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Development of Service System for Elderly Adults Living Alone Through Buriram Community Participation

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A B S T R A C T

Demographic shifts have resulted in a growing population of elderly adults and an increasing number of elderly individuals residing alone. This research aims to develop a service system for elderly individuals living alone with community participation. The study aims to investigate the situation of elderly individuals living alone, create a service model for them, and evaluate the effectiveness of the service system with community participation in Buriram Province. The sample comprised 100 elderly individuals selected using the Sarantakos method, a straightforward sampling approach. The research instrument utilized was a questionnaire encompassing sections for general information, assessment of favorable health conditions, access to healthcare, satisfaction with the service system, and data analysis conducted through mean, percentage, standard deviation, t-test, and content analysis. The findings revealed that elderly individuals living independently encounter the following challenges: access to adequate food, engagement in physical activity, ensuring sufficient rest, addressing smoking habits, managing excretion, coping with stress, and maintaining overall stability in life. On the network side, there are frequent changes in the personnel responsible for elderly care, resulting in intermittent services. They lack confidence in their job skills. The collective health status of elderly individuals residing independently is notably low, with a mean of 1.91 and a standard deviation of 0.45. Nevertheless, their health-related behaviors demonstrate a moderate level of adherence, indicated by a mean of 3.15 and a standard deviation of 0.10. Developing a service system for elderly individuals living alone involved four essential processes: problem analysis, service design, development outcomes, reflection on practice, and assessment of the model's suitability for the elderly service system. The overall satisfaction with the system was notably high, with a mean of 4.70 and a standard deviation of 0.50. Elderly individuals residing alone expressed a significantly high level of satisfaction with the model (Mean=4.44, S.D.=0.70). Moreover, the network partners exhibited a statistically notable enhancement in their knowledge and proficiency in tending to elderly individuals living alone after implementing the model ($p<0.05$). The study findings can be utilized to strategically plan, monitor, provide care, prevent diseases, and promote the well-being of the elderly within the community.

INTRODUCTION

Many nations are classified as aging societies and are expected to transition to entirely aging societies by 2025 and super-aging societies by 2040 (Luo et al., 2024). This represents more than doubling the current numbers (Ngamsangiam & Suttanon, 2020). Projections indicate that these societies will reach aging status by 2025 and advanced aging status by 2040 (Wongboonsin et al., 2020). Separating families from their elderly parents increases the likelihood of the elderly living alone. Currently, 12 percent of the total population has reached aging society status (Iamtrakul & Chayphong, 2022)."Operation of a solitary elderly service system: Research has shown that elderly individuals living alone are capable of self-care to some extent. 52% lack access to essential health resources and information, while 64% of communities lack confidence and expertise in elderly care. This applies to 60% of 342 elderly individuals living alone, with an additional 19% (Guo and Ling, 2022; de Castro et al., 2024)." The prevalence of elderly individuals living alone has reduced social interaction and physical activity. Many seniors do not receive adequate care due to a lack of family support or the unavailability of relatives to provide care. Community leaders must prioritize systematically managing aged services and integrating healthcare and community support. Brearley (2023) underscores the significance of community partners in delivering care in both routine and emergency scenarios (Gilleard, 2024). This research is focused on empowering elderly adults who live alone to become more self-sufficient. The ultimate goal is to improve their quality of life and establish a community-based support system for their care and well-being (Lin et al., 2023).

This research is focused on developing a service system for elderly individuals living alone through community engagement. As stated by Kemmis, McTaggart and Nixon (2019), it is crucial to understand the needs of elderly individuals living alone. The comprehensive strategy and action plan are tailored to the specific context of the area, aiming to reduce the cost of elderly care, address challenges and inequalities, and establish policies that foster a joyful and inclusive society. The plan also seeks to empower the elderly to become self-reliant and maintain a high quality of life while living independently.

RESEARCH OBJECTIVES

1. To study the living situation of elderly individuals living alone in Ban Khok Klang, Klantha Muang District, Buriram Province
2. To develop a service system for the elderly living alone with the participation of the Ban Khok Klang community in the Klantha Muang District, Buriram Province
3. To assess the service model for elderly individuals living alone with the involvement of the Ban Khok Klang community in Klantha Muang District, Buriram Province

RESEARCH SCOPE

This research is focused on research and development in the Ban Khok Klang area of Klantha Muang District, Buriram Province. The researcher will use two research instruments: interviews and semi-structured questionnaires. The research framework and methodology have been clearly defined by the researcher as follows:

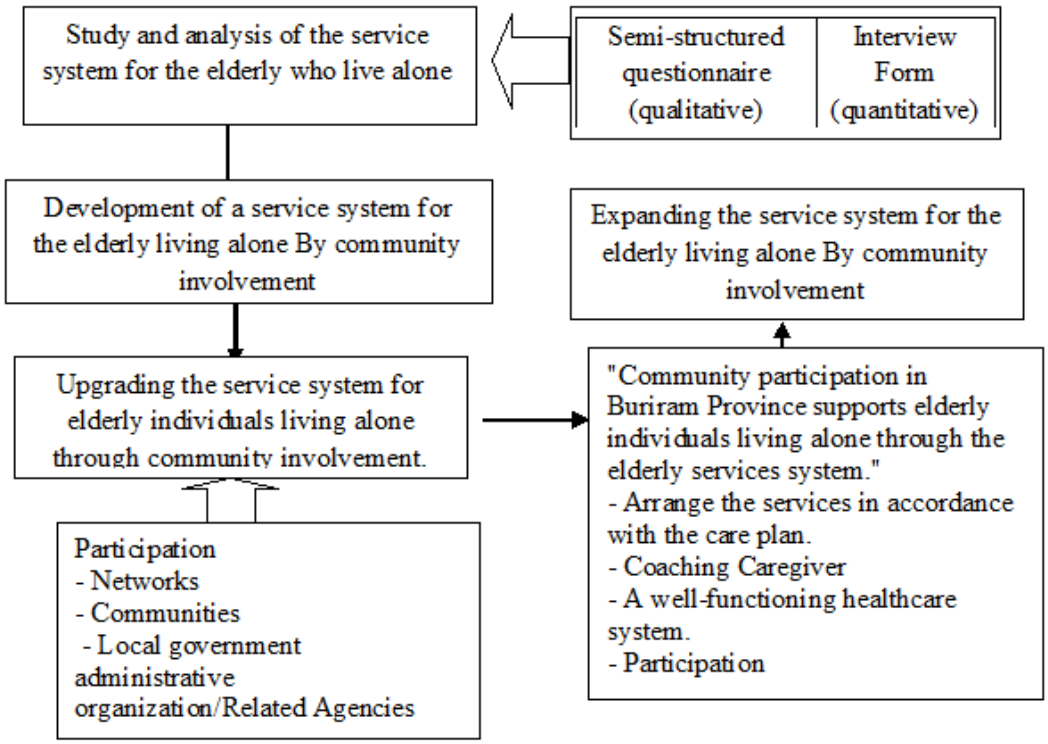

Figure 1: Research Framework

RESEARCH METHODOLOGY

Population and sample

The research included 60 cognizant and communicative seniors with a shared interest in research living in Ban Khok Klang, Klantha Muang District, Buriram. In a population of 10,249, there are 982 elderly individuals. This study used a sample of 100 people, and the population size was determined using Sarantakos' method (Sarantakos, 2013).

$$n = \frac{Np(1-p)z^2_{a/2}}{d^2(N-1) + p(1-p)z^2_{a/2}}$$

At the 95% confidence level, Z has a value of 1.96, representing the total population in the target area of all ages as 10,249 people, with 982 people aged 60 years and over...
The population is 93.39 or 94 people.

n = 93.39 or 94 individuals

Given that the number of calculated samples is less than 10,000, it is essential to consider adjusting the sample size using the formula as follows:

formula nf = n/[1+(n/N)]
by nf = Sample size
n = The sample size required when the population is less than 10,000 people
N = Total population
nf = 94/[1+(94/982)] = 85.76 or 86 individuals

The sample size, calculated using the appropriate formula, is 68 individuals. To accommodate potential response errors, a sample comprising 100 individuals was selected to participate in the questionnaire for this research study.

Sampling: Probability sampling is used for simple random sampling using a random sampling method with proportional size.

The research process consists of three steps, which are as follows:

Step 1: Context and Environmental Studies By surveying the area, observing, and exchanging ideas with network partners involved in the care of the elderly living alone, study the process management of the service system for elderly adults living alone in the community by analyzing the existing approach or service system for providing services to them. Also, study the strengths and weaknesses of current guidelines and service systems for assisting elderly individuals who live alone. Determine what kind of service system should be in place for elderly individuals living alone and provide recommendations for improving the service system for this demographic. This should involve community participation.

Step 2: Development of a service system for elderly individuals living alone with community involvement in Buriram Province. The current situation of the service system for elderly individuals living alone is being analyzed by examining the services offered to these individuals and conducting focus group discussions with representatives from the elderly community. The focus group discussions aim to gather information, exchange ideas, and share insights gained from the experiences of the elderly living alone within the service system. They will also utilize the data to design a support system model for the elderly who live alone with community involvement. During the focus group session, the participants included 2 monks, 5 elderly individuals, 5 community leaders, 2 public health officers, 1 representative from the local government organization, 2 officials from other government agencies, and 2 private individuals responsible for the care of elderly adults living alone in the community. The total number of participants in the group was 30. Upon obtaining the results, the preliminary format is integrated into the troubleshooting cycle by the Kemmis and McTaggart research cycle.

1. Planning: This involves establishing teams, network partners, and agencies responsible for developing a service model for elderly individuals living alone, with community involvement.

2. Operation: It involves implementing a draft version of a service system model for elderly individuals who live alone, with community participation. The model will be trialed in the area in collaboration with network partners and related agencies to create a service system model for the elderly who live alone, with community participation and supervision.

3. The observation encompasses changes that have transpired, encompassing practical facets such as the orchestration of health services for solitary elderly individuals, the promotion of elderly health, the arrangement of services by the care plan, and the provision of CG coaching.

4. Reflection: involves using data from the observation stage and data analysis to present to network partners. This is done to develop and improve the service system model or to review and lead to the next action plan to prepare a complete service system model for elderly individuals living alone with community participation.

In this study, we employed an action research model based on the research cycle developed by Kemmis and McTaggart. This approach was utilized as a systematic process to design a service model for elderly individuals living independently, with their active participation.

Stage 3 Development Results: It represents a model of an elderly care system developed through participation in action research, utilizing the research cycle proposed by Kemmis and McTaggart.

1. Planning: Using data analysis of current conditions to plan for future actions

1.1 Team building entails coordinating with local network partners and research collaborators at all stages, including liaising with relevant agencies involved in the research process.

1.2 Meeting with the team to clarify research objectives and collectively plan the implementation.

1.3 Developing a service system for elderly individuals living alone with community participation (draft).

2. Action includes the following activities:

2.1 Organize refresher training to enhance the knowledge of health leaders, network associates, and CGs on the aging process in the elderly and screening and health promotion for elderly individuals living alone. Practice skills in caring for and promoting the health of the elderly who live alone to reduce dependency and improve their quality of life. Additionally, clarify the role of CGs, health leaders, and network partners in promoting the health of elderly individuals living alone.

2.2 Organizing services for elderly individuals living alone by participating in service activities aligned with the primary care unit's core processes and providing services within the community.

2.3 Supervising and monitoring involve visiting the community to follow up on work progress, listening to problems, overcoming obstacles, and acknowledging achievements in health and network implementation. Leaders collaborate to solve the issues and exchange ideas for improvement, serving as a guideline for future operations.

3. Observation involves observing and documenting the practices and changes during the action process. This includes noting the effects of the action, the surrounding environment, and any limitations of the practice. It is the process of gathering information obtained from operations as follows:

3.1 Implementation process

3.1.1 Service organization, service System, CG coaching, arranging services according to the care plan, and promoting the health of the elderly living alone through community involvement.

3.1.2 Implementation of the role of health mainstay, CG, network

3.2 Practical results

3.2.1 Health/Networking/CG Mainstays of knowledge in the aging process include having caregiving skills and promoting the health of elderly individuals who live alone. This helps to reduce dependency and improve their quality of life. It is essential to understand our role in promoting the health of elderly individuals who live alone.

3.2.2 Elderly individuals living independently receive service coverage and possess self-care knowledge, improving self-health and satisfaction with the services received.

3.3 Assessing the operational limitations of healthcare systems within the environment and practice.

Step 4 Reflection The data collected during the observation stage is presented to a team consisting of the officer of the Subdistrict Health Promotion Hospital, the Subdistrict Administrative Organization, member representatives from senior citizens' clubs, health advocates, elderly individuals living alone, and residents of the central hump house. This presentation aims to improve the service system for the elderly living alone and reconsider the role of health leaders, networks, and community groups. This will ultimately result in better quality planning for the next operation.

RESEARCH TOOLS

1. Semi-structured interviews will be conducted to collect qualitative data. The preliminary data will be studied to gain basic knowledge, which will help frame the interviews to cover the issues to be explored. The study will involve analyzing documents, related research, and fieldwork. Initial interviews have been conducted with various stakeholders to gather information about the context of the area and the organization of services for the elderly living alone through community involvement.

2. Please remember the following information for the interview form to collect quantitative data: 1) General information: Name, surname, age, occupation, gender, medical condition, duration of illness, place to get health services, right to treatment, Who provides care at home and who they live with, Income, Nutritional status, Stress,

etc. 2) Assessment of desirable health conditions of the elderly living alone, which consists of 12 desirable health behavioral data. 11 of these are from a desirable health behavior questionnaire divided into 4 levels: Never practice, Practice sometimes, Practice frequently, and Practice consistently.3) The Health Service Access Assessment assesses the sufficiency, accessibility, affordability, and trust in service quality. 4) Satisfaction with the service system was categorized into five levels: highest, high, moderate, low, and lowest. The Cronbach's Alpha reliability coefficient was found to be 0.72.

DATA ANALYSIS

Quantitative data will be assessed using statistical measures such as mean, percentage, standard deviation, and t-test, while qualitative data will undergo analysis through a content-oriented approach.

RESEARCH ETHICS

The Research Ethics Committee of Buriram Rajabhat University, Certificate No. 003/2567, approved this study on January 25, 2024. The researcher clarified the research objectives and outlined the expected benefits. The research process and data collection methods will ensure confidentiality and exclusive use for this research. Before conducting the study, the participants were informed and asked to sign a consent form to participate in the study before data collection. Researchers consider privacy and respect the participants' decisions, including their right to withdraw from the research.

RESEARCH RESULTS

The results of this research are presented according to the 3-step study process:

1. study the living situation of elderly individuals living alone in Ban Khok Klang, Klantha Muang District, Buriram Province. The results were presented as the following:

1.1 In the broader context of favorable health conditions, it is observed that most elderly individuals are female. 74.00% were aged 60-69 (early elderly), 54.00% had comorbidities, and 88.00% had two comorbidities. Additionally, 47.72% had comorbidities in the year living alone: 12.00% of the population are mainly farmers, while 68.00% have an average monthly income of 2,001-4,000 baht. Additionally, 46% of the population experiences an insufficient level of income adequacy, with 84.00% being affected. The social network of elderly individuals who live alone mainly consists of other elderly relatives or neighbors with whom they are close. 35.00% have 1-2 people in their network, and 56.00% receive support from relatives or neighbors 2-3 times a month. Additionally, 74.00% receive an annual physical examination. When considering health-related aspects, problems that hinder daily activities include insomnia (16.00%), oral issues (13.00%), and respiratory problems (11.00%). Regarding health habits, 65.00% of individuals drink water at least 6-7 days a week, 4.00% smoke, and 52.00% sleep 5-6 hours per day, as shown in Table 1.

Table 1

Nutritional status, stress, depression, and desirable health conditions of elderly living alone in Ban Khok Klang, Klantha Muang District, Buriram Province

Activity	Percent	Mean	Level
Nutritional status		**2.54**	**Neutral**
1. Over the past 3 months, there has been a moderate decrease in food intake.	42.00	2.22	Neutral
2. Over the last 3 months, Weight reduced by 1-3 kg.	38.00	3.24	Neutral
3. Ability to move spontaneously.	99.00	2.99	Neutral
4. 1 month ago, there was no significant stress or sudden illness.	75.00	1.77	Disagree
5. There are no issues with memory loss or severe depression.	51.00	2.45	Disagree

Activity	Percent	Mean	Level
6. Maintain a BMI between 21 and 23.	41.00	2.59	Neutral
Stress		**1.64**	**Disagree**
7. Over the past 2 to 4 weeks, there have been very few sleep problems or almost none at all.	38.00	2.26	Disagree
8. You had little or no distractions Over the past 2 to 4 weeks.	70.00	1.41	Strongly Disagree
9. You exhibit minimal or no agitation Over the past 2 to 4 weeks.	60.00	1.57	Disagree
10. Over the past 2 to 4 weeks, there has been little or no sense of boredom.	62.00	1.51	Disagree
11. Over the past 2 to 4 weeks, there has been a tiny feeling of boredom among people or almost none at all	61.00	1.46	Strongly Disagree
Depression		**1.21**	**Strongly Disagree**
12. Feeling bored and not interested in doing anything.	4.00	1.18	Strongly Disagree
13. Feeling concerned, depressed, and discouraged.	2.00	1.23	Strongly Disagree
14. Having trouble falling asleep, waking up frequently, or sleeping too much	2.00	1.44	Strongly Disagree
15. Feeling easily fatigued or lacking in energy.	2.00	1.36	Strongly Disagree
16. Loss of appetite or excessive eating	2.00	1.26	Strongly Disagree
17. Feeling down on yourself, thinking you have failed, or believing that you have let yourself or your family down.	15.00	1.15	Strongly Disagree
18. Poor concentration while engaging in activities such as watching television, listening to the radio, or carrying out tasks requiring focused attention."	11.00	1.11	Strongly Disagree
19. Speak slowly, act slowly until others notice, or become restless and unable to stay still.	13.00	1.13	Strongly Disagree
20. "Have thoughts of harming yourself or think that dying would be good sometimes.".	1.00	1.06	Strongly Disagree
Desirable health conditions		**2.26**	**Disagree**
21. My overall health condition is excellent.	7.00	3.30	Neutral
22. Get an annual physical examination by medical and public health officer	74.00	1.84	Disagree
23. They have health problems (Congenital disease) that hinder daily activities or living life.	72.00	2.82	Neutral
24. Pay attention to continuous healthcare.	41.00	3.08	Neutral
25. My teeth were checked over the past year, and I received dental treatment.	61.00	1.39	Strongly Disagree
26. Brush your teeth before bedtime or after dinner without eating water until bed.	14.00	2.50	Disagree
27. Engage in moderate physical activities such as walking, cycling, household tasks, farming, gardening, or structured exercise for a minimum of 30 minutes daily or at least 150 minutes per week.	53.00	2.36	Disagree
28. Drink at least 8 glasses of water daily ***unless seniors have water restrictions under a doctor's prescription.	65.00	2.59	Neutral
29. Smoking cigarettes or tobacco	4.00	1.26	Strongly Disagree
30. Drinking alcoholic beverages.	5.00	1.32	Strongly Disagree
31. you typically sleep for 7-8 hours at night.	38.00	2.40	Disagree
Total Average		**1.91**	**Disagree**

1.2 Desirable health behaviors: Most elderly individuals living alone reported having moderate overall health conditions, with an average score of 3.15. When considering specific health behaviors, the most preferred behavior with a high score is eating all three meals, then accepting things that cannot be changed, such as old age and physical illness, and consuming 4 servings of fruits and vegetables daily. The average values for these behaviors were 3.80, 3.49, and 3.46, respectively. On the other hand, the least desirable health behavior, with a mean value of 1.97, is eating whole grains such as nuts, sesame seeds, etc. This information is shown in Table 2.

Table 2
Desirable Health Behaviors of Elderly Adults Living Alone in Ban Khok Klang, Klantha Muang District, Buriram Province

Desirable Health Behaviors	Never behave	Behave sometime	Behave often	Behave regularly	Mean	Level
1. Exercise or stretching, walking, and swinging your arms to the garden at least 3 times a week.	10.00	25.00	28.00	37.00	2.92	Neutral
2. Consume bland food without adding extra seasonings.	17.00	34.00	19.00	25.00	2.55	Neutral
3. include grains like beans and sesame in your daily diet.	46.00	25.00	15.00	14.00	1.97	Disagree
4. consume 400 grams or 5 handfuls of fruits and vegetables daily.	7.00	10.00	13.00	70.00	3.46	Neutral
5. Eat three meals a day.	5.00	0	5.00	90.00	3.80	Agree
6. Get adequate sleep, at least 6-8 hours.	4.00	20.00	13.00	63.00	3.35	Neutral
7. Accepting things that cannot be changed, such as old age and physical illness, is essential for our well-being.	15.00	1.00	4.00	80.00	3.49	Neutral
8. There are various ways to manage stress, such as praying, meditating, going to a place of worship, exercising, or talking with family or friends.	7.00	12.00	21.00	60.00	3.34	Neutral
9. Always take breaks when fatigued or overworked.	4.00	16.00	17.00	63.00	3.39	Neutral
10. Participating in activities organized by clubs, groups, or organizations and engaging in village events such as weddings, ordination ceremonies, and traditional celebrations.	13.00	9.00	20.00	58.00	3.23	Neutral
11. One may seek assistance from neighbors	18.00	7.00	11.00	64.00	3.21	Neutral

Desirable Health Behaviors	Never behave	Behave sometime	Behave often	Behave regularly	Mean	Level
for personal challenges or illness.						
Total average					3.15	Neutral

2. Access to the healthcare system for caregivers of elderly individuals living alone in Ban Khok Klang, Klantha Subdistrict, Mueang District, Buriram Province. The results were presented as follows:

2.1 Self-sufficiency of existing health services: During the inspection, it was found that the target group was satisfied with the variety of activities. The services provided to elderly adults who live alone by the network sector and CG, which mainly include examinations, screenings, and health status assessments, were at a 72.00 percent satisfaction rate. The services provided include counseling and advice on health promotion and disease prevention for the elderly, home visits, rehabilitation at home, education on self-care, and disease treatment. The goal is to restore the general condition of the elderly and prevent various complications, with success rates of 52.00%, 45.00%, 43.00%, and 40.00%, respectively.

2.2 Approximately 46.00% of the sample group had access to service sources or engaged in village activities, while 63.00% received annual physical examinations. When considering the type of media/health information received, it was found that 98.00% were most satisfied with group activities, followed by VDOs, books, and brochures at 86.00%, 85.00%, and 81.00%, respectively, with ease of access—health service facilities that are regularly used: 86.00% by motorcycle.

2.3 Most elderly individuals, accounting for 81.00 percent, avail themselves of comprehensive health services without charge, per the standards set forth by the Ministry of Public Health. When afflicted by illness or health-related issues, 97.00 percent seek medical care at government hospitals.

2.4 The acceptance and confidence in the quality of service, the confidence in receiving health services that cover medical treatment, health promotion, restoration of health, and disease prevention, all of which have standards and are taken care of by neighbors, the Subdistrict Administrative Organization community, and public health officials, as well as trust in the referral service system and continuing care in the community, are at the highest levels of 57.00 percent, 54.00 percent, and 58.00 percent, respectively.

3. Elderly individuals living alone face common challenges grouped into four main categories: health, social, emotional well-being, and economic/life security/environmental concerns (Table 3).

Table 3

Problems and needs of the elderly living alone by community participation, Buriram Province

problem	Support Needs Section	
Health (Physical, Mind)	Supporting dentures and Need advice on selecting appropriate food for the elderly with dentures and chewing problems.	*"Food in the village is readily available, but most options are greasy and bland.."* and *"From time to time, the children next door bring food, but I mostly earn my living."(OP2)*
	Advice on appropriate exercise for each elderly person	"*I am experiencing back, waist, and knee pain, which limits my activities to general housework. I have been unable to exercise like others.*" (OP3)
	Guidance pertains to attaining high-quality sleep and the assurance of obtaining an	"*I have trouble sleeping. I usually sleep briefly and then wake up, and I do not feel sleepy. Sometimes, I stay up all night watching TV until the morning. I try*

	adequate sleep duration.	*napping during the daytime, depending on the day.".* (OP2)
	Managing constipation problems, unusual urinary issues, and taking care of normal excretion	"*Most days, I have an excretion of feces every 3-4 days and need to take laxatives prescribed by the Subdistrict Health Promotion Hospital."* and *"I have difficulty controlling my bladder and need adult diapers for when I go out...*" (OP6)
society	Interested in taking part in village activities or joining senior citizens' clubs?	"*Staying at home alone is lonely. The solution is sometimes to go to the garden and rice fields and pray. Sometimes, I feel like I do not know why I am living, why I am a burden to others. Why don't I just die?*" (OP5)
Feelings of self-worth	Want to promote self-worth by passing on wisdom to future generations based on the expertise.	"*The neighbors gave their children and grandchildren all their wealth, but they never came to care for them. Now, I am afraid of being like them because my son inherited some land and went to work in Bangkok. He only comes home once a year during Songkran*" (OP9)
Economy/Life Security/Environment	The relevant agencies should assist in coordinating and publicizing channels for future planning for the elderly.	"*Well, I am getting elderly, and I am not sure how to plan for the future. I feel lost and uncertain about what to do. Just eating all day is not fulfilling*" (OP5)
	Ensure the house is improved to make it suitable and comfortable for elderly individuals.	"*My bathroom lacks a grab bar, so I take extra care not to slip and fall, as there is no budget for a new bathroom.*" (OP12)

4. Opinions from relevant network partners have identified issues in long-term care for elderly individuals living alone in the community (Table 4)**.**

Table 4
Problems and needs for developing a service model for the elderly living alone through community Involvement in Buriram Province

Problem	**Service system model development**	
Policy on Monitoring and Persistence	Provide care services for elderly individuals residing independently according to the standard Care Plan the Ministry of Public Health outlines.	"Our district frequently changes doctors, mostly due to their families. For instance, Dr. Kae was added to work with the elderly in our country and soon moved**.**." (CG**.**3) "Mrs. Pao is the caregiver for the elderly in my community. She has to work every day and rarely comes to visit me. I understand that everyone has to make a living. She told me that she will have a break next month and someone else will take care of me." (NP**.**1)
Operational knowledge and skills need to be	Training will cover the aging process, self-care for elderly individuals living alone, and the	"I have only been in charge of this home for less than a month, and the caregivers change frequently. The previous caregivers are rarely

consistently maintained.	roles of caregivers and nurse practitioners in addressing individual problems.	available because some of them have to go to work..” (CG.12), and “I have just accepted the position. I have enough knowledge, but I still dare to help dress wounds or give physical therapy to elderly people.” (CG.1)
Connectivity and integration	The process involves home visits and referrals with the participation of relevant agencies.	“When there is frequent turnover of caretakers for elderly people who live alone in our village, new staff members must constantly learn new tasks, which disrupts coordination between different departments. This results in occasional work-related problems.” *(NP.2)*

The health service system is organized to provide healthcare for elderly adults who live alone. It includes health promotion, disease control and prevention, medical treatment, and integrated rehabilitation. However, personnel shortages and limitations in the knowledge and abilities of personnel in rehabilitating the elderly make it challenging to provide appropriate services at home. Lack of coordination between related agencies results in separate and incomplete services, leading to duplication of efforts, increased costs, and limited funding for organizing services for the elderly living alone in the community; community groups are responsible for caring for the elderly, according to specific guidelines. However, our knowledge does not cover all aspects, and we have limited expertise in caring for elderly individuals living alone. The training provided to staff is the primary source of knowledge, but there is still room for improvement in sharing and learning from practical experiences. Therefore, the community must participate in providing care services for elderly individuals who live alone, along with health leaders. Network partners should also be involved in this effort and clearly define their roles. Both health leaders and partners in the CG network must possess the knowledge and skills to care for elderly adults who live alone. This is necessary due to the changes in community work within the CG.

2 Develop a service system for elderly individuals living alone, with the participation of the Ban Khok Klang community in Klantha Muang District, Buriram Province

The results were presented as follows:

The investigation of the development of a service system model for the elderly who reside independently confirms its suitability. The service system demonstrates the highest potential, usefulness, and overall satisfaction level, with respective mean ratings of 4.70, 4.67, and 4.70. The model was created through a service design process encompassing 4 distinct activities.

1. Provide services according to the Care Plan by organizing group discussions. Inform network partners about methods or procedures for caring for elderly adults who live alone in the community. Community participation must adhere to the Ministry of Public Health standards to receive physical and mental health services.

2. The organization conducts workshops to educate the elderly about the aging process and self-care, promotes health, and empowers them to participate in healthcare continuously.

3. CG's role is to address problems by organizing group discussions, providing knowledge and work skills, and caring for elderly adults who live alone and encounter challenges.

4. Home visits and referrals involve visiting the homes of elderly adults who live alone in collaboration with CG Health Promotion Hospital and community leaders. The focus is on encouraging family members, relatives, and neighbors to participate in caring for the elderly so that they can live according to their health needs.

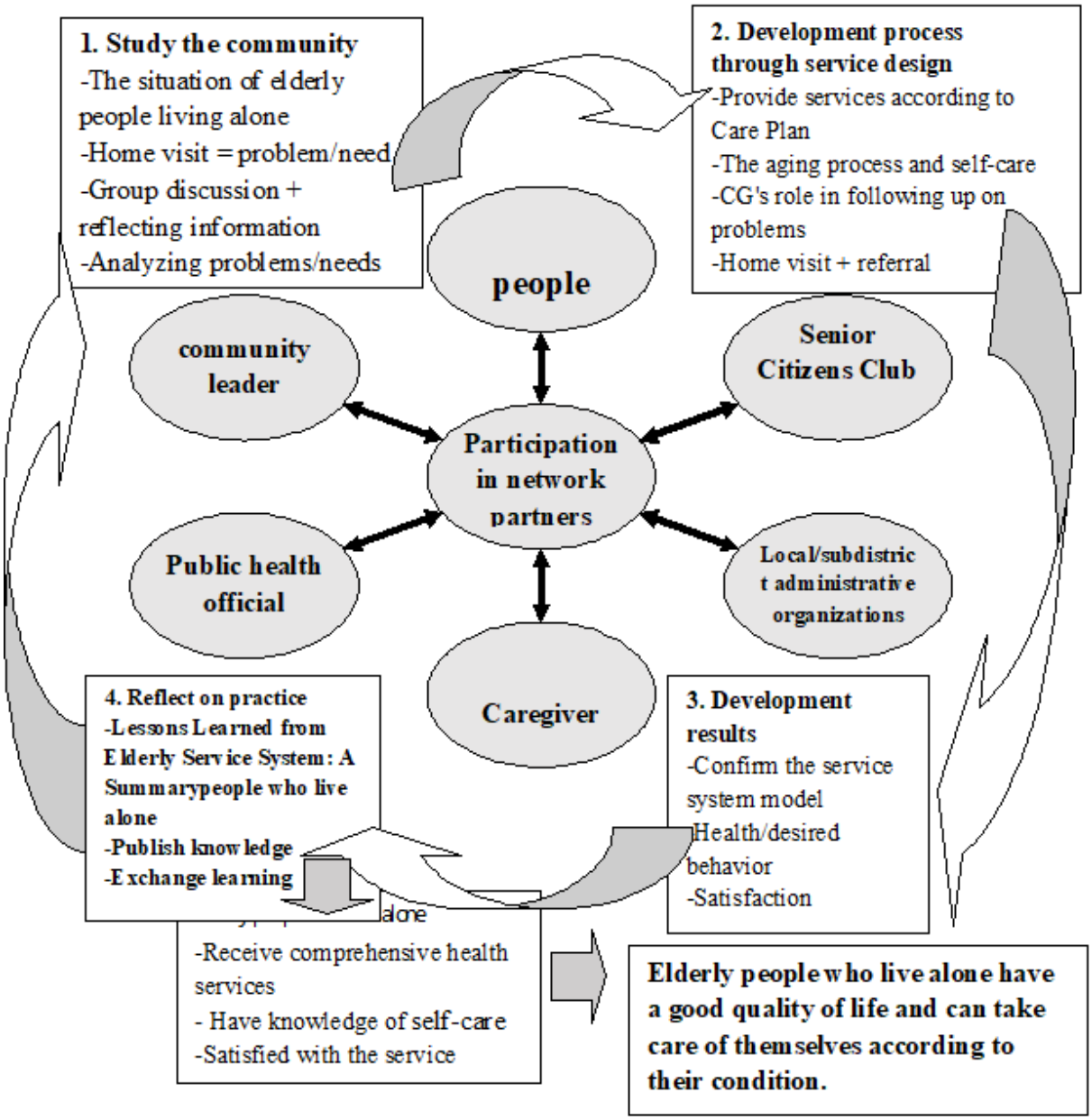

Figure 2: Model of an elderly service system for individuals residing alone, with community involvement

3. Evaluate the model of the elderly service system for those living alone in the Klantha Muang District, Buriram Province, with community involvement

The results were presented as follows:

1. Results of the evaluation of the service system model for the elderly who live alone with the participation of the community in Kalanta Subdistrict, Mueang District, Buriram Province. After applying and evaluating the model, it was found that the overall satisfaction was at a high level (Mean=4.44, S.D.=0.70). The satisfaction level in the service system activities, including quality of service, treatment care, health promotion,

health restoration, disease prevention, and overall satisfaction with the visits from CG's neighbors, who came to visit, meet, and talk at home, was the highest with a mean of 4.53., as shown in Table 5

Table 5
Satisfaction with the service system for elderly caregivers living alone in Ban Khok Klang, Klantha Muang District, Buriram Province

Activity	Percentage of satisfaction in the service system					Mean	S.D.
	Excellent	Very Good	Good	Fair	Poor		
1. Satisfied with the quality of service, treatment, care, health promotion, health restoration, disease prevention, and overall every aspect.	57.00	19.00	24.00	0	0	4.53	0.64
2. Satisfied with the healthcare service system provided by the Subdistrict Administrative Organization hospital, CG network, and other related agencies such as the province's school, Social Development, and Human Security.	54.00	29.00	17.00	0	0	4.39	0.81
3. Relatives or neighbors come to help and provide support.	58.00	22.00	20.00	0	0	4.44	0.60
4. Satisfied that you have received good care from your neighbors, community, Subdistrict Administrative Organization, and public health officials.	50.00	44.00	6.00	0	0	4.34	0.80
5. Continued satisfaction with the referral service system and continuing care in the community.	50.00	39.00	3.00	5.00	0	4.43	0.74
6. Satisfied that the neighbor, CG., came to visit and meet and talk at home.	53.00	42.00	5.00	0	0	4.53	0.64
						4.44	**0.70**

2. Reflecting on the performance based on the pattern, it was determined that:
2.1 Provide services according to the care plan and specified standards. It was found that elderly adults who live alone were most satisfied with the care plan service system, with 64.5 percent satisfaction from services received from network partners, followed by receiving care for all aspects of their health problems. Assess all aspects of health services according to specified standards; symptoms are monitored regularly. Unique health services and continuous care at home were rated at 52.2%, 48.9%, 47.8%, 42.2%, 41.1%, and 38.9%, respectively.
2.2 Following the implementation of a workshop aimed at imparting knowledge on the aging process and self-care for the elderly, alongside the restoration of the caregiver's role, health promotion activities, and the provision of supplements, a T-test analysis revealed a statistically significant increase in knowledge and skills related to the care of elderly individuals living alone. This increase was particularly notable in problem-based care, home visits, and active engagement in continuous health care. The observed enhancement yielded a statistically significant p-value of less than 0.05 compared to pre-training and group discussions, as indicated in Table 6.

Table 6
Knowledge and skills involved in caring for elderly adults living alone by CG and community leaders before and after engaging in activities (N=20)

Knowledge and skills in caring for elderly individuals who live alone.	**Mean**	**S.D.**	**T**	**DF**	**p-value**
Before Organizing workshops	11.43	1.53	11.94	28	0.000
After Organizing workshops	19.21	2.62			

CONCLUSION

Most elderly individuals living alone in Ban Khok Klang are female (74.00%) and aged 60-69. Of these, 88.00% have congenital diseases and live alone. 12% have low-level desired health conditions (Mean = 1.91) and exhibit moderate health behaviors (Mean = 3.15). They are most satisfied with access to the health service system and participating in village activities, which they do without paying. They have confidence in receiving treatment and believe health services cover their needs. Overall satisfaction with the service system for the elderly living alone is high (Mean = 4.44, S.D. = 0.70). After training, community network partners showed improved knowledge and skills in caring for elderly individuals.

DISCUSSION

Most elderly individuals living alone in Ban Khok Klang are females. They reside in separate households with their children and grandchildren, often grappling with stress and loneliness, which they perceive as a regular part of their lives. McDonald, Frazer, and Warters (2022) found that elderly individuals living alone are more prone to mental health issues such as anxiety, fear, and loneliness when compared to those living with partners. Additionally, a study by Ugargol et al. (2016) revealed that elderly individuals living alone are more likely to experience chronic illnesses. Based on a study by Wang et al. (2024), it was discovered that social isolation and living alone result in more deaths among the elderly in the community. According to a study by Luo, Guo, and Tian (2024), living alone provides elderly individuals more free time for social activities. Conversely, living with children may lead to family conflict as children may restrict the elderly's activities due to health concerns, negatively affecting their well-being. Furthermore, research by Mudrazija et al. (2020) suggests that elderly individuals living alone are more likely to experience poverty as they age, with the risk of poverty increasing as long as they remain homeless. In a study conducted by Ishikawa and Yokoyama (2023), it was revealed that income plays a crucial role in the well-being of elderly individuals living alone. Low-income levels are associated with an increased risk of congenital diseases, malnutrition, and decreased appetite, particularly among elderly individuals in unsuitable living environments. The study also indicated that while many elderly individuals living alone maintain a healthy body mass index, some experience malnutrition and low body mass index, leading to higher levels of depression. These findings contradict the results of a study by Intarangkul and Thonkate (2023), which found that depression was 4.29 times more prevalent among normal-weight elderly individuals compared to their obese counterparts. This suggests that elderly individuals with an average weight may experience higher levels of depression than obese individuals, possibly due to the positive impact of food and sweets on the mental well-being of overweight individuals, as opposed to the stress associated with managing food intake and congenital diseases.

The majority of elderly individuals who live alone face similar health-related challenges. A study by Lamtrakul and Chayphong (2022) revealed that they often isolate themselves and avoid participating in community activities, leading to a lack of social and physical engagement. Another study by Wang et al. (2024) identified age, gender, low education level, living alone, poverty, depression, and lack of social support as significant risk factors contributing to their isolation. This isolation can lead to various physical and mental health problems, affecting the well-being of elderly individuals as they age. Furthermore, a study by Klangrit et al. (2021) emphasized the

importance of mental health. Therefore, it is essential to promote the mental health of elderly individuals who live alone through community cooperation, lifestyle, and cultural support. Please take note of the following passage. However, based on the research conducted by Dang, Wu, and Liu (2018), it was found that elderly individuals who live alone tend to participate in more social activities and engage more actively in society. This active engagement enhances their daily lives and provides richer experiences as they enjoy interacting with people outside their homes. Conversely, the presence of children and grandchildren can bring about various burdens, hindering the ability of elderly individuals to take part in activities outside the house and potentially leading to a diminished sense of self-worth. These findings align with Nemmers' research in 2023, which underscores the significance of knowledge and understanding from younger generations for the well-being of the elderly. Engaging in community activities not only adds value to the lives of the elderly in terms of personal fulfillment but also has implications for their economic well-being, life security, and the environment.

The network partners have identified issues within the long-term care system for elderly individuals living alone in the community, particularly concerning the policies for monitoring and maintaining the well-being of those responsible for their care. Additionally, the Subdistrict Health Promoting Hospital, CG, experiences frequent turnover in staff accountable for this work, resulting in a lack of continuity and integration in knowledge and skills. These findings align with a study by Onseng et al. (2024), underscoring the need for systematic coordination and the elimination of work gaps in the elderly care system by CG and its network partners. It is essential to enhance the skills and confidence of caregivers and healthcare teams in remotely caring for the elderly at home.

Hence, it is essential to involve the community in developing a service system for elderly individuals who live alone to improve their quality of life. This can be achieved through the following service design activities: organizing services based on the Care Plan, providing education on aging and self-care for the elderly, offering training on skills and knowledge, and understanding the role of caregivers along with home visits and referrals. The evaluation and affirmation of the suitability of the service system for elderly individuals living alone indicate its potential usefulness and high satisfaction levels. These findings are consistent with a study by Wang, Zhou, and Ma (2014) which highlights the significance of social support and home visits in improving the health of the elderly. Additionally, the research of Chu et al. (2019) underscores the importance of community involvement in elderly care within the community.

Elderly individuals living alone often encounter challenges in their daily lives and may not regularly participate in community activities. Conversely, those in good health and who are not advanced are more inclined to engage in community activities. Therefore, it is crucial to establish a service system that promotes community participation for elderly individuals living alone, ensuring a high quality of life-based on their current living conditions. An effective care system for these individuals necessitates collaboration among network partners, enabling efficient planning and support for their healthcare, thereby facilitating the maintenance of good health behaviors and a sustainable quality of life. While various factors influence the tendency of elderly people to live alone, such as demographic characteristics, current health conditions, and social, cultural, and environmental factors, community participation plays a critical role in establishing a care system for the elderly who live alone. This is supported by studies by Berkman and Syme (1979) and Malhotra et al. (2021), highlighting the significance of social and community support in assisting elderly adults in independently managing their daily activities.

RECOMMENDATIONS

Recommendations from research results

1. Studies have indicated that elderly individuals who live alone often have a moderate nutritional status. They tend to consume less food, experience reduced appetite, and may lose 1-3 kilograms in weight. This issue is often attributed to dental health. Enhancing the level of care for the elderly by engaging relevant agencies is essential. Efforts should be focused on developing strategies to address the challenges faced by elderly individuals who live alone, such as providing increased knowledge and dental health care for this demographic.

2. The recommended health status is at a low level. Regular follow-up visits to the homes of elderly individuals, with a focus on providing care and promoting continuous health maintenance for those living alone, are essential.

3. Knowledge should be constantly expanded and updated. It is essential to develop skills in caring for elderly individuals who live alone and to build a network of partners to provide continuous support.

4. Depression and mental frailty are health issues associated with elderly individuals living alone, as depression puts them at a higher risk of frailty. Therefore, it is crucial for nurses to promptly use the depression index to screen for depression and reduce frailty in elderly individuals living alone in the future.

For future research, the research results should be fundamental information for future studies and comparisons with other communities. They should also be utilized to develop care models for the elderly living alone in the community by integrating all sectors to improve their quality of life.

LIMITATION

Conducting interviews using simple convenience sampling may select readily or easily accessible individuals, potentially leading to sampling bias.

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REFERENCES

1. Berkman, L.F., & Syme, S.L. (1979). Social networks, host resistance, and mortality: A nine-
2. year follow-up study of alameda county residents. *Am. J. Epidemiol. 109*, 186–204. https://doi.org/10.1093/oxfordjournals.aje.a112674
3. Bradshaw, A., Ostler, S., Goodman, C., Batkovskyte, I., Ellis-Smith, C., Tunnard, I., ... &
4. Sleeman, K. E. (2023). Provision of palliative and end-of-life care in UK care homes during the COVID-19 pandemic: A mixed methods observational study with implications for policy. *Frontiers in Public Health, 11*, 1058736. https://doi.org/10.3389/fpubh.2023.1058736
5. Brearley, C. P. (2023). *Residential work with the elderly.* Routledge.
6. https://doi.org/10.4324/9781003385301
7. Chandana, N., James, M., Kokilavani, C., Padmasree, P., Soniya, N., Tarugu, J., ... & Koni, K.
8. (2024). Caregiver burden of the elderly in a selected urban community, Chittoor district,
9. Andhra Pradesh. *International Journal of Community Medicine and Public Health, 11*(2),
10. 815. https://dx.doi.org/10.18203/2394-6040.ijcmph20240271
11. Chu, W., Chang, S. F., Ho, H. Y., & Lin, H. C. (2019). The relationship between depression and
12. frailty in community-dwelling older people: A systematic review and meta-analysis of 84,351 older adults. *Journal of Nursing Scholarship*, *51*(5), 547-559. https://doi.org/10.1111/jnu.12501
13. De Castro, V. L., Neves, L. M. T., & Almeida, C. N. S. (2024). Fragility profile of elderly people
14. with chronic obstructive pulmonary disease residents in the community. *Brazilian Journal of Physical Therapy, 28,* 101010. https://doi.org/10.1016/j.bjpt.2024.101010
15. Dang, J. W., Wu, Y., & Liu, N. (2018). Survey report on the living conditions of China's urban
16. and rural older persons. Social Sciences Academic Press: Beijing, China, 21-96.
17. Gilleard, C. J. (2024). *Living with dementia: Community care of the elderly mentally infirm*.

18. Taylor & Francis.
19. Guo, J., & Ling, W. (2022). The relationship between the mental health status and social support
20. of the lonely elderly with government participation in the Internet context. Frontiers in Public Health, 10, 1013069. https://doi.org/10.3389/fpubh.2022.1013069
21. Ishikawa, M., & Yokoyama, T. (2023). The relationship between individual and environmental
22. factors related to health, nutritional status, and diet in elderly people living alone in Japan. *Nutrition Reviews, 81*(1), 91-94. https://doi.org/10.1093/nutrit/nuac041
23. Kemmis, S., McTaggart, R., & Nixon, R. (2019), "Critical participatory action research",
24. Zuber-Skerritt, O. and Wood, L. (Ed.) Action Learning and Action Research: Genres and
25. Approaches, Emerald Publishing Limited, Leeds, pp. 179-192. https://doi.org/10.1108/978-1-78769-537-520191016
26. Klangrit, S., Perrodin, D. D., Siripaprapakon, Y., Choudhry, F.R., Intaranggkul, T.,
27. Pratoomkaew, S., Khemsiri, K., Saengrung, K., & Vachirayano, W. (2021), "Religion
28. and mental health among older adults in Thailand: a national survey study", *Mental Health Review Journal, Vol. 26 No. 4,* pp. 380-391. https://doi.org/10.1108/MHRJ-06-2020-0039
29. Lin, A. F. C., Cunliffe, C., Chu, V. K., Chan, V., Leung, A. C., Lau, R. P., & Ng, L. L. W.
30. (2023). Prevention-focused care: the potential role of chiropractors in Hong Kong's
31. primary healthcare transformation. *Cureus, 15*(3). https://doi.org/10.7759/cureus.36950
32. Lin, M., Li, W., Cao, Y., & Shan, L. (2023). Consumer attitudes toward community elderly
33. services during negative population growth and sustainable development. *Sustainability*, *15*(20), 15166. https://doi.org/10.3390/su152015166
34. Luo, J., Guo, Y., & Tian, Z. (2024). Loneliness or sociability: The impact of social
35. participation on the mental health of the elderly living alone. *Health & Social Care in the Community*, 2024.) https://doi.org/10.1155/2024/5614808
36. McDonald, A., Frazer, K., & Warters, A. (2022). Irish public health nursing services and home
37. support services: Governance of older persons' home care. *Public Health Nursing, 39*(1), 96-102. https://doi.org/10.1111/phn.13021
38. Malhotra, R., Tareque, I., Saito, Y., Ma, S., Chiu, C. T., & Chan, A. (2021). Loneliness and
39. health expectancy among older adults: A longitudinal population-based study. *J. Am. Geriatr. Soc. 69*, 3092–3102 https://doi.org/10.1111/jgs.17343
40. Mudrazija, S., Angel, J. L., Cipin, I., & Smolic, S. (2020). Living alone in the United States and
41. Europe: The impact of public support on the independence of older adults. *Research on Aging, 42*(5-6), 150-162. https://doi.org/10.1177/0164027520907332
42. Nemmers, N. L. (2023). *Living alone in later life: Understanding independence, adaptation, and*
43. *well-being in the face of impairment using the National Health and Aging Trends Study* (Doctoral dissertation, Iowa State University).
44. Ngamsangiam, P., & Suttanon, P. (2020). Risk factors for falls among community-dwelling
45. elderly people in Asia: a systematic review. *Science & Technology Asia*, 105-126.
46. doi: 10.14456/scitechasia.2020.40
47. Onseng, P., Jiraporncharoen, W., Moonkayaow, S., Veerasirikul, P., Wiwatkunupakarn, N.,
48. Angkurawaranon, C., & Pinyopornpanish, K. (2024). Expectation, attitude, and barriers to receiving telehomecare among caregivers of homebound or bedridden older adults: Qualitative study. *JMIR aging*, *7*, e48132. **https://preprints.jmir.org/preprint/48132**
49. Portacolone, E., Rubinstein, R. L., Covinsky, K. E., Halpern, J., & Johnson, J. K. (2019). The
50. precarity of older adults living alone with cognitive impairment. *The Gerontologist, 59*(2), 271-280. https://doi.org/10.1093/geront/gnx193
51. Riccò, I., Anleu-Hernández, C. M., & De Stefani, A. (2024). Implementing a senior community
52. care model: An Italian top-down cohousing project and nursing home. *Social Inclusion*, 12. https://doi.org/10.17645/si.7404

53. Rummery, K. (2023). *Primary care and social services: Developing new partnerships for*
54. *older people (National Primary Care Research & Development Centre).* CRC Press. https://doi.org/10.1201/9781003420286
55. Saha, S. (2024). Social relationships and subjective wellbeing of the older adults in India: The
56. moderating role of gender. *BMC geriatrics*, *24*(1), 142.
57. https://doi.org/10.1186/s12877-023-04520-x
58. Sarantakos, S. (2013) *Social Research* (4th ed.). Basingstoke: Palgrave Macmillan.
59. Iamtrakul, P., & Chayphong, S. (2022). Exploring the influencing factors on living alone and
60. social isolation among older adults in rural areas of Thailand. *International journal of environmental research and public health, 19(*21), 14572. https://doi.org/10.3390/ijerph192114572
61. Intarangkul, T., & Thonkate, C. (2023). Prevalence and factors affecting depression of the
62. elderly: A cross-sectional study in Thailand. *Journal for ReAttach therapy and developmental diversities, 6*(3s), 691-697. 401 https://jrtdd.com/index.php/journal/article/view/401
63. Tunstall, J. (2024). Old and alone: A sociological study of old people. Taylor & Francis. Ugargol, A. P., Hutter, I., James, K. S., & Bailey, A. (2016). Care needs and caregivers:
64. Associations and effects of living arrangements on caregiving to older adults in India.
65. *Ageing international, 41*(2), 193-213.
66. https://doi.org/10.1007/s12126-016-9243-9
67. Wang, J. F., Zhou, J. H., & Ma, X. Q. (2014). Influencing factor analysis of depression status of
68. empty nest elderly in community. *Nurs J Chin People's Liberation Army*, *18*, 19-22.
69. Wang, X., Dai, M., & Xu, J. (2024). Association of living alone and living alone time with
70. hypertension among Chinese men aged 80 years and older: a cohort study. *Frontiers in Public Health,* 11, 1274955. https://doi.org/10.3389/fpubh.2023.1274955
71. Wang, S., Lin, J., Kuang, L., Yang, X., Yu, B., & Cui, Y. (2024). Risk factors for social isolation
72. in older adults: A systematic review and meta-analysis. *Public Health Nursing*, *41*(2), 200-208. https://doi.org/10.1111/phn.13266
73. Wongboonsin, P., Aungsuroch, Y., & Hatsukano, N. (2020). The ageing society and human
74. Resources to care for older people in Thailand. Human resources for the health and long-term care of older persons in Asia, 104. https://www.ide.go.jp/library/English/Publish/Reports/Ec/pdf/202011_ch04.pdf