Original Article

The Effect of a Health-Promoting Program on Quality of Life of Thai Homebound Older Adults: A Quasi-Experimental Study

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Abstract

Background: Homebound older adults (HOAs) are especially susceptible to social isolation and loneliness, which can lead to poorer physical and mental health, as well as accelerated cognitive decline, which may increase dependence upon their families. Thus, support from family caregivers is crucial in maintaining the health, safety, and quality of life (QoL) of HOAs. This study aimed to evaluate the effects of a health-promoting program for HOAs and family caregivers on the QoL among HOAs in rural Thai.

Methods: This quasi-experimental study was conducted on 114 HOAs and their family caregivers in Selaphum district, Roi Et, Thailand, from August to October 2023. The control group (N=57) received usual home visits, while the experimental group (N=57) underwent 12 weeks of an educational program based on Hulme's family empowerment framework. Data were collected for QoL using the Thai version of the brief form of the World Health Organization QoL at baseline and week 12 for both groups. Data were analyzed through SPSS software version 26 using the Chi-square test, paired t-test, and independent t-test. Statistical significance was defined as a P value <0.05.

Results: The mean total score of QoL was not significantly different between the control group (87.12±5.06) and experimental group (87.35±5.04) before the intervention (P=0.81). Twelve weeks after the intervention, the mean total score of QoL was significantly different between the experimental (103.53±9.83) and control groups (87.44±5.26) (P<0.001).

Conclusion: The health-promoting program for HOAs and family caregivers can provide benefits to enhance QoL among HOAs. It is suggested that healthcare practitioners should collaborate with family caregivers through ongoing training, support, and shared decision-making to ensure continuity of care and enhance HOAs' well-being.

Keywords: Aged, Caregivers, Health Promotion, Homebound Persons, Quality of Life

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Introduction

The global population of individuals aged 60 and above is increasing rapidly. In 2019, this figure reached one billion, and it is projected to grow to 1.4 billion by 2030 and 2.1 billion by 2050.[1] The number of older adults has been increasing significantly, especially in developing countries, including Thailand.[2] Thailand's older adults population is steadily growing, with 19.97% of the population aged 60 or older in 2023.[3] Selaphum district, Roi Et province, Thailand, is an interesting community due to its population of 76,448 people, including 19,890 older adults (aged 60 and above), which represents 26.02% of the population. According to the survey report in 2024, there are 18,678 socially active older adults in this area, accounting for 93.90% of the older adult population, 1,083 homebound older adults (HOAs), accounting for 5.45%, and 129 bedridden older adults, accounting for 0.65%.[4]

Older adults can be categorized by functional capacity using the Barthel Index of Activities of Daily Living (ADLs): active (ADLs 12-20 score), homebound (ADLs 5-11 score), and bedridden (ADLs 0-4 score). Each group has specific care needs, with active individuals needing little assistance, while homebound and bedridden individuals require more daily support.[5] "Being confined to home, as in the case of HOAs," negatively affects older adults' health and decreases their quality of life (QoL).[6] Despite the high demand for medical care services, their access to healthcare services is limited because of their physical and economic dependency, coupled with a lack of information and support.[7] Evidence shows that homebound status is linked to increased rates of chronic diseases, physical disability, cognitive decline, social isolation, and a higher prevalence of dementia, depression and anxiety.[6-11]

The increase in the older adult population can also lead to an increase in the proportion of HOAs.[12] This is linked to advanced age and the presence of multiple comorbidities.[13] These physical, psychological, and social vulnerabilities limit older adults' access to external resources and social activities, reducing interactions with relatives, friends, and neighbors. This increases the risk of loneliness, resulting in poor QoL.[14, 15] Although the QoL of older adults declines as they age, other factors also contribute to this decline, such as chronic diseases and ongoing treatment.[16] Supporting older adults, especially in HOAs, should not be done only to increase their life expectancy. Nowadays, dynamic aging is the goal, which means that as the older adult population increases, their QoL should also be considered.[7, 17] However, family caregivers provide necessary daily assistance with ADLs and instrumental activities of daily living (IADLs) that HOAs cannot perform independently.[18] Therefore, family caregivers at home play a crucial role in assisting and caring for HOAs.

Caregivers serve as vital support systems for older adults. It can be said that if caregivers possess knowledge and good caregiving behaviors, it will positively affect the physical and mental health of older adults, leading to an improved QoL.[19] Most studies in Thailand have examined the prevalence of, and the factors associated with, QoL and caregiver burden;[20-22] one program implementation focused only on wellness of older adults in semi-urban communities.[23]A Thai study has found that a family caregiver capacity-building program which includes individual and group education, caregiving skill training, and home and telephone visits, with evaluation at week 12 for caregiver's ability and at week 24 for the quality of care significantly enhanced the caregivers' ability to provide quality care for dependent older adults, ultimately improving the caregivers' quality of care.[24] However, there is limited research on the impact of health-promoting programs for HOAs and family caregivers in improving the QoL among Thai HOAs. For example, a study revealed that family caregivers' involvement needs to be improved when conducting health promotion among older adults.[25]

Overall, the number of older adults

suffering from limited functional capacity, particularly those categorized as homebound, has increased significantly in recent years due to various reasons. With proper management of homebound conditions in the older adult population, it is possible to have a positive impact on their QoL. The health promotion program is based on Hulme's family empowerment framework which uses empowerment strategies to guide structured training that gradually enhances the caregivers' knowledge, confidence, and capacity for change.[26] Thus, this study aimed to examine a health-promoting program for HOAs and family caregivers on the QoL among HOAs in a rural Thai community.

Materials And Methods

The study utilized a quasi-experimental design employing a two-group, pretest-posttest approach. This is the third phase of a research and development project entitled "The program development of a caregiver model for caring for older adults in the community." This research was conducted from August to October 2023. The research population included HOAs who had health records in a Health-Promoting Hospital. This research was single blinded so that the statistician who analyzed the data was blind to the group allocation.

Inclusion criteria for HOAs were being 60 years of age or older, having a self-care ability with a score between 5-11 assessed by ADLs, having a family caregiver aged 18 years or older to provide care for more than 3 months, being willing to participate in the program, not having participated in another health promoting program for at least 6 months before the beginning of this study, and having ability to communicate in the Thai language. Exclusion criteria included HOAs who had health problems that prevented them from participating in this study, such as being admitted to the hospital during the study and being diagnosed with cognitive impairment, such as dementia, Alzheimer's, or psychoses, during the study.

The sample size was determined using an independent t-test utilizing G*Power,[27] setting 90% for power, 0.05 for significance, and 0.68 for the effect size. The effect size was based on a prior study with a similar focus on the QoL in older adults.[28] The sample size was calculated to be 47 per group.

$$n = \frac{2(Z_{1-\alpha/2} + Z_{1-\beta})^2}{d^2}$$

$$n = \frac{2(1.96 + 1.28)^2}{0.68^2} \approx 45.4$$

Given a 20% probability of attrition, the final sample consisted of 114 people (57 people per group). A sample of 114 family caregivers and HOAs, from two rural communities in Selaphum District, Roi Et province, northeast Thailand, were equally assigned to a control group and an experimental group.

In this study, data were collected using demographic and QoL questionnaires. The demographic questionnaire of HOAs included nine questions about sex, age, religion, education level, marital status, living arrangement, underlying disease/co-morbidity, number of comorbidities, and walking aids. For assessment of QoL of HOAs in this study, the Thai version of the brief form of the World Health Organization Quality of Life (WHOQOL-BREF-THAI) was used.[29] It was developed from the WHOQOL-BREF, originally published by the World Health Organization.[30] It consists of 26 items and is scored using a 5-point Likert scale, having 4 subscales measuring physical health (7 items), psychological well-being (6 items), social relationships (3 items), and satisfaction with the environment (8 items). In terms of interpretation, the mean scores are categorized into 3 levels. A mean score ranging from 96 to 130 indicates a good level of QoL, while a score between 61 and 95 represents an average level. Mean scores falling between 26 and 60 indicate a relatively lower QoL.[30] The content and construct validity have been investigated, and the reliability of the questionnaire has been determined to be 0.65 and 0.84, respectively.[29] In addition, internal consistency reliability

was tested through a pilot study among 30 HOAs who had similar qualifications to the actual participants and yielded a Cronbach α coefficient of 0.80.

The intervention group received the health promotion program outlined in Table 1. The intervention was developed by community stakeholders and the research team in 2023. The program was based on Hulme's family empowerment framework,[26] which consists of changing behavior through empowerment strategies and serves as the foundation for structured training sessions that gradually build family caregivers' knowledge, confidence, and ability to implement change. The training program consisted of three sections as follows: theoretical training, laboratory training, and practical training. The training program adopted a comprehensive approach, starting with theoretical lectures that present essential knowledge at the first week. These lectures covered topics such as nutrition, exercise, mental care, sleep and rest, urinary and bowel elimination, fall prevention, personal hygiene, and basic life support. This theoretical stage was a 5-day training program comprising 6 hours of instruction per day, for a total of 30 hours. After the theoretical lectures, the training program advanced to the laboratory section at the second week, where family caregivers could refine their skills in a controlled environment before applying them to HOAs. These sections bridge theory and practice, offering hands-on experience through interactive activities, simulations, and role-playing to enhance learning. This laboratory stage spanned 5 days, with 6 hours of training per day, totaling 30 hours. The theoretical and laboratory training sections were implemented by all researchers at

Table 1: Health-promoting program content

Timing	Component Activities	Activity
Week 1	Theoretical training section (30 hours) at Roi Et Rajabhat University	-Family caregivers were trained by a team of professionals, including a nutritionist, physical therapist, community nurse practitioner, and gerontologist nurse, to enhance their knowledge and attitude in caring for HOAs[a]. The training covered nutrition, exercise, mental care, sleep and rest, urinary and bowel elimination, fall prevention, personal hygiene, and basic life support.
Week 2	Laboratory training section (30 hours) at Roi Et Rajabhat University	-Family caregivers were trained through demonstrations and hands-on practice in a laboratory setting on basic care for HOAs. This included primary health screenings such as blood pressure and body temperature monitoring, exercise, basic life support, hygiene care including oral and perineum care, meditation and recreational activities, food preparation, and fall prevention in the home environment.
Week 3-12	Practical training section (10 weeks) at a community	In this session consisted of 4 activities: 1) Providing hygiene care to HOAs: Family caregivers practiced proper basic care techniques, including bathing, shampooing, nail clipping, oral care, and perineum care. 2) Promoting leisure and recreational activities for HOAs: Family caregivers allocated time to encourage leisure and recreational activities that suited their loved ones, such as gardening, knitting, card games, jigsaw puzzles, yoga, and dancing. Identifying appropriate activities can be challenging, especially for HOAs with specific physical or mobility limitations. Therefore, researchers acted as consultants for family caregivers. These activities could enhance both the mental and physical well-being of HOAs. 3) Modifying the safety environment: Family caregivers made home modifications such as cleaning up clutter, repairing or removing tripping hazards, improving lighting, applying reflective tape to stairs, and using walking aids. 4) Creating a sense of self-worth and self-efficacy among family caregivers: Over 10 weeks, family caregivers reflected on and shared their strengths and areas for development with each other weekly.

[a]HOAs: Homebound older adults

the Faculty of Nursing, Roi Et Rajabhat University. Finally, the program culminated in a practical section from week 3 to 12, emphasizing real-world application. Here, family caregivers implemented their newly acquired skills in daily caregiving scenarios, fostering self-efficacy and problem-solving while ensuring meaningful and effective care for HOAs in the community, and the research team visited weekly at the community. The program content was validated by five experts in the fields of gerontology, education, and community health nursing. This was revised according to the recommendations of those experts and piloted with ten HOAs and their family caregivers before full implementation.

The control group received usual home visits conducted by community health volunteers who had completed a 420-hour training program. These volunteers operated under the supervision of community nurses at the Sub-District Health Promoting Hospital, providing healthcare and health promotion services to older adults and their family caregivers monthly or as needed.

All HOAs were asked to provide demographic information and complete quality of life (QoL) assessments at their own homes before implementing the program. The intervention began one week after baseline measurements in the intervention group and continued for 12 weeks. At the end of the study, QoL reassessment was done for both intervention and control groups.

Participants were assured that joining the program would have no negative effects. The goals and benefits were communicated to the authorities, who could access the results upon request. If they agreed, the control group received the health-promoting program after the study period to ensure they also benefited from the intervention.

Data were analyzed using SPSS version 26. The Shapiro-Wilk test was used to examine the normality of data. The Chi-square test was used to compare the demographic characteristics between the experimental and control groups. Paired t-test and independent t-test were done for within-and between-groups comparison, respectively.

This study was conducted according to the Helsinki Declaration, considering all principles related to the design of this study. Ethical approval was obtained from the Research Ethics Committee of Roi Et Rajabhat University, Thailand (certification number 073/2566). This article is a part of the research entitled "The program development of a caregiver model for caring for older adults in the community". All participants received written and verbal explanations of the study. Before giving written informed consent, they learned of the objectives, methods, risks, benefits, and their right to refuse or withdraw from the study at any time. Participants were assured that joining the program would have no negative effects. The goals and benefits were communicated to the authorities, who could access the results upon request. If they agreed, the control group received the health-promoting program after the study period to ensure they also benefited from the intervention.

Results

A total of 114 participants remained in the study, with 57 in each group. The majority of HOAs, 95 (83.33%), were female. The mean ages were 69.05±4.53 years in the experimental group and 68.74±4.71 years in the control group. All HOAs in both groups were identified as Buddhists. Most had a primary level of education, representing 38(66.7% %) across both groups. 69(60.52%) of the HOAs were married. There were no significant differences in any characteristics between the two groups ($P>0.05$) (Table 2).

After the intervention, the experimental group had a higher mean of total QoL score than before the intervention ($P<0.001$). The mean of the total QoL score of HOAs showed no statistically significant difference between before and after the intervention in the control group ($P=0.054$). After the intervention, between-group comparison showed a statistically significant difference ($P<0.001$) (Table 3).

Table 2: Comparison of the demographic characteristic of the homebound older adults between the experimental and control groups

Variable	Group		P value
	Control (n=57)	Experimental (n=57)	
	Mean±SD	Mean±SD	
Older adult's Age (years)	68.74±4.71	69.05±4.53	0.71*
	N (%)	N (%)	
Older adult's Age (years)			
60-69	33 (57.90)	32 (56.10)	0.85**
70-79	24 (42.10)	25 (43.90)	
Older adult's Sex			
Male	8 (14.00)	11 (19.30)	0.45**
Female	49 (86.00)	46 (80.70)	
Religion			1.00**
Buddhism	57 (100.00)	57 (100.00)	
Education level			
Informal education	9 (15.80)	8 (14.00)	0.94**
Primary level	38 (66.70)	38 (66.70)	
Secondary/Diploma	10 (17.50)	11 (19.30)	
Marital status			
Single	7 (12.30)	6 (10.50)	0.84**
Divorced/Widowed	17 (29.80)	15 (26.30)	
Couple	33 (57.90)	36 (63.20)	
Living arrangement			
Alone	4 (7.00)	6 (10.50)	
Living with others	5 (8.80)	3 (5.30)	0.81**
Living with their children	22 (38.60)	23 (40.40)	
Living with spouse	26 (45.60)	25 (43.80)	
Underlying disease/comorbidity			
None	5 (8.80)	4 (7.00)	
Diabetes mellitus	40 (70.20)	42 (73.30)	
Hypertension	47 (82.50)	46 (80.70)	0.72**
Stroke	2 (3.50)	2 (3.50)	
Cardiovascular disease	4 (7.00)	6 (10.50)	
Osteoarthritis	7 (12.30)	8 (14.00)	
Others (i.e., cancer, cataract)	2 (3.50)	4 (7.00)	
Number of comorbidities			
Less than 3 diseases	48 (84.20)	47 (82.50)	0.77**
More than 3 diseases	9 (15.80)	10 (17.50)	
Walking aids			
No gait aid use	46 (80.70)	48 (84.20)	0.622**
Gait aid use	11 (19.30)	9 (15.80)	

*Independent t-test; **Chi-square test

Discussion

The findings of this present study revealed that the implementation of a health-promoting program for family caregivers significantly enhanced the QoL among HOAs in a Thai rural community. The experimental group demonstrated a substantial increase in the mean QoL scores when comparing baseline to post-intervention measurements after 12 weeks, while the control group showed no significant change. Similarly, previous studies have shown that youth peer support training programs enhance the QoL, including physical health, psychological well-being, social relationships, and environmental satisfaction in HOAs.[31] For example, interventions such as education, reminiscence therapy, and exercise

Table 3: Comparison of the mean total and subscales scores of the quality of life of homebound older adults between the experimental and control groups before and after the intervention

Variable	Stages of study	Groups		P value*
		Control (Mean±SD)	Experimental (Mean±SD)	
Physical health	Pre-test	23.74±2.75	24.30±3.33	0.330
	Post-test	23.47±4.57	29.21±5.54	<0.001
	P value**	0.294	<0.001	
Psychological well-being	Pre-test	20.81±2.83	21.12±2.34	0.519
	Post-test	20.86±4.75	25.67±3.85	<0.001
	P value**	0.841	<0.001	
Social relationships	Pre-test	10.51±2.89	10.54±2.89	0.949
	Post-test	10.56±4.75	12.68±4.88	0.021
	P value**	0.838	0.004	
Satisfaction with the environment	Pre-test	28.07±3.19	27.75±3.10	0.594
	Post-test	28.32±4.78	33.02±4.79	<0.001
	P value**	0.290	<0.001	
Total quality of life	Pre-test	87.12±5.06	87.35±5.04	0.810
	Post-test	87.44±5.26	103.53±9.83	<0.001
	P value**	0.054	<0.001	

*Independent t-test, **Paired t-test

demonstrations were effective in India,[28] while a training program in Spain benefited older adults with limited physical function.[32] Engagement in physical activity and multidimensional interventions are particularly effective strategies for enhancing QoL in older adults.[33] However, a systematic review found that multidisciplinary home-based interventions do not improve QoL among frail older adults in many countries across Europe, North America, Asia, and Oceania.[34]

This intervention of the present study was grounded in the principles of the family empowerment framework, empowering family caregivers through training in essential care skills and mental health support.[26] The program consisted of three sessions that included theoretical, laboratory, and practical training to enhance the QoL among HOAs. By equipping family caregivers with knowledge, attitude, and practice, the program addressed the physical and psychological needs of HOAs while fostering a supportive caregiving environment. Similarly, prior research demonstrated that empowering caregivers through education, skill training, and interaction with researchers improved their ability to provide quality care for dependent older adults.[24] Social support, like empowerment, has also been shown to enhance the QoL of older adults in social institutions.[35, 36] Importantly, enhancing support for family caregivers helps them navigate and sustain their caregiving relationships.[37] However, previous studies have mentioned the pervasiveness of family caregivers' training needs, particularly with medically-oriented activities, and indicated that escalations in older adults' care needs are linked to caregiver training needs.[38]

These results confirm the effectiveness of the comprehensive health-promoting program for family caregivers that combined theoretical, laboratory, and practical training sessions covering nutrition, exercise, fall prevention and mental care. This holistic approach prepared family caregivers to meet HOAs' diverse needs, enhancing the HOAs' QoL at week 12 across physical, psychological, social, and environmental satisfaction dimensions, and provided sufficient time for caregivers to integrate new skills into their caregiving routines and receive feedback and support from the research team. The previous study in a rural community in Thailand involved four sessions and monthly family activities for 9 months. After the intervention, social support and perception of healthcare from family members

on older adult care improved. This was followed by 12 months of monthly meetings with older adults that covered exercise, nutrition, dementia prevention, emotional management, chronic disease care, and meditation, resulting in improved overall QoL.[25] This extended practice period likely contributed to the sustainability of the intervention effects, as suggested by another study which found that longer-duration interventions had more sustained impacts on both caregiver competence and care recipient outcomes.[39]

Despite the positive outcomes, some limitations should be acknowledged. First, the study was conducted in a rural community in Thailand, limiting the generalizability of the findings. Future research should explore the efficacy of similar programs in other geographic and cultural settings to determine whether the results can be replicated. Additionally, the quasi-experimental design, while robust, does not eliminate the possibility of selection bias. A randomized controlled trial would provide stronger evidence of causality and help further validate the effectiveness of the intervention. Finally, although the program improved QoL significantly, its long-term effects remain unknown. Follow-up studies should assess whether the improvements in QoL are sustained over time and whether any additional interventions are needed to maintain the gains achieved during the twelve-week program.

Conclusion

The health-promoting program implemented for family caregivers improved the QoL among HOAs in a rural Thai community. By focusing on enhancing the caregivers' knowledge, practices, and attitudes, the program empowered them to provide higher-quality care, which led to improvements in the physical, psychological, and social relationships and satisfaction with the environment of HOAs. Based on these findings, healthcare practitioners should collaborate closely with family caregivers to ensure continuity of care. Providing caregivers with ongoing training and support, as well as involving them in healthcare decision-making processes, can further enhance the overall well-being of HOAs.

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Authors' Contribution

WB, PL, and PN were responsible for the conceptualization and design of this study. The data collection was conducted by WB, PL, PN, and US. The data analysis and interpretation were carried out by WB, PL, PN, and US. WB and PL drafted the initial manuscript. All authors critically reviewed, revised, and approved the final version of the manuscript for publication. All authors take responsibility for the integrity of the data and the accuracy of the data analysis. The corresponding author attests that all listed authors meet authorship criteria and that nobody meeting the criteria have been omitted.

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Conflict of Interest

None declared

Declaration on the use of AI

The authors used ChatGPT (GPT-4) by OpenAI and Claude 3 Sonnet by Anthropic to assist with language editing. All intellectual content, data analysis, and interpretations were performed by the authors, and the final manuscript was reviewed and approved by all authors.

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