Effects of a Supportive Educative Nursing Program on Knowledge and Self-care Behaviors of Older Adults with Heart Failure

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ABSTRACT

An increasing number of older adults with heart failure has been recognized worldwide. With a decline in self-care ability and lack of knowledge, older patients with heart failure have been facing frequent admission and more complications. The aim of this study was to assess the effects of a supportive educative nursing program developed based on the Orem's Self-care Theory on knowledge and self-care behaviors of the older patients with heart failure. A two-group pre-posttest experimental study was conducted at patients' homes in Bangkok. A total of 42 participants, 60 years and older with a diagnosis of heart failure, were randomly assigned to the intervention and the comparison groups. The comparison group received routine care, while the intervention group received a 4-week supportive educative nursing program. The intervention consisted of health education and skill training on fluid and sodium restriction, medical adherence, exercise, and emergency care, home visits; and weekly telephone call. A self-report questionnaire, developed by the researcher, was used to collect data before and after the intervention. According to paired t-test, the intervention group has a significantly higher pre-posttest mean score of knowledge as well as self-care behaviors ($p<0.001$). The results confirmed that a supportive educative nursing program could improve knowledge and self-care behaviors of older adults with HF. Clinical outcome should be examined for older adults with HF in the future study. This program should be applied to promote self-care behaviors of the community-dwelling older patients with other chronic disease.

Keywords: supportive educative nursing program, older adults, self-care behavior, heart failure

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Introduction

Similar to other parts of the world, Heart failure (HF) is a major public health problem worldwide. HF is a severe condition of patients with a cardiovascular disease and is commonly found among older people[1]. In the United States more than 75% of patients with HF are older than 65 years[2]. Globally, the prevalence of HF of 132 cases per 100,000 population was reported in 2009[3]. In Thailand, the incidence of HF increased from 169,673 cases in 2009 to 547,447 cases in 2011 and the mortality rate of HF increased from 28.96 cases per 100,000 population in 2009 to 31.4 cases per 100,000 population in 2011[4]. A slightly higher mortality rate of HF was reported for Bangkok (34.4 cases per 100,000)[5].

HF is the leading cause of hospital admission and readmission in older patients. Patients with HF have common symptoms including fatigue and difficulty breathing caused by water and salt retention in the body leading to swelling, low urine output, ascites, and swollen feet[6, 7]. Pulmonary edema is another serious complication, when severe patients present frothy cough with bloody sputum[8]. One half of HF patients die within five years after the first onset of its symptom; and one half with severe HF do not live longer than one year[9]. In addition, about 54% of HF patients were re-admitted to a hospital within six months after discharge, particularly among older adults with HF during the first month after discharge.

Most older patients with HF suffer from lack of knowledge about the disease and consequently are not able to fulfill their own self-care needs[10]. In the first week after discharge from the hospital, 80% of older adult did not know about important signs and symptoms, dietary requirement, medications[11]. More than 50% of patients with HF are re-hospitalized before the first follow-up[12].

Previous study demonstrated that self-care behaviors could promote quality of life of HF patients. The main goals of HF self-care behaviors are to slow the disease progression, decrease mortality and decrease readmissions[13]. The American Heart Association recommend self-care behaviors in obtaining daily weight, monitoring HF symptoms, adherence to medications and low-sodium diet[6]. Results from a study among chronic disease patient in Bangkok showed that they practiced self-care behaviors in a moderate level[14]. It was recommended that all health care providers should promote self-care behaviors among chronic disease patients.

A preliminary study conducted by the researcher among older patients with HF at Klang Hospital, a general hospital under the Bangkok Metropolitan Area, showed that the subjects were lack of knowledge about

disease and complication recognition. Lack of adherence to self-care behaviors, such as dietary restriction of sodium, daily weight monitoring, exercise and smoking cessation were also reported. However, the effects of the intervention based on the Orem's self-care theory on knowledge and self-care behaviors of the older patients with heart failure is limited.

Thus, the purpose of this study was to evaluate the effects of a supportive educative nursing (SEN) intervention program involving teaching and supporting to patients on knowledge and self-care behaviors of older adult patients with HF after hospital discharge.

Materials and Methods

A two-group pre-posttest experimental study design was employed to examine the effects of the SEN program on knowledge and self-care behaviors of the older patients with HF. The study population was those older patients with HF, who were discharged from Klang Hospital, under Bangkok Metropolitan Authority. According to the previous study, a sample size of 42 subjects was estimated based on 80% power of the study with an effect size of 0.84 and 95% confidence interval[15]. A total of 42 patients with HF who met inclusion criteria were randomly assigned into an intervention group and a comparison group. Inclusion criteria were 1) male and female older patients with HF, 2) aged 60 years and older, 3) being independent (having a Barthel Index of Activities of Daily Living >12 score, 4) being cognitively intact, 5) able to read and write in Thai, and 6) willing to participate in the 4-week program.

Research instrument, an intervention tool and data collection tool, were developed by the researcher based on the Orem's Self-care Theory[16]. The intervention tool included the HF educational plan, the self-care for HF booklet, the guidelines for home visit and telephone follow up. A 4-part self-administered questionnaire was used for data collection. It consisted of general information, knowledge, and self-care behavior. Knowledge about heart failure was assessed by a 15-item questions, developed by the researcher about symptoms and complications of heart failure, self-care, diet, medication, exercise and physical activity. A score of 1 and 0 were given to the correct and incorrect answers, respectively. The higher score means the better knowledge. Self-care behaviors were assessed by the 20-item Likert scale, modified by the researcher according to literature review and Self-Care Nursing Theory, with four levels ranging from 1 indicating never practice, 2 indicating sometimes, 3 indicating often, and 4 indicating practice regularly.

The validity of the questionnaire was assessed by five experts and a content

validity index of 0.8 and 1.0 was acceptable for knowledge and self-care behavior questions, respectively. The reliability of the questionnaire was assessed among 30 HF patients. Cronbach's alpha coefficient of 0.89 and 0.96 were reported for knowledge and self-care behavior, respectively.

Data Collection

This study was approved by the ethics committee, Faculty of Public Health, Mahidol University (MUPH 2015-149). After the IRB approval, both groups was asked to complete the personal information, knowledge about heart failure, and self-care behaviors in the first week. After discharge, the comparison group received a routine care, whereas the intervention group received the SEN program for 4-weeks. In addition, those in the intervention group received a 45-minute health education and skill training program on disease and dietary regimens with restricted fluid and sodium, treatment adherence, exercise, and emergency management. Then they received a handbook on self-care for older adults with HF. During week 2, each subject received a home visit and feedback on their self-care behaviors. During week 3-4, a telephone call was made to follow up and provide feedback to each subject.

Statistical Analysis

The characteristics of participants in the intervention and the comparison groups were compared using Chi-square test. We used paired t-test to compare the mean score of knowledge and self-care behaviors before and after the SEN program implementation. The level of statistical significance was set at 0.05 for all of the statistical analyses.

Results

Table 1 shows the characteristics of the study participants. Most participants were female (76.2%) with an average age of 69.7 years (SD = 6.3 years), married (52.4%), had completed primary school (52.4%), and were homemakers (57.1%). Regarding medical diagnosis, 47.6% and 35.7% had a diagnosis of cardiac arrhythmias and congestive heart failure, respectively. Hypertension (45.3%) and Diabetes Mellitus (33.3%) were the common comorbidity. Most subjects had compression of the heart with an ejection fraction (EF) of 31 to 40% and were taking diuretics and beta-blockers.

Table 1 Participants' Characteristics. (n = 42)

Variables	Intervention Gr. (n = 21)		Comparison Gr. (n = 21)		Total (%)	p
	n	%	n	%		
Sex						
Male	5	23.8	10	47.6	15 (35.7)	0.064
Female	16	76.2	11	52.4	27 (64.2)	
Age (years)						
60-70	13	61.9	10	47.6	23 (54.7)	0.537
71-80	8	38.1	11	52.4	19 (45.2)	
Marital status						
married	9	42.9	11	52.4	20 (47.6)	0.758
Single/widow/separated	12	57.1	10	47.6	22 (52.3)	
Education						
Never go to school	8	38.1	-	-	8 (19)	0.109
Primary school	8	38.1	11	52.4	19 (45.2)	
Secondary school	5	23.8	10	47.6	15 (35.7)	
Occupation						
Housewife	12	57.1	-	-	12 (28.5)	0.751
Employee	9	42.9	5	23.8	14 (33.3)	
Merchant	-	-	16	76.2	16 (38)	
Adequacy of income						
Enough with saving	4	19.0	13	61.9	17 (40.4)	0.145
Enough without saving	12	57.1	5	23.8	17 (40.4)	
Inadequate	5	23.8	3	14.3	8 (19)	
Types of heart disease						
Arrhythmia	10	47.6	10	47.6	20 (47.6)	0.104
CHF	8	38.1	7	33.3	15(35.7)	
Myocardial Infarction	3	14.3	4	19.1	7 (16.7)	
Co-morbidity						
DM	5	23.8	9	42.9	14 (33.3)	0.156
HT	9	42.9	10	47.6	19 (45.3)	
ESRD	7	33.3	2	9.5	9 (21.4)	
Ejection fraction (EF)						
31-40	12	57.1	16	76.2	28 (66.6)	0.031
41-50	9	42.9	5	23.8	14 (33.3)	
Smoking						
Never	8	38.1	9	42.9	17 (40.4)	0.145
Seldom	8	38.1	9	42.9	17 (40.4)	
Regularly	5	23.8	3	14.3	8 (19)	

Table 1 Participants' Characteristics. (n = 42) (cont.)

Variables	Intervention Gr. (n = 21)		Comparison Gr. (n = 21)		Total (%)	p
	n	%	n	%		
Alcohol drinking						
Never	8	38.1	11	52.4	19 (45.2)	0.168
Seldom	4	19.0	10	47.6	14 (33.3)	
Regularly	9	42.9	-	-	9 (21.4)	
Medication use						
Diuretic	8	38.1	10	47.6	18 (42.8)	0.031
ACE	5	23.8	6	28.6	11 (26.1)	
Beta blocker/ Vasodilator	8	38.1	5	23.8	13 (30.9)	

The effects of the SEN program on changes of knowledge and self-care behaviors related to heart disease were evaluated by comparing mean scores of knowledge and self-care behaviors measured before and after the intervention separately for the intervention and the comparison groups. As shown in Table 2, mean scores of knowledge and self-care behavior related to heart failure after receiving the SEN Program significantly increased from 6.33 to 12.62 and 42.48 to 63.62, respectively. In contrast, non-significant results were observed for the comparison group for both mean scores of knowledge and self-care behaviors.

Table 2 Mean of Knowledge and Self-care Behavior Related to Heart Failure Between Intervention and Comparison Group Before and After the Intervention. (n = 42)

Group	Before		After		p
	Mean	SD	Mean	SD	
Intervention					
Knowledge	6.33	2.43	12.62	1.02	<0.001
Self-care behavior	42.48	9.64	63.62	10.14	<0.001
Comparison					
Knowledge	4.95	0.74	6.48	1.75	0.06
Self-care behavior	36.86	4.68	38.38	3.17	0.07

Discussion

The results of this study confirmed that the SEN Program could improve knowledge and self-care behaviors. Changes in knowledge and self-care behaviors from the current study support the benefit of the SEN program on older adults with congestive heart failure. After intervention, mean scores of knowledge and self-care behaviors of older patients with congestive heart failure were significantly higher than before the intervention ($p < 0.001$).

Heart failure education was found to be a key intervention for older adults with HF. Similar to the previous study, the community-dwelling older adults with HF who received the heart failure supportive education nursing program had better knowledge and self-care behavior than the control group ($p < .05$)[16]. Information about D-METHOD discharge planning program, including heart disease management, such as fluid and sodium restriction, weight control, medical adherence and physical activity is recommended to promote self-care for older adults with HF and their family.

In summary the SEN intervention with several strategies, such as education, home visit and telephone follow up, has shown to improve self-care behaviors[17]. The current study showed that education programs and home visits provided specific instructions and guidelines in self-care practices for individual patients. Before conducting a home visit, the nurse researcher reviewed patient's history regarding treatment at the hospital, knowledge and skill of HF self-care behaviors from the pre-discharge educational session. Telephone follow-up also served to inspire and motivate patients to make more effort to care for themselves and maintain their self-care abilities to recognize complications and effectively reduce recurrent and re-hospitalization[18].

In addition, a nurse researcher used telephone guideline to follow up on their sign and symptoms of HF, eating behaviors, exercise, medications, level of activity performance. The subjects and their family members could call the researcher when they need assistance. Professional support and home visits are clearly important to improve self-care and decrease the disparity regarding services accessibility among community-dwelling older adults with chronic diseases. Concerning nursing practice, the SEN intervention was provided to the participants based on their needs and their family context. Therefore, the findings can be applied to guide nursing care programs to change knowledge and self-care behavior among older patients with other chronic diseases.

Recommendation for future research

Overall, more research in the field of heart disease management is clearly needed. Future research should be geared towards

identifying effective interventions at play among older adults, who are at high risk of poor resource accessibility and clinical outcome. Therefore, the guidelines and program should be replicated and its long-term effects should be examined.

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ผลของโปรแกรมการสนับสนุนและให้ความรู้ต่อความรู้และพฤติกรรมการดูแลตนเองของผู้ป่วยสูงอายุที่มีภาวะหัวใจล้มเหลว

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บทคัดย่อ

ปัจจุบันจำนวนผู้สูงอายุที่มีภาวะหัวใจล้มเหลวมีจำนวนเพิ่มขึ้นทั่วโลก พบว่า ผู้สูงอายุดังกล่าวต้องเผชิญกับปัญหาการเข้ารักษาตัวในโรงพยาบาลและภาวะแทรกซ้อนบ่อยครั้ง เนื่องจากมีความสามารถในการดูแลตนเองลดลง และขาดความรู้เรื่องโรคและการดูแลตนเอง การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลของโปรแกรมการสนับสนุนและให้ความรู้ต่อความรู้และพฤติกรรมการดูแลตนเองของผู้ป่วยสูงอายุที่มีภาวะหัวใจล้มเหลวหลังจากจำหน่ายออกจากโรงพยาบาล การวิจัยกึ่งทดลองแบบ 2 กลุ่ม วัดก่อนและหลังทำการศึกษาในกลุ่มผู้ป่วยที่มีภาวะหัวใจล้มเหลว อายุ 60 ปีขึ้นไป ที่จำหน่ายออกจากโรงพยาบาลกลางกรุงเทพมหานคร สุ่มเลือกกลุ่มเปรียบเทียบ (ได้รับการดูแลตามปกติ) และกลุ่มทดลอง (ได้รับโปรแกรมการสนับสนุนและให้ความรู้ เป็นระยะเวลา 4 สัปดาห์) ประกอบด้วยการสอนให้ความรู้ การเยี่ยมบ้าน และการโทรศัพท์ติดตามสัปดาห์ละ 1 ครั้ง เก็บข้อมูลโดยใช้แบบสอบถามความรู้และแบบสอบถามพฤติกรรมการดูแลตนเองที่พัฒนาโดยผู้วิจัย ผลการวิเคราะห์ด้วยสถิติ Paired T-test พบว่า กลุ่มทดลองมีความรู้และพฤติกรรมการดูแลตนเอง มากกว่าก่อนได้รับโปรแกรมอย่างมีนัยสำคัญทางสถิติ ($p< 0.001$) พบว่าโปรแกรมการสนับสนุนและให้ความรู้สามารถพัฒนาความรู้และส่งเสริมพฤติกรรมการดูแลตนเองของผู้ป่วยภาวะหัวใจล้มเหลวได้ จึงควรนำโปรแกรมดังกล่าวไปใช้เป็นแนวทางในการดูแลผู้ป่วยภาวะหัวใจล้มเหลวในชุมชนเพื่อพัฒนาผลลัพธ์ทางสุขภาพต่อไป

คำสำคัญ: โปรแกรมการสนับสนุนและให้ความรู้, ผู้สูงอายุ, พฤติกรรมการดูแลตนเอง, โรคหัวใจวาย

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