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The Effect of Health Promotion Program on Perceived Self-Efficacy and Self-Care Practices among Elderly with Multimorbidity in Chiang Mai, Thailand

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Abstract

Multimorbidity in the elderly is a major public health issue with serious consequences. This study investigated the effects of health promotion programs on perceived self-efficacy and self-care practices among the elderly with multimorbidity using a quasi-experimental study design from February to July 2021. The study samples were the elderly from Doi Saket District, Chiang Mai Province, Thailand, selected by a multistage random sampling technique. The experimental and control groups each comprised 40 elderly with multimorbidity. All elderly participants took part in a 12-week health promotion program. The perceived self-efficacy and self-care practices of the study samples were assessed using interviews, and the group results were compared using the independent t-test. Repeated measures analysis of variance (ANOVA) was applied at a significance level of 0.05 for three different periods. Follow-up results after the intervention showed that the experimental group had significantly higher mean scores of perceived self-efficacy and self-care practice than the control group (p -value<0.05). The health promotion program enhanced perceived self-efficacy and self-care practices in the elderly with multimorbidity. It can also be applied to improve the quality of life of people in other age groups.

Keywords: elderly, health promotion, multimorbidity, perceived self-efficacy, self-care practices

Introduction

With improved health care, aging population has become a worldwide phenomenon. Thailand ranked the third most rapidly aging population in the world.¹ Thailand became an aging society in 2005, with 10.4% of the population aged 60 years and older, increasing to 14.4% ten years later, and reaching 18.6% (around 13 million people) by the end of January 2022.² If the aging population continues to grow at the current rate,^{3,4} Thai's elderly population will reach 20 million by 2050 (35.8% of the population).³ In an aging society, caregivers and government agencies (e.g. the Ministry of Public Health) should pay more attention to the availability of utilities to help the elderly live their lives.⁵ The majority of the elderly in Thailand suffer from frailty and chronic diseases and need daily care from their family members and healthcare providers.⁵

The elderly are more exposed to both physical and psychological vulnerabilities and at risk of developing a wide range of diseases.⁶ As a high-risk group for multimorbidity,^{7,8} the presence of two or more chronic dis-

eases is more likely. Previous studies reported that 24-83% of the elderly had multimorbidity depending on the definition of multimorbidity itself (how many chronic noncommunicable diseases (NCDs) an elderly have), age of the population, and data source.^{9,10} Multimorbidity is associated with lower disability-adjusted life year (DALY),⁷ an increase in mortality and disability, and a decrease in functional capacity and life quality. Multimorbidity also increases health care utilization (costs, length of hospital stays, and number of physician visits).^{11,12}

The occurrence of multimorbidity was 11.5% and 25.3% of the Thai elderly population in 2010 and 2014, respectively,^{13,14} as one of the most pressing issues confronting Thailand's health care system with increasing prevalence and incidence of chronic NCDs such as hypertension, diabetes, stroke, and coronary artery disease.⁴ These diseases seriously disrupt the well-being of the elderly and may render them completely dependent.⁴ The elderly with multimorbidity require more primary health care (PHC) than all other age

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groups.^{6,15}

Thailand has established the 20-year Thai National Strategy (2017–2036) and the second Thai National Plan for the Elderly (2002–2021) to increase health awareness, basic self-care, and self-prevention, strengthening organizations that care for the elderly.¹⁶ Furthermore, as the senior population increases, Thailand faces a scarcity of workers with necessary skills and experience to care for the elderly.¹⁶ Therefore, encouraging the elderly with multimorbidity to take charge of their health behaviors to reduce complications and improve the quality of their lives presents a worthwhile challenge.

Bandura's self-efficacy theory,¹⁷ can be applied to the elderly with chronic diseases to reduce complications, impairment, and early mortality and allow them to live normal lives in society. This also reduces the burden of family and government spending. However, there are still a few studies on health promotion programs for the elderly with multimorbidity in Thailand. Therefore, this study investigated the effects of health promotion programs on perceived self-efficacy and self-care practices in the elderly with multimorbidity. This study's findings can be used to improve health and modify self-care behaviors in the elderly with multimorbidity, allowing them to enjoy a decent quality of life as part of community with dignity.

Method

This quasi-experimental study was conducted in February-July 2021 with participants split into experimental and control groups. Each measurement was performed in triplicate. The study samples were the elderly with multimorbidity residing in Doi Saket District, Chiang Mai Province, Thailand. The sample size was calculated using statistical power analyses with a power of 0.95, an alpha of 0.05, and an effect size of 0.80. Based on the conditions of 40 samples in each group, the eligible sample size was 80 people with an additional 10% dropout rate, resulting in 40 participants per group. Simple random sampling without replacement was used to select the participants. Inclusion criteria were people aged over 60 years with more than one non-communicable disease diagnosed by a physician for at least one year, no difficulties in speaking, hearing, or sight, and willing to participate in the entire program.

A total of 80 participants were recruited from two PHC in Choeng Doi and Luang Nuea Subdistricts in Doi Saket District. The experimental group was assigned to one subdistrict, whereas the control group was assigned to the other. The distance of the subdistricts was 10 km to prevent information contamination between the two groups. This study's data was collected using a questionnaire (delivered offline) categorized into three sections. Section one comprised demographic charac-

teristics involving sex, age, marital status, education level, occupation, and monthly income. Section two asked about perceived self-efficacy, using Bandura's self-efficacy theory,¹⁷ and 17 questions with answers on a three-point scale (regularly practice, sometimes practice, and never practice). Cronbach's alpha was determined at 0.88, with the item objective congruence (IOC) index higher than 0.67 for all items. Section three, examining self-care practices based on the previous study, consisted of 25 questions divided into five dimensions: healthy eating, physical activity, exercise, stress management, and medication adherence. Answers ranged from 1 (never or rarely) to 4 (always). Cronbach's alpha was 0.75, and the IOC index was higher than 0.67 for all items.

The experimental group followed a set of activities designed to promote perceived self-efficacy and self-care practices in the elderly with multimorbidity. The study duration was 12 weeks, with face-to-face interventions conducted once a week. During week 1 (2.0 hours) as the beginning of the program, the participants were welcomed, made to feel comfortable with the program, and provided with knowledge through discussions on overall elderly health, perceived self-efficacy, and self-care practices. Participants were also given a developed handbook on elderly health care to read at home. During weeks 2-5 (2.5-3.0 hours per week), the participants engaged in educational activities focusing on perceiving self-efficacy. These included judging whether a situation may cause harm and in what way, determining what can be done to control the situation, and analyzing barriers to effective self-management, adherence to treatments, disease management ability, and self-care management ability.¹⁸ The patients were also given opportunities to analyze, discuss, and share their health issues and healthy behaviors.

During weeks 6-9 (2.5-3.0 hours per week), the participants attended teaching and demonstrations in addition to practice activities focusing on five dimensions of self-care: healthy eating, physical activities, exercise, stress management, and medication adherence.¹⁹ The participants also took part in games. At the end of each session, the participants were asked to review self-care practices and instructed to self-observe other activities ahead of the next session. Each activity involved video media and teaching materials, including pictures, food models, and PowerPoint presentations by easy language. The follow-up program at 10–12 weeks comprised 10–15 minutes phone calls once a week. The participants were encouraged to engage in self-care practices regularly.

Following the intervention, healthcare providers gave all the participants in the experimental group a standard routine program. The participants were asked to com-

plete a questionnaire before the intervention (pre-test in week 1), immediately after the intervention (post-test in week 12), and one month after the intervention was completed (follow-up in week 16). Participants in the control group followed normal activities from healthcare providers in their communities and did not receive the 12-week health promotion program. The same intervention was administered to the control group members after completing the experimental group, intervention platform, and data collection. The program ran for 12 weeks. After one month of intervention, a follow-up was undertaken to ascertain behavioral changes, and both groups completed the same assessment test.

STATA 16 software (Stata Corp LP, College Station, Texas) was used to clean, check for completeness, and analyze the data, with normality determined using the Kolmogorov-Smirnov test. Descriptive demographic statistics were computed as frequencies and percentages to categorize the variables, while means and standard deviations to classify the metric variables. Differences in participant demographics between the experimental and control group baselines were determined using Chi-square and Fisher's exact tests. The before and after effects of the program were analyzed using repeated measures analysis of variance (ANOVA), with statistical

significance levels for all tests set at a p-value of less than 0.05.

Results

The baseline demographic characteristics of the participants are reported in Table 1. Sex, age, education level, occupation, and monthly income were not statistically different between the two groups (p-value>0.05). In the experimental group, 60% were female with a mean age of 68.25 (SD = 5.78), 97.50% had primary school education, 35% were employed, and 95% had a monthly income of lower than 140 USD/month. In the control group, most were females (75%) with a mean age of 68.58 (SD = 5.80), 85% had primary school education, 30% were employed, and 92.60% had a monthly income lower than 140 USD/month.

When considering post-intervention and follow-up scores, the experimental group's perceived self-efficacy and self-care practices improved considerably compared to the control group. Repeated ANOVA measures revealed statistically significant differences in mean scores of perceived self-efficacy and self-care practices between the elderly in the experimental and control groups (p-value<0.001 and p-value<0.001, respectively)

Table 1. Demographic Characteristics of the Participants

Variable	Category	Experimental Group (n = 40)		Control Group (n = 40)		p-value
		n	%	n	%	
Sex	Male	16	40.00	10	25.00	0.152
	Female	24	60.00	30	75.00	
Age (year)	Average	68.25 (5.78)		68.58 (5.80)		0.904
	Min-max	60-80		60-81		
	60-69	25	62.50	27	67.50	
	70-79	14	35.00	12	30.00	
Education level	>80	1	2.50	1	2.50	0.108
	Primary school	39	97.50	34	85.00	
	High school	1	2.50	6	15.00	
	Vocational/University	0	0.00	0	0.00	
Occupation	Employed	14	35.00	12	30.00	0.633
	Unemployed	26	65.00	28	70.00	
Monthly income (USD/month)*	<140	38	95.00	37	92.60	1.000
	140-280	2	5.00	3	7.50	

Note: *Calculated at an exchange rate of 35.70 Baht per 1 USD.

Table 2. Comparison of Mean Scores of Perceived Self-Efficacy and Self-Care Practices Before, After, and at Follow-up (1-Month Post-Intervention)

Variable	Category	Mean (SD)		p-value	Repeated Measures ANOVA	
		Experimental Group	Control Group		F	p-value
Perceived self-efficacy	Pre-test	23.50 (1.54)	23.45 (1.43)	0.009	527.57	<0.001
	Post-test	27.88 (1.52)	23.55 (1.36)			
	Follow-up	31.45 (0.93)	23.10 (1.50)			
Self-care practices	Pre-test	33.80 (2.31)	33.85 (2.05)	0.000	173.15	<0.001
	Post-test	43.40 (3.00)	33.58 (1.70)			
	Follow-up	48.53 (5.16)	33.45 (1.87)			

at baseline, post-intervention, and follow-up (Table 2).

Discussion

The health promotion intervention demonstrated a significant improvement in perceived self-efficacy, with participants in the experimental group showing higher perceived self-efficacy than those in the control group. In addition, the health promotion program enhanced perceived self-efficacy in the elderly with multimorbidity. These findings agreed with previous studies,²⁰⁻²³ demonstrating that systematically-planned health promotion programs can improve perceived self-efficacy toward self-care practices. The program applied in this study contained well-planned activities, including video demonstrations for self-care practice, model representations, and encouragement from peers. All these activities increased participants' confidence in self-care practice management.^{20,21} The outcome of this study concurred with Supasri, *et al.*,²² who studied the effect of health promotion programs on perceived self-efficacy. Their study results indicated that the experimental group's self-care among the elderly with hypertension significantly improved compared to the control group.²² It was also consistent with a study by Ahmad, *et al.*,²³ examining the influence of promotion and educational programs on self-efficacy, self-care behavior, and blood pressure in elderly hypertensives. Their results demonstrated that intervention significantly improved self-efficacy in the experimental group.

The study results were also in line with Bandura's self-efficacy theory stating that increased self-efficacy positively affects self-care practices and promotes health benefits.²⁴ Hejazi, *et al.*,²⁵ observed statistical significance between self-efficacy and self-care behaviors in patients with type 2 diabetes mellitus (T2DM) indicating that self-efficacy was a significant predictor of self-care behaviors. According to Bandura's theory,¹⁷ when self-efficacy increases, the elderly are more likely to engage in health promotion self-care behaviors, thereby improving their quality of life and well-being.^{25,26} Reisi, *et al.*,²⁷ found that individuals with higher self-efficacy were more motivated to improve their self-care practices. Noticeably, the study results indicated that the elderly with multimorbidity receiving the intervention showed significantly improved self-care practices in healthy eating, physical activity, exercise, stress management, and medication. From baseline to intervention and one month after, the experimental group had higher scores for self-care practices than the control group. This result was consistent with a study by Sun, *et al.*,²⁸ discovering that health educational intervention improved quality of life as well as self-care behaviors in elderly patients with cardiovascular diseases, also was supported by Evangelista, *et al.*,²⁹ who demonstrated that health promotion interventions for the

elderly diagnosed with heart failure decompensation were feasible. Compared to the control group, the elderly in the experimental group had more excellent self-care knowledge, skills, and self-efficacy, as well as improved inactivation over time.²⁹ Thus, health promotion is an essential and useful intervention in the context of self-care practices, favorably empowering the elderly with chronic conditions and, consequently, improving functional capacity.³⁰

Limited studies support the association between perceived self-efficacy and self-care practices in the elderly with multimorbidity.^{31,32} Nevertheless, the findings of this study were consistent with the one conducted in the United States, which reported that the elderly with hypertension who practiced good self-efficacy showed improved self-care behavior.³¹ A similar study by Yasaratna and Wijesinghe reported that targeted health promotion interventions to improve self-efficacy had a beneficial effect on self-care practices and disease control factors such as blood pressure in the elderly with chronic diseases.³² Effects of interventions on the increase in self-efficacy and self-care practices in the elderly have been investigated in other dimensions. Park and Chang,³³ investigated the effect of a health counseling self-management program for the elderly with multimorbidity. This program was effective in adjusting self-care behaviors and enhancing perceived health conditions.³³ Previous studies identified that the elderly gained essential knowledge and skills to actively participate in the self-management of their condition when they achieved higher levels of activation.^{29,34} Similarly, the elderly who acknowledged that they could improve their health participated more in making health decisions and adhered to behaviors that improved health conditions.²⁹ Therefore, to improve perceived self-efficacy and self-care behaviors of the elderly with multimorbidity, it is essential to have an effective health promotion program.

Strengths and Limitations

The strength of this study included focusing on the elderly with multimorbidity and following up more than once to ensure that the patients showed improved health literacy. This discussion enhanced patient engagement in proper self-care activities, enabling them to control their health outcomes better. Furthermore, no follow-up cases were lost in this study. To the best of the authors' knowledge, few studies on the effects of health promotion intervention programs have been conducted to determine improvements in perceived self-efficacy and self-care practices in the elderly with multimorbidity in Thailand. This study is the first research conducted in Chiang Mai Province, Thailand. The findings are applicable to other locations both in Thailand and worldwide with similar characteristics and situations for the elderly.

This study has some significant limitations. First, the study was conducted using a small sample size; thus, the results might not represent the elderly with multimorbidity in population aspects of race, education, and socioeconomic status, thus limiting generalization. Future study should employ more samples for a more accurate analysis. Second, the close-ended questions limited the authors' ability to investigate details of participants' emotions. Third, this study found no significant association between perceived self-efficacy and self-care practices. Therefore, the link between these two factors cannot be clearly stated. Fourth, this study did not control variables affecting perceived self-efficacy and self-care practices, such as personal characteristics or environmental factors. Finally, self-care practices were measured by self-report that might induce response bias due to the desire for social acceptance.

Conclusion

Implementing a health promotion program is feasible, potentially improving perceived self-efficacy and self-care practices in the elderly with multimorbidity. Multi-disciplinary health care providers in PHC can apply this program to make the elderly with multimorbidity more responsible for their self-care practices by modifying or maintaining healthy habits and strengthening self-efficacy. Further study should be conducted using a large-scale randomized controlled trial and other settings to validate the findings. Therefore, the health promotion program from this study can be practically applied as a guide to enhance the perceived self-efficacy and self-care practices in the elderly with multimorbidity. Relevant agencies should implement the program to promote the health and life quality of the elderly with similar conditions.

Abbreviations

ANOVA: Analysis of Variance; DALY: Disability-Adjusted Life Year; NCDs: Noncommunicable Diseases; PHC: Primary Health Care; IOC: Item Objective Congruence; USD: United States Dollars; SD: Standard Deviation; T2DM: Type 2 Diabetes Mellitus.

Ethics Approval and Consent to Participate

The Ethics Research Committee of the Faculty of Public Health, Chiang Mai University, approved this study (approval code: ET008/2021). All participants were provided with an informed consent form for signature. The consent form contained detailed information regarding the study's objectives, risks, and benefits.

Competing Interest

The authors declare that there are no significant competing financial, professional, or personal interests that might have affected the performance.

Availability of Data and Materials

All study data are available upon reasonable request to the corresponding author. The identities of the participants remain classified.

Authors' Contribution

JW was responsible for conceptualization and methodology. JW and NK collected the data and conducted the investigation. PP contributed to data curation and analysis. JW wrote the original draft and critically reviewed the manuscript. JW supervised this study. All authors have read and approved the final manuscript.

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