

Effectiveness of an Individual and Family Educative–Supportive Program among People with Heart Failure: A Quasi–Experimental Study

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Abstract: Heart failure, a growing global public health concern, necessitates the empowerment of individuals and families with self-care knowledge and skills to enhance outcomes and reduce hospitalizations. Studies focused on situation specific of heart failure knowledge and practice of self-care skills are limited. This quasi-experimental study was conducted to assess the impact of the Individual and Family Educative-Supportive program, a significant intervention, on self-care behaviors and symptom burden among hospitalized people with heart failure. The study involved 46 participants (23 in the intervention group and 23 in the control group) from a tertiary care hospital in Bangkok, Thailand. The intervention group received five sessions of the Individual and Family Educative-Supportive Program over three weeks in addition to usual care, while the control group received usual care only. Data were collected at pre-test before the intervention (week 1), post-test (week 3), and follow-up (week 7) using the Self-Care of Heart Failure Index-Thai version 7.2 and the Modified Memorial Symptom Assessment Scale-Heart Failure-Thai version. Repeated measures ANOVA and independent t-tests were used for data analysis.

The results revealed that the intervention group demonstrated a significantly higher mean score of self-care behaviors and a lower mean score of symptom burden than those of the control group at both week 3 and week 7. Thus, the Individual and Family Educative-Supportive Program effectively improved self-care behaviors and reduced symptom burden in hospitalized people with heart failure. Nurses can use this program in clinical practice. However, further testing of the program in various settings is required, including a randomized controlled trial.

Keywords: Educative-supportive program, Family support, Heart failure, Nursing, Self-care behaviors, Symptom burden

This study was registered in the Thailand Clinical Trial Registry (Project code TCTR20210624003).

Received 27 February 2024; Revised 5 June 2024;
Accepted 9 June 2024

Introduction

Heart failure (HF) is a significant public health problem, affecting an estimated 64.3 million people worldwide, and is the leading cause of hospital admission for older adults.¹ It represents a large burden

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in many aspects from an individual physical, cognitive, and emotional symptoms burden,²⁻⁴ family and

caregiver burden,⁵⁻⁶ and economic burden due to the high cost of admission.⁷⁻⁸ The primary goal of HF treatment is to achieve optimal management, which involves symptom relief, prognosis improvement, and mortality reduction. Inadequate self-care behaviors and lack of family support are the most common causes of worsening symptoms that lead to re-admission in people with HF (PW-HF).⁹⁻¹⁰ PW-HF have adequate self-care behaviors related to daily self-monitoring and adhering to prescribed medication, diet, and follow-up care, leading to a better quality of life, fewer hospitalizations, and relieving exacerbation of symptoms.¹¹⁻¹² However, most PW-HF had inadequate self-care behaviors¹³⁻¹⁴ and had difficulty monitoring sudden weight gain. They were unable to recognize their symptoms or were unable to recognize them very quickly, which led to the worsening of their HF symptoms.¹²

The practice guidelines recommend that patients and family members should receive specific individualized education to facilitate self-care behaviors, focusing on providing HF knowledge and training self-care skills.¹⁵⁻¹⁶ Studies on individuals in HF situations and the practice of self-care skills are limited. Previous studies reported that many programs were developed to enhance self-care behaviors among PW-HF and it significantly reduced symptoms.^{2,17-19} Few studies involved family members participating in the program; they did not focus on improving decision-making, symptom perception, and self-care management skills, and also did not measure symptom burden. Therefore, this study aimed to evaluate the effectiveness of the individual and family educative–supportive program (IF-ESP) that could increase self-care behaviors and reduce symptom burden in PW-HF.

Conceptual Framework and Review of Literature

The conceptual framework was developed based on the situation-specific theory of heart failure

self-care of Riegel et al.²⁰ and relevant literature. Self-care is defined as a process of naturalistic decision-making (NDM) in which people select behaviors to maintain physiological health (self-care maintenance), recognize and interpret symptoms (symptom perception), and manage those symptoms (self-care management).²⁰ Individual, problem, and environmental factors influence self-care behavior by interacting with knowledge, experience, skill, and values.²⁰ Self-care behaviors are complicated because they have many aspects and require both knowledge and skills,²¹ especially the dietary sodium restrictions, medication adherence, and the selection of low-sodium foods. Additionally, family members are an essential source of support and is a necessary person to promote self-care behaviors.²² Hence, PW-HF require support from family members to facilitate various aspects of self-care behaviors, including implementing dietary changes, adhering to multiple medications, monitoring daily weight, recognizing symptoms, and managing their symptoms intensively.

Several studies on education interventions show positive effects on self-care behaviors. The education intervention was conducted to gain knowledge to perform their self-care at home, such as a nurse-led discharge education program,²³ Orem-based self-care education,²⁴ and a self-care education program.^{14,25} Similarly, telephone follow-up reinforces prior education and increases self-efficacy among PW-HF to engage in self-care behaviors. For example, previous studies used empowerment programs that provide education sessions and follow-ups via the Telegram messaging application,²⁶ structured education and telemonitoring follow-ups,²⁷ self-regulation programs and telephone counseling.²⁹ These programs improved patients' self-care behaviors and reduced symptom burden in PW-HF.

Additionally, family involvement is important, previous studies that incorporated family caregivers into educational programs demonstrated positive impacts on both HF knowledge and self-care behaviors among PW-HF. For example, the effects of the teach-back method, multimedia, and blended training on self-care

and social support for PW-HF resulted in increased HF knowledge among caregivers and improved self-care behaviors among PW-HF.²⁹ Furthermore, involving family members in an educational intervention improved both HF knowledge and self-care behaviors among PW-HF.²¹ Similarly, the effect of caregiver education was significantly better self-care and caregiver knowledge among PW-HF. The result suggests that intervention targeting caregiver HF education could effectively improve HF patients' self-care.³⁰ Therefore, guided by the situation-specific theory of heart failure self-care and relevant studies, the integration of family support and line application was integrated into the intervention program called the Individual and Family Educative-Supportive Program (IF-ESP) to improve self-care behaviors and reduce symptom burden in PW-HF.

Study Aim and Hypothesis

This study aimed to evaluate the effects of the IF-ESP on self-care behaviors and symptom burden among hospitalized PW-HF with the following hypotheses: 1) the participants who received the IF-ESP would have higher mean scores of self-care behaviors and lower mean scores of symptom burden than the control group at post-intervention (week 3) and follow-up (week 7), and 2) the participants who received the IF-ESP would have higher mean scores of self-care behaviors and lower mean scores of symptom burden at follow-up (week 7) than those at post-intervention (week 3) and pre-intervention (week 1).

Methods

Design: This study employed a quasi-experimental design with repeated measures and two groups. This report followed the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) statement checklist for the quasi-experimental design.

Sampling and Setting: The participants were PW-HF receiving treatments at medical wards in a tertiary care hospital in Bangkok and their family members. The inclusion criteria for the PW-HF were: aged 40 years or older, diagnosed with HF for at least 6 months by the cardiologist, the New York Heart Association (NYHA) class II to III at the time of recruitment, stable comorbidity conditions, no sign of blindness or hard of hearing status, no cognitive impairment screened by the Thai Mental State Examination (TMSE); the cut-off point for TMSE was ≥ 23 scores, having a mobile phone, using the LINE application, reading, writing, and communicating in Thai.

The inclusion criteria for family members were: 1) a close family member who lived with the participant, 2) aged of 20 years or older, 3) taking care of the participants at least four days a week with no payment, 4) able to read, write, and communicate in Thai, and 5) able to use the LINE application. PW-HF who could not attend all of the intervention sessions were excluded. The discontinuation criteria were having severe symptoms or transfer to the intensive care unit during the period of the program and having a worse condition or dying before the end of the program.

The sample size was determined using the G*Power program 3.1.9.4 software. The power analysis used the *F* test for the analysis of variance (ANOVA) with repeated measures to determine within- and between-factor effects, with a power of 0.80, a significance level of 0.05, and the effect size of the *F* test at 0.20 from the previous study.³¹ Thus, the study required a minimum sample of 42 individuals, with a 12% attrition rate. Consequently, the sample needed 24 participants per group.

Participants' recruitment was based on the weekly assignment by lottery, using odd and even numbers. Forty-eight eligible PW-HFs were recruited by the first research assistant (RA), a nurse who worked in the hospital, in the first week of admission. Following their initial week of hospitalization, these eligible were

assigned to either the intervention or control groups and then re-enrolled in the alternated for the next week. PW-HF who were admitted in the odd week were assigned to the control group, while those of the even week were assigned to the intervention group. From pre-test to follow-up, there were two participants who dropped out during the follow-up because one participant in the intervention group died of respiratory failure before completing the program, and one participant in the control group could not be contacted.

Ethical Considerations: This study was approved by the Institutional Review Board Committee of Burapha University (Project Code G-HS007/2564) and the studied hospital (Project Code LH641040). The primary investigator (PI) provided details regarding the study objectives, methods, potential benefits and risks, and withdrawal from the study without any effect on the health care services they would receive in the hospital. Before any data were collected, all participants and their families signed a consent form guaranteeing that their information would be kept confidential, and their names would not be revealed. Anonymity was safeguarded through the coding of questionnaires.

Research Instruments: Instruments for data collection were: the Demographic Record Form, the Self-Care of Heart Failure Index (SCHFI)-Thai Version 7.2, and the Modified Memorial Symptom Assessment Scale-Heart Failure (MSAS-HF) Thai version.

The Demographic Record Form was developed by the PI. It comprised two parts: the demographic data of participants and family members. The demographic data of participants included gender, age, education level, co-morbidity disease, the New York Heart Association Classification (NYHA) functional class, and body weight. The demographic data of family members has four items on gender, relationship of participants, co-morbidity disease, and average time to take care.

*The SCHFI-Thai version 7.2*³² was used to measure self-care behaviors. The PI translated the instrument from the original English version into the Thai version

using the instrument translation process of Riegel.³²

To ensure the accuracy of the Thai translation of this instrument by four qualified experts (two professors for the forward translation and two professors for the backward). The forward translator included one with an MS degree in nursing and one with a PhD in nursing, while the backward translation included two with a PhD in nursing. After that, the PI sent a final back-translated English version to Professor Dr. Barbara Riegel, the owner of this instrument, for a final check and revised it following her suggestion.

The SCHFI-Thai version 7.2 consisted of 29 items with three subscales, including self-care maintenance (10 items), symptom perception (9 items), and self-care management (8 items). Self-care maintenance was measured by the frequency of behaviors that PW-HF perform on a daily basis (e.g., "Eat a low salt diet?"). Symptom perception assesses the frequency of symptom monitoring (e.g., "Monitor your weight daily?"). Self-care management asks which behaviors the respondent commonly used to control their symptoms (e.g., "Reducing your fluid intake?"). A score is on a 5-point rating scale, resulting in a standardized total score from 0 to 100, with a higher score indicating higher self-care behavior and a score equal to or greater than 70 indicating adequate self-care behaviors. The SCHFI-Thai version 7.2 was tested for reliability using Cronbach's alpha coefficient of internal consistency. The Cronbach's alpha coefficient was 0.75 in the pilot study with 20 PW-HF, and 0.83 in the main study.

The MSAS-HF Thai version was used to evaluate symptom burden, which was developed by Zambroski et al.³³ and translated and back-translated into Thai by Suwanratsamee et al.³⁴ This questionnaire assessed the perception of symptoms in the past seven days, including the prevalence, frequency, severity, and distress in life across 32 items/symptoms (21 physical symptoms, 5 heart failure symptoms, and 6 psychological symptoms). For each item, participants indicated experience by selecting "no (score = 0)" or "yes (score = 1)"

(e.g., “Waking up breathless at night”). If “yes” was selected, they were asked to rate frequency (1: rarely to 4: almost constantly), severity (1: mild to 4: very severe), and distress (0: not at all to 4: very severe). Symptom burden score for each symptom is determined by the mean severity, frequency, and distress, ranging from 0–4. In addition, the total symptom burden score is the sum of the mean score for all symptoms.³³ The possible scores range from 0 (no symptoms at all) to 128 (highest symptom burden). The Cronbach’s alpha coefficient was 0.74 in the pilot study with 20 PW–HF, and 0.86 in the main study.

The Individual and Family Educative–Supportive Program (IF–ESP)

The IF–ESP was developed based on the situation–specific theory of heart failure self–care²⁰ and literature review. This program focused on the process of decision–making, made by PW–HF with support from family members, to perform self–care behaviors of maintenance, symptom perception, and management. The program consisted of five sessions over three weeks and was separated into two parts, including during hospitalization and after hospital discharge. This program employed a method of helping using the Orem model,³⁵ encompassing teaching, providing, and supporting. The strategies consisted of individual face–to–face education and discussion, training and practicing self–care skills, and demonstrations and return demonstrations. Follow–up was conducted through video calls and using the LINE application. The program included: 1) creating trusting relationships and identifying factors that affected self–care behaviors; 2) providing HF knowledge and self–care behaviors; 3) training and practicing self–care skills with support from family members; 4) maintaining self–care behaviors; and 5) reflecting and evaluating self–care behaviors. The details and implementation of the program are in **Appendix, Table 1**. This program was reviewed and validated by five experts: one cardiologist, two clinical nurse specialists, and two nursing instructors.

Usual Care: The intervention group received usual care plus the IF–ESP. The control group was given usual care, which included treatment protocols and education from the on–duty nurses.

Data Collection: The data were collected from November 2021 to August 2022. Following ethical approval, the PI contacted the head nurses and staff nurses in medical wards to approach PW–HF and their family members. After PW–HF were admitted, the first RA recruited eligible participants the first week of admission and then alternated the next week into groups. The control group received usual care only, while the intervention group received usual care plus the IF–ESP delivered by the PI, with their family members involved in all sessions of the program. The second RA was trained as an outcome evaluator and collected the data for both groups. Three research instruments were used to collect data before receiving the program at the ward (week 1), immediately after completion of the program at OPD clinic (week 3), and one month after completion of the program at OPD clinic (week 7). The study used a double–blind technique in which participants and outcome assessors were unaware of group assignments. The sample recruitment and data collection are presented in **Figure 1**.

Data Analysis: The demographic data of participants, family members, and outcome variables were described by frequency, percentage, means, and standard deviations. Chi–square and *t*–tests were used to compare the characteristics of participants in the groups. Repeated measures ANOVA was used to evaluate the differences in mean self–care behaviors and symptom burden scores between the groups and within the intervention group at three time points. All assumptions were met for between–group and within–subject effects of the mixed ANOVA. The SPSS program version 26 was used to analyze the data, and the statistical significance level was set at $p < .05$.

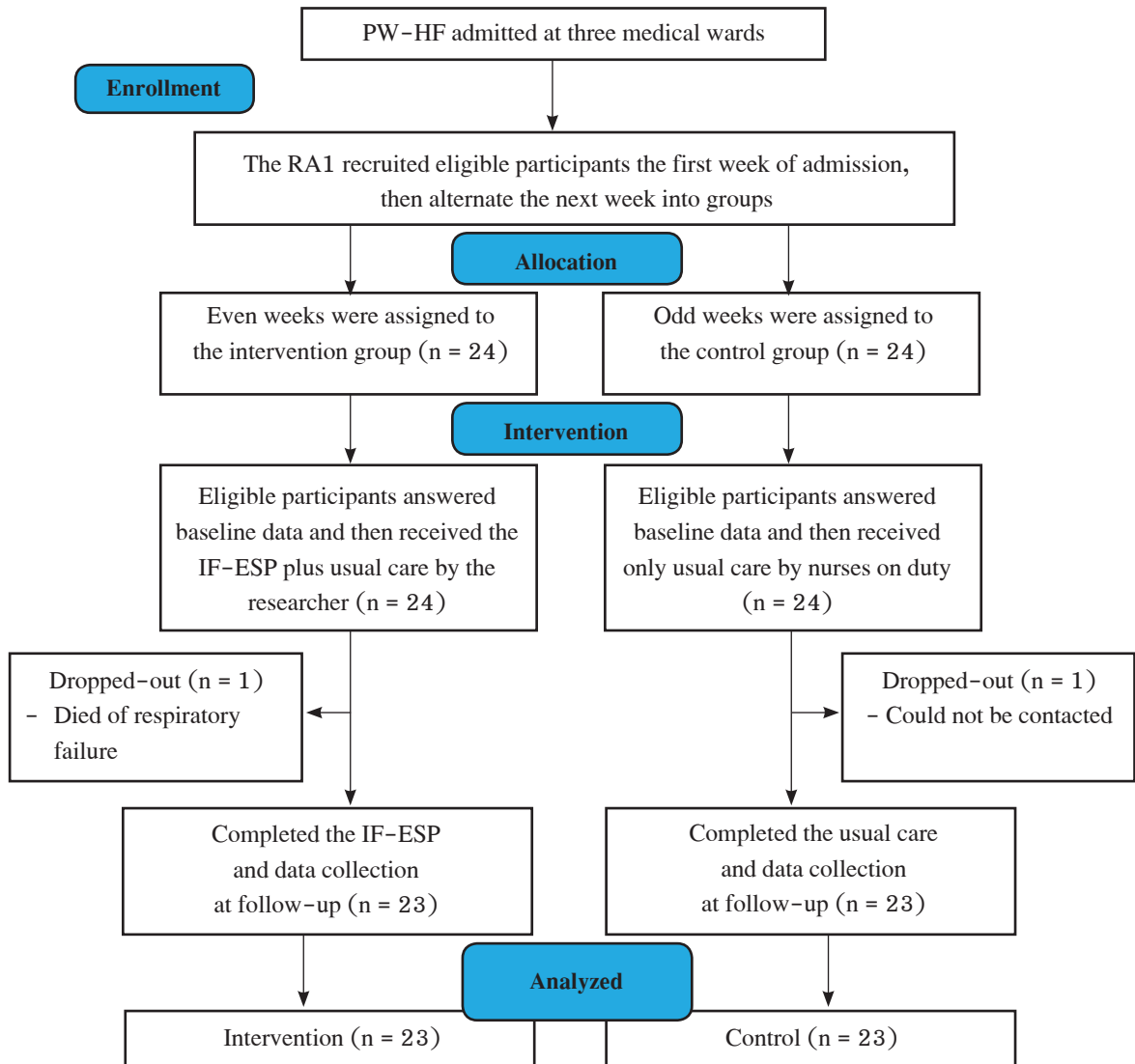


Figure 1. Summary of sample recruitment and data collection

Results

Forty-six participants remained at the completion of the study, 23 in each group. For both groups, the gender of participants was almost equal for males and females, the ages ranged from 40 to 83 years in the intervention group and 40 to 82 years in the control group, graduated with higher primary school, had co-morbidity with hypertension, the NYHA class III, obesity, and were

admitted at least once a year. For the family members in both groups, the majority were female, being a spouse, had co-morbidity with hypertension, and time to take care of PW-HF was around 3.13 hours per day in the intervention group, whereas around 2.70 hours per day in the control group. There were no significant differences in the demographic data of participants and their families between the intervention and control groups, except for body weight (Table 2).

Table 2. Characteristics of the participants and family members

Characteristics	Intervention group (n = 23)		Control group (n = 23)		Statistic value	p-value
	n	%	n	%		
Participants with HF						
Gender					.88 ^b	.767
Male	12	52.2	13	56.5		
Female	11	47.8	10	43.5		
Age (years)						
Range	40-83		40-82		-.33 ^a	.738
Mean ± SD	59.78 ± 13.07		58.57 ± 11.44			
Education level					3.13 ^b	.077
≤ Primary level	8	34.8	14	60.9		
> Primary level	15	65.2	9	39.1		
Co-morbidity disease						
Hypertension	20	87.0	18	78.3	.60 ^c	.699
Diabetes mellitus	12	52.2	16	69.6	1.46 ^b	.227
Renal impairment	2	8.7	4	17.4	.76 ^c	.665
Admission due to HF (Time per year)					1.28 ^a	.204
Range	0-3		0-10			
Mean ± SD	0.78 ± 0.95		1.43 ± 2.33			
NYHA functional classification					1.09 ^c	.608
Class II	3	13.0	1	4.3		
Class III	20	87.0	22	95.7		
Body weight (kg)					-2.84 ^a	.007
Range	53.50-166		44-97			
Mean ± SD	82.41 ± 27.81		63.24 ± 16.44			
Family members						
Gender					.09 ^b	.753
Male	8	34.8	7	30.4		
Female	15	65.2	16	69.6		
Relationship					3.17 ^b	.204
Spouse	14	69.9	8	34.8		
Child or grandchild	5	21.7	9	39.1		
Brother or sister	4	17.4	6	26.1		
Co-morbidity disease						
Hypertension	9	39.1	4	17.4	2.42 ^c	.243
Diabetes mellitus	6	26.1	2	8.7	2.68 ^b	.102
Heart disease	2	8.7	-	-	2.09 ^c	.489
Average time to take care (hours/day)					-.95 ^a	.346
Range	2-10		2-4			
Mean ± SD	3.13 ± 2.05		2.70 ± 0.76			

Note. ^a independent t-test, ^b Chi-square, ^c Fisher's exact test, NYHA = New York Heart Association

The Effect of the IF-ESP on Self-care Behaviors and Symptom Burden

Self-care behaviors: Almost all intervention group participants had adequate self-care behaviors immediately after completion by week 3 after the program and one month later (week 7), while most control group participants had inadequate self-care

behaviors over time (Table 3). After receiving the program, the mean self-care behaviors score in the intervention group increased over time while slightly increasing in the control group. However, there was no statistically significant difference in the mean score of self-care behaviors between groups before receiving the program (Table 3).

Table 3. Descriptive summary of self-care behaviors scores between the intervention and control groups at three-time points

Week	Intervention group (n = 23)			Control group (n = 23)			t	p-value
	Score ≥ 70	Score < 70	Mean(SD)	Score ≥ 70	Score < 70	Mean(SD)		
	n(%)	n(%)		n(%)	n(%)			
1	3(13)	20(87)	51.84(13.02)	1(4.3)	22(95.7)	50.46(11.38)	.39	.693
3	21(91.3)	2(8.7)	78.18(19.39)	1(4.3)	22(95.7)	50.38 (9.45)		
7	22(95.7)	1(4.3)	83.07(8.23)	1(4.3)	22(95.7)	53.51 (9.47)		

Note. Score ≥ 70 indicating adequate self-care behaviors, Score < 70 indicating inadequate self-care behaviors

The results of repeated measures ANOVA are presented in Table 5. The interaction effect (time*group) was significantly different across three time points (p < .001). The simple effect of group (between-subjects) revealed significantly higher self-care behavior scores than those in the control group over three time points (p < .001) (Figure 2). The simple

effect of time (within-subjects) revealed significantly increased self-care behavior scores across three time measures (p < .001) (Figure 2). These findings indicated that the participants who received the IF-ESP had a statistically significant increase in self-care behaviors than those who did not receive the program.

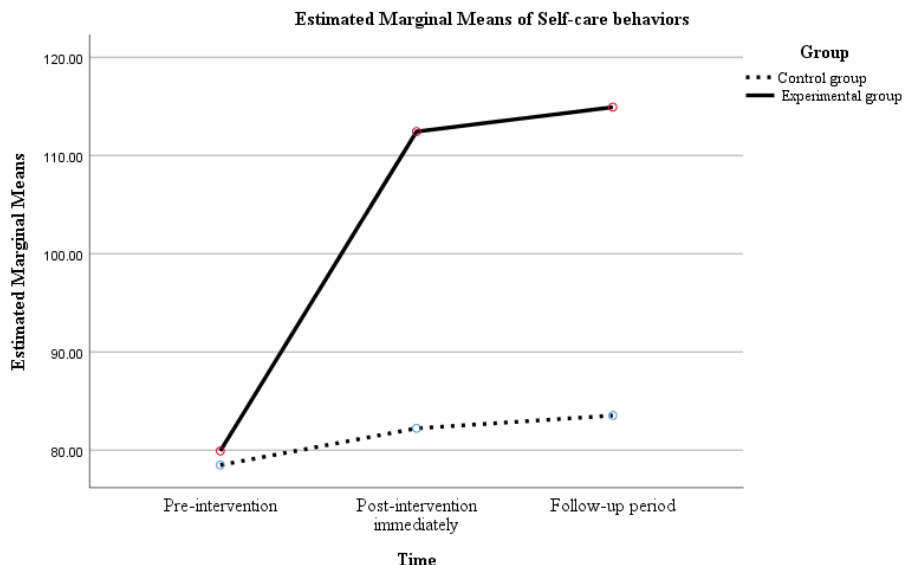


Figure 2. Self-care behaviors in each participant group

Symptom burden: The intervention and control group participants experienced a decrease in symptom prevalence over time. Moreover, the intervention group had a lower mean total symptom burden score

than the control group. However, there was no statistically significant difference in the mean total symptom burden scores between groups before receiving the program (Table 4).

Table 4. Descriptive summary of total symptom burden scores between the intervention and control groups at three-time points

Week	Intervention group (n = 23)		Control group (n = 23)		t	p-value
	Symptom prevalence	Total symptom burden	Symptom prevalence	Total symptom burden		
	n(%)	M(SD)	n(%)	M(SD)		
1	19(59.38)	95.37(16.05)	22(68.75)	90.99(22.06)	.77	.445
3	14(43.75)	36.89(9.79)	18(56.25)	49.25(17.23)		
7	9(28.13)	28.20(4.15)	11(34.38)	33.48(9.68)		

The results of repeated measures ANOVA are presented in Table 5. A significant difference was noted in the interaction effect (time*group). The simple effect of group (between-subjects) revealed no statistically significant difference between the intervention and the control groups (p > .05). In contrast, the simple effect

of time (within-subjects) revealed a significantly lower symptom burden score across three time measures (p < .001) (Figure 3). These findings indicated that the participants who received the IF-ESP had a statistically significant decrease in symptom burden than those who did not receive the program.

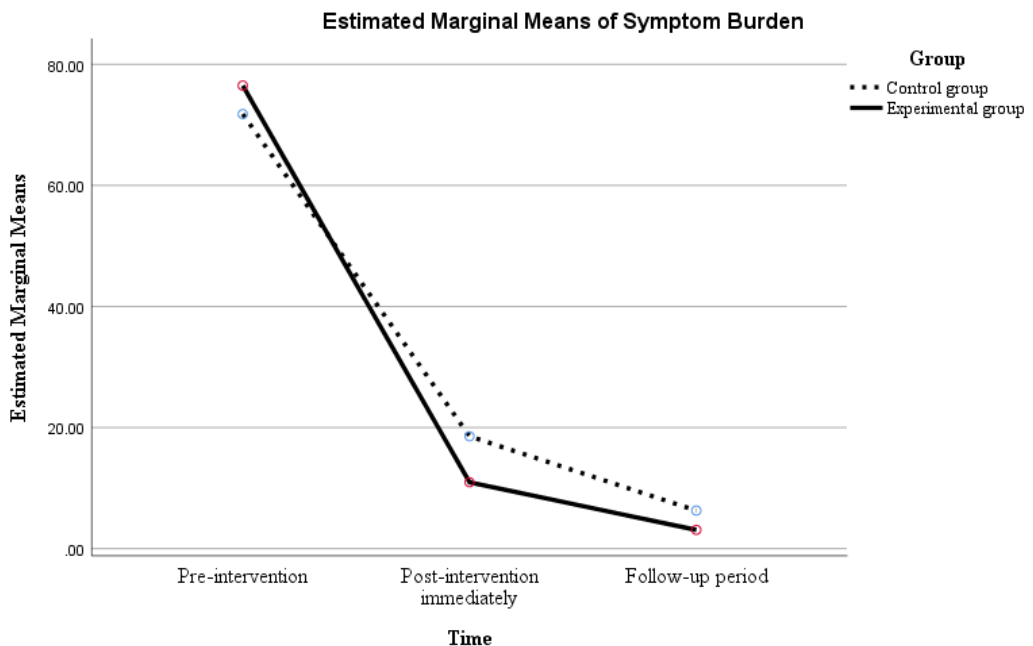


Figure 3. Symptom burden in each group

Table 5. Repeated measures ANOVA of the scores of self-care behaviors and symptom burden

Source of variation	SS	df	MS	F	p-value	η^2_p
Self-care behaviors						
Between subjects						
Group	15,340.76	1	15,340.76	57.89	< .001	.568
Error	11,658.14	44	264.95			
Within subjects ^a						
Time	11,169.10	1.48	7,540.50	163.61	< .001	.788
Time*Group	6,673.21	1.48	4,505.23	97.75	< .001	.690
Error time	3,003.68	65.17	46.08			
Symptom burden						
Between subjects						
Group	673.21	1	673.21	2.29	.137	.050
Error	12,919.50	44	293.62			
Within subjects ^a						
Time	100,371.75	1.40	71,715.03	303.41	< .001	.873
Time*Group	1,623.92	1.40	1,160.28	4.90	.020	.100
Error time	14,555.55	61.58	236.36			

Note. ^aGreenhouse-Geisser, SS = sum of squares, df = degree of freedom, MS = mean square, η^2_p = Partial eta squared

Table 6. Pairwise comparison of the mean difference of self-care behaviors and symptom burden between each pair of time points within the intervention and control groups

Time	M _{diff}	SE	p-value	95% CI for difference	
				Lower	Upper
Self-care behaviors					
Intervention group					
Week 1 vs. Week 3	-32.52	2.01	< .001	-37.53	-27.50
Week 1 vs. Week 7	-35.00	1.90	< .001	-39.73	-30.27
Week 3 vs. Week 7	-2.47	1.10	.092	-5.24	0.28
Control group					
Week 1 vs. Week 3	-3.73	2.01	.211	-8.75	1.27
Week 1 vs. Week 7	-4.82	1.90	.044	-9.55	-0.096
Week 3 vs. Week 7	-1.08	1.10	.998	-3.84	1.67
Symptom burden					
Intervention group					
Week 1 vs. Week 3	58.47	4.54	< .001	47.15	69.80
Week 1 vs. Week 7	67.16	4.15	< .001	56.81	77.51
Week 3 vs. Week 7	8.68	2.27	< .001	3.02	14.34
Control group					
Week 1 vs. Week 3	41.73	4.54	< .001	30.41	53.06
Week 1 vs. Week 7	57.50	4.15	< .001	47.15	67.85
Week 3 vs. Week 7	15.76	2.27	< .001	10.10	21.42

Note. M_{diff} = Mean difference, SE = Standard error, CI = Confidence interval

Discussion

The results of this study revealed the effectiveness of the IF-ESP on self-care behaviors and symptom burden among hospitalized PW-HF. The results strengthen the validity of Riegel et al.'s situation-specific theory of heart failure self-care,²⁰ and are consistent with the findings of previous studies.

In this study, the IF-ESP comprised five sessions over three weeks. The program focused on the decision-making process of PW-HF with support from family members. Two LINE video calls were conducted to enhance self-care behaviors related to maintenance, symptom perception, and management. Consequently, this collective approach assisted the PW-HF in enhancing their self-care behaviors, reducing symptom burden, and preventing re-admission.

After the intervention, the participants had adequate self-care behaviors with a significant improvement compared to the control group. The increasing self-care behaviors were due to the provision of individual face-to-face education and training in self-care skills, followed by telephone follow-up. Throughout the five sessions of the IF-ESP over three weeks. The participants could increase HF knowledge and understanding of the disease, develop abilities to perform self-care skills and control symptom exacerbation. Knowledge is important but not sufficient to improve self-care behaviors.²² People need to link the knowledge to their daily lives.²¹ Providing specific HF knowledge tailored to their individual needs can enhance their understanding of the disease and encourage active engagement in self-care behaviors. Additionally, training in self-care skills, like self-care monitoring, equips PW-HF with the specific behaviors (e.g., monitoring weight daily, recording symptoms) that they can take independently to recognize and interpret health-related changes in signs or symptoms, resulting in early detection and management of their symptoms and maintain good health. After an education session and skills training, two LINE video calls proved effective in empowering them to manage symptoms as they arise.

In addition, our study included family members, who were important for supporting all aspects of self-care behaviors in PW-HF through the utilization of an HF booklet and diary record at home. The families could monitor and record HF symptoms and daily body weight gain for early detection and management of symptoms in the early stage. Because early recognition of weight changes and other symptoms allows for prompt symptom management and potentially reduces the risk of symptom exacerbations. This led to a decrease in symptom burden.

Previous studies support our findings in that the study of Hwang et al.²¹ found that an educational intervention improved HF knowledge and self-care behaviors of PW-HF. Similarly, the study of Hsu et al.²⁸ revealed that a 4-week self-regulation program, including face-to-face individual self-regulation education sessions and eight telephone follow-up counseling sessions, improved self-care behaviors among Taiwanese with HF. Furthermore, Chen et al.³⁶ found that tailored education and follow-up that began on the day immediately after admission and found that the intervention group significantly improved in self-care. In addition, Ghobadi et al.³⁷ found that a multidisciplinary management program, including group educational discussions followed by telephone follow-ups on symptom burden and medication adherence in PW-HF with comorbidities, significantly reduced symptom burden. The results of the current study reflect the effectiveness of the IF-ESP in improving self-care behaviors and reducing symptom burden among PW-HF.

Limitations

The study was conducted in a selected setting. Thus, generalizability to other settings with different contexts is limited. A one-month follow-up period may be insufficient to maintain self-care behaviors. Therefore, considering a longer follow-up period, such as three or six months, and including other outcomes, such as rehospitalization or emergency department visits, is recommended to examine the program's sustainable

effects and cost of care and expand the study settings for future research.

Conclusions and Implications for Nursing Practice

The findings show the IF-ESP's effects on increasing self-care behaviors and reducing symptom burden for PW-HF. Nurses can incorporate the IF-ESP in routine inpatient discharge planning and other healthcare settings. Additionally, nurses should explore the potential of LINE application to facilitate self-care recording, monitor HF symptoms, and enhance communication between healthcare providers and PW-HF. Further research should consider adding mobile health (mHealth) to promote self-care skills associated with monitoring and interpreting symptoms to reduce symptom burden along with randomized controlled trial.

Acknowledgments

The authors are grateful to all study participants and Burapha University Graduate School for funding this research. Without their support, this study would not have been possible.

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Appendix

Table 1. Summary of the five sessions of the program

Day/Time/Session	Objectives	Activities
<p>In hospital Day 4 of admission Session 1: Creating trusting relationships and identifying factors that affected self-care behaviors (10 minutes)</p>	<p>1. To build relationships between researchers, RA₁, participants, and family members 2. To identify factors that affected self-care behaviors</p>	<p>– Introduce the research team, describe the objective, and outline the research protocol – Identify factors affecting self-care behaviors by the participants and their family members – Use the LINE application to contact the participants and their family members when they have any questions or problems about self-care behaviors – Sharing symptom experiences of the participants and their symptom management – Teaching specific HF knowledge of heart function, signs and symptoms, medication, and information about living with HF according to the needs of individual participants – Describe the importance of self-care behaviors such as monitoring weight daily and symptoms and managing symptoms – Provide the heart failure self-care booklet “Living with HF,” diary record form “HF Weight log book,” and digital weight scale monitor and recording body weight, symptoms, and management – Practicing self-care skills (i.e., monitoring and managing symptoms, reading food labels) with support from family members – Demonstration and return demonstration of monitoring and recording symptoms in the diary record form, “HF Weight Log Book” – Guiding an example of a situation that may occur and matches with individual management of symptoms</p>
<p>Session 2: Providing heart failure (HF) knowledge and self-care behaviors (20 minutes)</p>	<p>1. To increase HF knowledge and understanding of self-care behaviors with participants and their family members</p>	<p>– Teaching specific HF knowledge of heart function, signs and symptoms, medication, and information about living with HF according to the needs of individual participants – Describe the importance of self-care behaviors such as monitoring weight daily and symptoms and managing symptoms – Provide the heart failure self-care booklet “Living with HF,” diary record form “HF Weight log book,” and digital weight scale monitor and recording body weight, symptoms, and management – Practicing self-care skills (i.e., monitoring and managing symptoms, reading food labels) with support from family members – Demonstration and return demonstration of monitoring and recording symptoms in the diary record form, “HF Weight Log Book” – Guiding an example of a situation that may occur and matches with individual management of symptoms</p>
<p>Session 3: Training and practicing self-care skills with support from family members (20 minutes)</p>	<p>1. To increase self-care skills for participants and their family members 2. To practice self-care skills with their family members 3. Have ability to manage symptoms that arise in everyday life</p>	<p>– Practicing self-care skills (i.e., monitoring and managing symptoms, reading food labels) with support from family members – Demonstration and return demonstration of monitoring and recording symptoms in the diary record form, “HF Weight Log Book” – Guiding an example of a situation that may occur and matches with individual management of symptoms</p>

Table 1. Summary of the five sessions of the program (Cont.)

Day/Time/Session	Objectives	Activities
<p>At home Day 3 after hospital discharge Session 4: Maintaining self-care behaviors (15 minutes)</p>	<p>1. To explain the importance of monitoring, interpreting, and managing symptoms that are appropriate 2. To describe and discuss individual problems of self-care behaviors</p>	<p>– Asking: “Do you have any symptoms?” “How do you manage those symptoms?” and “Are there barriers to performing the activities?” – Sharing and discussing based on their symptom experience and management – Providing feedback on managing their symptoms and admiring them when they perform self-care behaviors appropriately</p>
<p>Day 7 after hospital discharge Session 4: Maintaining self-care behaviors (15 minutes)</p>	<p>1. To describe and discuss individual problems of self-care behaviors</p>	<p>– Sharing and discussing based on their symptom experience and management – Show diary record form by using VDO call via LINE app – Praise them for being able to carry out self-care behaviors appropriately – Encourage them to maintain self-care behaviors in daily life (i.e., monitor and record symptoms)</p>
<p>At OPD clinic Day 14 after hospital discharge Session 5: Reflecting and evaluating self-care behaviors (15 minutes)</p>	<p>1. To reflect and evaluate self-care behaviors 2. To reflect on and evaluate the program activities</p>	<p>– Discuss the problems, benefits, and barriers to self-care behaviors – Summarizing self-care behaviors – Evaluate and reflect on PW-HF’s abilities in performing self-care behaviors – Thanks for participating in this program</p>

ประสิทธิผลของโปรแกรมการสนับสนุนและให้ความรู้แบบรายบุคคลร่วมกับครอบครัวต่อพฤติกรรมการดูแลตนเองของผู้ที่มีภาวะหัวใจล้มเหลว

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บทคัดย่อ: ภาวะหัวใจล้มเหลว เป็นปัญหาด้านสาธารณสุขที่เพิ่มมากขึ้นทั่วโลก รวมถึงในประเทศไทย ด้วยการให้ความรู้และพัฒนาทักษะการดูแลตนเองที่สอดคล้องกับบริบทของผู้ที่มีภาวะหัวใจล้มเหลวและสมาชิกครอบครัวจึงเป็นกลยุทธ์สำคัญในการพัฒนาพฤติกรรมดูแลตนเองและลดการเข้ารับการรักษาในโรงพยาบาล การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อทดสอบประสิทธิผลของโปรแกรมการสนับสนุนและให้ความรู้แบบรายบุคคลร่วมกับครอบครัวในผู้ที่มีภาวะหัวใจล้มเหลว กลุ่มตัวอย่างจำนวน 46 ราย สุ่มเข้ากลุ่มทดลอง 23 ราย และกลุ่มควบคุม 23 ราย เครื่องมือวิจัยประกอบด้วยโปรแกรมการสนับสนุนและให้ความรู้แบบรายบุคคลร่วมกับการมีส่วนร่วมของครอบครัว แบบสอบถามข้อมูลทั่วไป ชีวประวัติการดูแลตนเองของผู้มีภาวะหัวใจล้มเหลว และแบบสอบถามภาวะอาการ ประเมินผลลัพธ์ 3 ครั้ง คือ ระยะเวลาการทดลอง (สัปดาห์ที่ 1) ระยะเวลาหลังการทดลอง (สัปดาห์ที่ 3) และระยะติดตามผล (สัปดาห์ที่ 7) วิเคราะห์ข้อมูลด้วยการทดสอบค่าเฉลี่ยของกลุ่มตัวอย่าง 2 กลุ่มที่เป็นอิสระต่อกัน (independent t-test) และทดสอบความแปรปรวนแบบวัดซ้ำ (repeated measures ANOVA)

ผลการวิจัยพบว่า ภายหลังการเข้าร่วมโปรแกรมในระยะเวลาหลังทดลองและระยะติดตามผล กลุ่มทดลองมีคะแนนเฉลี่ยพฤติกรรมดูแลตนเองสูงขึ้น และมีคะแนนเฉลี่ยภาวะอาการลดลงมากกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ เมื่อพิจารณาภายในกลุ่มทดลองพบว่า กลุ่มตัวอย่างมีคะแนนเฉลี่ยพฤติกรรมดูแลตนเองเพิ่มขึ้นและมีคะแนนเฉลี่ยภาวะอาการลดลงแตกต่างกันในแต่ละช่วงเวลาอย่างมีนัยสำคัญทางสถิติ ผลการวิจัยนี้แสดงให้เห็นว่าโปรแกรมนี้สามารถปรับปรุงผลลัพธ์ของกลุ่มตัวอย่างได้อย่างมีประสิทธิภาพ โดยโปรแกรมการสนับสนุนและให้ความรู้แบบรายบุคคลร่วมกับการมีส่วนร่วมของครอบครัวช่วยให้ผู้ป่วยที่มีภาวะหัวใจล้มเหลวปรับปรุงพฤติกรรมดูแลตนเองและลดภาวะอาการได้ ดังนั้นควรนำโปรแกรมนี้ไปใช้เป็นแนวทางในการดูแลผู้ป่วยที่มีภาวะหัวใจล้มเหลวในขณะรับการรักษาในโรงพยาบาลต่อเนื่องจนออกจากโรงพยาบาล เพื่อส่งเสริมพฤติกรรมดูแลตนเองและลดอาการกำเริบของอาการที่บ้าน อย่างไรก็ตาม จำเป็นต้องมีการทดสอบโปรแกรมเพิ่มเติมในสถานที่บริบทต่างๆ รวมถึงมีการวิจัยเชิงทดลองแบบสุ่มที่มีกลุ่มควบคุมก่อนนำไปใช้ในการปฏิบัติทางคลินิก

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คำสำคัญ: โปรแกรมการสนับสนุนและให้ความรู้ การสนับสนุนของครอบครัว ภาวะหัวใจล้มเหลว พฤติกรรมดูแลตนเอง ภาวะอาการ

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