for natural resources and environment, provincial public health offices .etc.
Long-term care
ADL (Physical and mental condition)
Family
X
V
Community
Support 1
Doing all the daily activities on their own, but some activities require help
Support 2
Making the routine worse, therefore needing support services as needed
Long-term care 1
Can move and may have problems eating or excretion, but with brain confusion
Long-term care 2
Can't move and may have problems eating or excretion or having severe illness
Long-term care 3
Can't move and may have problems eating or excretion or having severe illness or being in the last phase of life
Self-help group
Do not need long-term care promote health
Support services for prevention
- House visit
- Nursing at home
- Rehabilitation / physical therapy
- Thai traditional medicine / alternative medicine
- Counseling
- Provide knowledge of diseases / illnesses / prevention of dementia, falls, depression, nutrition, pharmacy
- Institutional services in the daytime.
Long-term care service
- Elderly homes / care facilities / elderly care centers / institutional services
- Long-term care services in medicine and nursing at home
- Palliative care/ care end of life
- Counseling
- Providing necessary medical equipment
- Communitysupport, etc.
Health Promotion Services
- Exercise / Fitness / Tai Chi
- Recreation
- Provide knowledge about health care
- Crafts
- Complementary occupation
- Elderly club
If the condition of the body and mind is changed, you can apply for a long term care service at the elderly care center.

## Discussion

Health and chronic diseases is a major cause of LTC development in the industrial area, the elderly especially, tend to become more chronic with non-communicable diseases. By the year 2001 – 2014, the main cause of 5 primary orders of deaths had been increasing composed of heart disease, diabetes, stroke, high blood pressure and cancer with an average increase rate of more than 12 %, which is mainly due to improper health risk behaviors.[8] Following the World Health Organization global report, [9] there are approximately 36.5 million people with dementia, who need LTC. Therefore, LTC services must be closely related to disease incidence.

LTC model may have different characteristics according to the context. In urban areas where people are not close to each other and most have limited time. The LTC model in the industrial area should, therefore, allow all sectors to participate in caring for the elderly, both government agencies, private sector and community, by working proactively, which agrees with the research of Narirat Jitmontri et al.[10] in study the model of good elderly care of urban areas, pointing that in providing health services needed to integrate social services in a proactive, comprehensive and thoroughly coverage approach. The factors that promote good elderly LTC are the community potential, good support system, and the elderly themselves. Indicators of good elderly care of the community are strong leaders and cooperative team members, also a support system from many sectors; the public sector and the private sector should work cooperatively with the community in caring for the elderly as well as creating an elderly database which makes the LTC strength in the urban area.

In Samutprakarn, there is a need for LTC at a high level. The elderly people who are more dependent on the need for services in the community and home services than other services due to difficulties in travel, cost problems and disease severity, therefore, require long-term care in the community or home services inconsistent with the findings of Ayumi et al.[11] studied the integration of community services and the factors involved in merging into the LTC insurance system in Japan. 9 service types were found in this study, namely 1) daily care 2) daily care and convenient equipment 3) daily care, helpers at home and convenient equipment 4) helpers at home and convenient equipment 5) convenient equipment 6) helpers at home 7) daily care and helpers at home 8) helpers at home, home visiting by nurses and convenient equipments and 9) others. The overall picture was a combination of services at home and community.

## Conclusion

The study of LTC model for the elderly in the industrial area found that the area context should be consistent with the lifestyle of the urban people living in industrial areas who mostly

have limited time. The target group should be divided into 3 groups of people aged 40-59 years, focus on promoting health and disease preventive health against non-communicable diseases (NCDs) while people aged 60 years and over ready prepared for the LTC system and older people who can help themselves should promote health and prevent disease. Classification of the elderly should be based on the assessment of their activities of daily living, together with family, and community to perform holistic assistance. The service benefits package should be designed to facilitate the operation and maximize benefits for the elderly. LTC services should be based on community services and home services with proactive care in the area, composing of physical rehabilitation, physical therapy and psychological care which family members should be involved. Local administrative organizations to prepare a memorandum of cooperation with relevant agencies so that all sectors are involved in caring for the elderly and developing a sustainable system.

**Recommendations**

1. The local government organization should support the establishment of the elderly care center / the center for developing the quality of life for the elderly to be a specialized unit for elderly care.

2. The local government organization should prepare a memorandum of cooperation with relevant agencies, namely enterprises/factories/hospital/police station, etc. for all sectors participated in the elderly LTC.

3. The local government organization should use information technology to set up the elderly database and use communication tools such as mobile phones, notebook computers, connect with CCTV to take care of the elderly or propose for enterprises/factories installment for alarm warning systems to care for elderly people who are alone or have movement difficulty.

**Recommendations for further research**

1. There should be a further study of problems and other factors affecting the LTC system for the elderly in Thailand.

2. There should be a further study of the budget for LTC expenses in the future. Including the cost of providing various types of services

3. There should be a further study of chronic non-communicable diseases (NCDs) that affect elderly healthy.

**Acknowledgments**

I would like to thank the Royal Golden Jubilee (RGJ) Ph.D. Program and Huachiew Chalermprakiet University for their funding and support. Many thanks to all persons involved in making this successful research.

## References


1. Department of Elderly Affairs. Elderly society How to create power in entering the ASEAN community. Main documents and resolutions of the National Elderly Assembly. Bangkok: Ministry of Social Development and Human Security; 2015.
2. Thai Elderly Research and Development Institute Foundation and Institute for Population and Social Research Mahidol University.Thai Elderly Situation 2015. Bangkok: Amarin Printing and Publishing Public Company Limited; 2016.
3. National Health Security Office (NHSO). Strategic plan for the implementation of long-term care systems for the elderly in dependency, 2014-2018. Bangkok: National Health Security Office (NHSO); 2014.
4. Samutprakan Provincial Industry Office. Report of the number of industrial work in Samut prakan Province in 2016.
5. Yamane T.Statistical an introductory analysis. New York: Harper & Row; 1973. Cited in Boontham kitpridabrisut. Statistical analysis for research. 5th edition, Bangkok: Kaew Kaew Printing; 2010.
6. National Health Security Office (NHSO). Manual of long-term health care system for elderly people with long-term dependency in the national health insurance system, fiscal year 2016. Bangkok: National Health Security Office (NHSO); 2016. pp. 19-20.
7. Sumrit Srithamrongsawat et al. The complete report of the research project for the development of a long-term care system for elderly people with dependency under the national health security system. Faculty of Medicine Ramathibodi Hospital Mahidol University and Health Systems Research Institute (HSRI); 2018. pp. 100-101.
8. Office of the National Economic and Social Development. National Economic and Social Development Plan No. 12. Bangkok: Office of the Prime Minister; 2016.
9. World Health Organization. World Report on Ageing and Health. Geneva; 2015.
10. Narirat Jitmontri, Wilaiwan Thongcharoen, Sawitree Yanyasin. Study of good elderly care model of urban communities. Bangkok: Health Systems Research Institute (HSRI) Foundation of Thai Elderly Research and Development Institute; 2009.
11. Ayumi Igarashi, Tomoaki Ishibashi ,Tomohiro Shinozaki and Noriko Yamamoto-Mitani. Combinations of long-term care insurance services and associated factors in Japan: a classification tree model. BMC Health Services Research [internet]. 2014 [Cited 2019 March 20];14 (382) :1-10. Available from:http://www.biomedcentral.com/1472-6963/14/382