Engagement Program of Public Health Volunteers and Caregivers in Home Care Service for Stroke Patients

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ABSTRACT

This research aimed to evaluate the engagement program of public health volunteers and caregivers in home care service for stroke patients. The study adopted a quasi-experimental design, The subjects of 120 were recruited, consisting of 60 public health volunteers and 60 caregivers. Each group was divided into 30 participants as the intervention group and 30 participants as the control group by simple random sampling. The intervention group participated in the engagement program which consisted of 4 task components: 1) improving the movement for the body balance, 2) improving the mental health, 3) improving the environment at home, 4) preventing the complication of disease. The stroke knowledge for caring stroke patient and stroke care practice in public health volunteers and caregivers were measured at the beginning of the engagement program (baseline) and at a 12-weeks follow-up, and the Barthel ADL index by the questionnaire. Data were analyzed by descriptive statistics, pair-sample t-test, and independent-sample t-test. The results found that after program implementation, the stroke knowledge for caring stroke patient and stroke care practice of health volunteers and caregivers were significantly higher than the control group ($p < .05$). The Barthel ADL index of stroke in the intervention group was significantly higher than the control group ($p < .001$). When comparing the results before and after program implementation, the stroke knowledge for caring stroke patient and stroke care practice in public health volunteers and caregivers were significantly higher than before program implementation. ($p < 0.05$). The study showed that the engagement program of public health volunteer and caregiver in home care service for stroke patients enhanced their knowledge in their real-life practice. This program was suitable for promoting the public health and caregiver to provide home care service for stroke patients at the community level.

KEYWORDS: Caregiver, Engagement program, Public health volunteer, Stroke patients, Home care

1. Introduction

Stroke is a serious life-threatening medical condition that occur when the blood supply to part of the brain is interrupted. Annually, the number of strokes and deaths increased continuously until to the present. This disease affects to physical, cognitive, quality of life and social participation (Kristine K.Miller & Susan H. Lin ScD, 2019)

Early treatment and rehabilitation can improve recovery brain and body function to increase the survival of the patient.(Kristine K.Miller &Susan H. Lin ScD, 2019) One study showed The need of stroke patients and caregivers about the transition of care from hospital to home should be suitable considered. They needed to receive the stroke caring service after discharging at home. (Coleman ER & Moudgal R, 2017) Healthcare professionals, public health volunteers, family members and caregivers were the important people to improve survivors' activities of daily living (ADLs) and quality of life of patients. (Hsiang-Chu Pai & Yi-Chen Tsai, 2021) Especially, public health volunteer and caregivers who closed to stroke patients were an essential part of the primary health care model in community. Those people had positive effects on the management of stroke that enhanced the stroke patient' well-being including stroke survivors. (Chinchai P& Sirisatayawong P,2020) Previous study presented the problems of public health volunteer and caregivers for caring stroke patients at home such as lacking of stroke knowledge, caring and the process of home care service. (David H Saunders 1& Mark Sanderson, 2020).Moreover, previous evidence showed that public health volunteer and caregivers should receive stroke care training to understand the roles in health promotion and the rehabilitation support in their community. (Elton H. Lobo & Mohamed Abdelrazek, 2017) The engagement programs for non-communicable diseases such as diabetes mellitus and hypertension were contributed to many areas in primary care system to increase health promotion and prevention for patients.(Pindus DM, Mullis R & 2018) There has been little research on the public health volunteers and caregivers' engagement for caring stroke patients in home care service by assisting stroke survivors in self-management to enrich existing stroke rehabilitation programs. Therefore, the aimed of this study was to evaluate the engagement program of public health volunteer and caregiver in home care service for stroke patients. Finding of this study can increase the collaboration between public health volunteers and caregivers to best support stroke patients during rehabilitation in home care and to enhance stroke survivor 'recovery outcomes.

The Purpose of the Study

The aim of this study was to evaluate the engagement program of public health volunteer and caregiver in home care service for stroke patients.

2. Methods

Research design

This study was a quasi-experimental research design, two group pretest posttest design. The purpose of this study was to evaluate the engagement program of public health volunteer and caregiver in home care service for stroke patients. The intervention group receives a 4-week intervention program, whereas the control group receives usual care. The outcomes in both groups were measured at the baseline, and week 12 after the baseline measurement.

Population and sample

The population in this research was public health volunteers and caregiver who lived in Bo Thong District Chonburi

Province. Based on data from a previous study [9] sample size calculation was made with a computer software G*power 3.1.9.4. Set the power of test at 0.80, the effect size of 0.8 and set the confidence at .05. Therefore, 120 participants were recruited that consisted of 60 public health volunteers and 60 caregivers. Each group was divided 30 participants as the intervention group and 30 participants as the control group by simple random sampling. Inclusion criteria for public health volunteers was 1) register with Bo Thong hospital as the member of public health volunteers, 2) able to read and communicate in Thai language 3) willing to participate in the study. Inclusion criteria for caregiver was 1) currently, taking care stroke patients after discharge from hospital, 2) able to read and communicate in Thai language 3) willing to participate in this study. Participants who had problems about cognitive impairment were excluded.

Research instruments

The research instruments were divided into two types, the first was the engagement program of public health volunteer and caregiver in home care service for stroke patients as an intervention instrument. The second was the questionnaire about stroke knowledge and caring for data collection.

1. The intervention instruments

The engagement program of public health volunteer and caregiver in home care service for stroke patients was developed by literature review from previous studies. This program consisted of four components of 1) improving the movement for the body balance, 2) improving the mental health, 3) improving the environment at home, 4) preventing the complication of disease. The intervention group receives a 4-week intervention program, whereas the control group receives usual knowledge and practice. The outcomes were measured at the beginning of the engagement program (baseline) and at a 12-weeks follow-up. The first weeks, participants were trained about specific balance exercises for stroke patients by practicing balance rehab exercises to improve the movement for the body balance after stroke. The second week, the mental health program focused on management for common mental health problems, such as anxiety, depression, and social isolation, during post-stroke period. The third week, the built good environment and facilities at home such as the bathroom, the bedroom, a kitchen, and the natural environment around home. The last week, preventing the complication of disease, for example, stroke patients had bedsores because of immobility. Participants were trained about the prevent and treatment about the stroke complication.

2. The instrument of data collection

The questionnaire about stroke knowledge and stroke care practice was used to be the instrument of data collection basing on the literature reviews and the standard questionnaire of the Department of Mental Health. This questionnaire consisted of three parts, firstly, the demographic such as gender, age, education level, career, marital status, income, and the Barthel Index of stroke patient. Secondly, the questionnaire for stroke knowledge related to the improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke. Overall, 40 items. Finally, the questionnaire for stroke care practice, 10 scores in each component, totally 40 scores.

The quality of all research instruments was tested to explore the content validity and the reliability. The content validity was judge content validity by three experts. The content validity index (CVI) presented 1.00. For the reliability of the

questionnaire was tested using Cronbach's alpha for internal consistency reliability. The results of Kuder Richardson 20 and Cronbach's alpha showed 0.86 and 0.88, respectively.

Data collection

Prior to beginning the engagement program, this study was approved by the Human Research Ethics Committee, Faculty of Medicine Thammasat University received a certificate number MTU-EC-ES-0-110/63. All participants were fully informed and signed consent for this study. The researcher spent 30 minutes to explain about the purpose of the study, procedures, methods, and the concern for protection of the participants. The participants in the intervention group received the 4-weeks intervention (improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke) while the control group received usual care. Participants spent a total time approximately 180 minutes in each week. The outcomes in both groups were measured at the baseline, and week 12 after the baseline measurement by the questionnaire about stroke knowledge and caring.

Data analysis

The demographic data was tested by using the descriptive statistic comprising frequency, percentage, mean, and standard deviation. The stroke knowledge scores, the practice of caring for stroke patients and the Barthel ADL index were analyzed by independent t-test and Paired sample t-test to compare the outcomes within and between group. A p-value < 0.05 was considered statistically significant.

3. Results

The 120 participants were divided into 60 public health volunteers and 60 caregivers. Each group was divided into 30 participants as the intervention group and 30 participants as the control group. The demographic data indicated the majority of both groups predominantly females, age 60 years and lower, married, in agriculture and business owner, universal health coverage insurance and income. The result showed that there were no significant differences of demographic characteristics of public health volunteers and caregivers between both groups (p value $\geq .05$)

Before the program implementation, the average score of stroke knowledge of public health volunteer and caregiver, for caring stroke patients at home related to the improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke of participants were not statistically significant difference between the intervention and the control group ($p < .05$). After the program implementation at week 12, the average score of the stroke knowledge for caring stroke patients at home of public health volunteer in the intervention group (38.86 ± 7.61) was significantly higher than the control group (11.04 ± 11.87) ($p < .05$). For caregiver, the average score of the stroke knowledge for caring stroke patients at home in the intervention group (34.64 ± 5.45) was significantly higher than the control group ($17.44 \pm .87$) ($p \leq .05$). as shown in table 1.

Table 1 Comparisons of stroke knowledge for caring stroke patients at home related to the improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke between the intervention and control group.

	The intervention (n=30)		The control group (n=30)		t-test	df	p-value
	Mean	S.D.	Mean	S.D			
Public health volunteers							
Before program	11.04	8.71	9.96	7.01	0.56	58	0.96
After program	38.86	7.61	11.04	11.87	-11.61	58	<0.05*
Caregiver							
Before program	7.90	3.15	7.65	4.02	1.28	58	0.95
After program	34.65	5.45	17.44	6.87	-14.12	58	<0.05*

***** p-value < 0.05

Before the program implementation of public health volunteer and caregiver, the average score of the stroke care practice including the improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke of participants were not statistically significant difference between the intervention and the control group ($p < .05$) (Table 2)

After the program implementation at week 12, the results of public health volunteer revealed that, the average score of the stroke care practice in the intervention group such as improving the movement for the body balance (8.96±2.41), the mental health (9.61±2.38), the environment at home (9.78±2.55), and preventing the complication of stroke (9.22±2.66) was significantly higher than the control group (improving the movement for the body balance (6.06±2.48), the mental health (7.55±2.64), the environment at home (6.64±3.14), and preventing the complication of stroke (7.50±2.25) ($p < .05$). For caregiver, the average score of the stroke care practice in the intervention group such as improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke were (8.66±2.43), (8.07±2.25), (9.06±2.45), (8.92±2.27), respectively. While the control group, the average score of the stroke care practice in the intervention group such as improving the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke were (4.13±2.82), (3.04±1.54), (3.98±2.67), (4.15±2.75), respectively. All components of the stroke care practice in

intervention group was significantly higher than the control group ($p < .05$). As showed in table 3.

Before the program implementation, the Barthel ADL index of stroke patients who were cared by participants in the intervention group was 63.55 while the Barthel ADL index of stroke patients who were cared by participants in the control group was 59.83. The comparison between the intervention group and the control group were not statistically significantly different ($p= 0.74$).

After the program implementation**,** the Barthel ADL index of stroke patients who were cared by participants in the intervention group was 80.21 while the Barthel ADL index of stroke patients who were cared by participants in the control group was 63.30. The Barthel ADL index of stroke in the intervention group was significantly higher than the control group ($p < .001$). The results presented in Table 4.

Table 2. The comparison of stroke care practice scores between the intervention group and the control group before the program Implementation (baseline).

	The intervention group (n=30)		The control group (n=30)		t-test	df	p-value
	Mean	S.D	Mean	S.D			
Health volunteer							
-Improving the movement for the body balances	6.45	3.21	6.65	2.84	0.86	58	0.46
-Improving the mental health	7.44	2.11	7.33	2.54	0.72	58	0.58
-Improving the environment at home	6.12	2.95	6.55	2.74	1.93	58	0.72
-Preventing the complication of disease	7.64	2.21	7.84	2.95	1.17	58	0.45
Caregiver							
-Improving the movement for the body balances	4.76	2.23	4.43	2.02	1.28	58	0.52

-Improving the mental	3.24	1.25	3.34	1.34	0.56	58
0.18						
-Improving the environment	3.56	1.58	3.64	1.66	0.67	58
0.47						
at home						
-Preventing the complication	4.25	2.47	4.15	2.35	1.64	58
0.55						
of disease						

***** p-value < 0.05

Table 3. The comparison of stroke care practice scores between the intervention group and the control group after the program Implementation, follow-up at week 12.

	The intervention group (n=30)		The control group (n=30)		t-test	df
p-value						
	Mean	S.D	Mean	S.D		
Health volunteer						
-Improving the movement for	8.96	2.41	6.06	2.48	0.84	58
< 0.05						
the body balances						
-Improving the mental health	9.61	2.38	7.55	2.64	0.52	58
<0.05						
-Improving the environment	9.78	2.55	6.64	3.14	0.78	58
<0.05						
at home						
-Preventing the complication	9.22	2.66	7.50	2.25	1.37	58
<0.05						
of disease						
Caregiver						
-Improving the movement for	8.66	2.43	4.13	2.82	- 6.97	58
<0.05						
the body balance						
-Improving the mental health	8.07	2.25	3.04	1.54	-4.66	58
<0.05						

-Improving the environment	9.06	2.45	3.98	2.67	-5.1	58
<0.05 at home						
-Preventing the complication	8.92	2.27	4.15	2.75	-4.14	58
<0.05 of disease						

***** p-value < 0.05

Table 4. The outcome of the Barthel ADL index of stroke patients before and after program implementation by caring from public health volunteers and caregivers, follow-up at week 12

	The experimental group (n=30)		The control group (n=30)		t-test	df
p-value						
Barthel ADL index	Mean	S.D.	Mean	S.D		
Before program	63.55	26.22	59.83	23.72	16.21	58
0.74						
After program	80.21	9.78	63.30	21.12	-18.12	58
<0.001*						

***** p-value < 0.001

Discussion

The engagement program of public health volunteer and caregiver in home care service for stroke patients was designed to help public health volunteers and caregivers for caring post stroke patients after discharge from hospital to their home. This program focused on four components such as improving the movement for the body balance, improving the mental health, improving the environment at home, and preventing the complication of stroke. The outcomes were followed up at 12-weeks. The finding revealed that the stroke knowledge for caring stroke patient and stroke care practice of health volunteers and caregivers were higher than the control group. Additionally, the Barthel ADL index of stroke in the intervention group was higher than the control group. This engagement program in in home care for stroke patients have more benefit to support stroke patients during rehabilitation in home care and to enhance stroke survivor. Public health volunteer and caregiver have the crucial role to care stroke in community after discharge from hospital to their home. (Ho Yu Cheng 2 0 1 8 ,Harrison M. 2020). Public health volunteers and caregivers should improve the knowledge of stroke patient care, for example, the body balance, the mental health, the environment, and preventing the complication. In addition, they can coordinate between the stroke patients, health care team and the health workers in the community to reduce the problems and severity of stroke patients at home. (McCurley JL, Funes CJ 2019, Alexander H Nave 2 0 1 9) Refer to this program, Public health volunteers and caregivers

were trained about the movement for the body balance for stroke patients including grooming, moving, bathing, walking, and exercise to recover muscle and prevent bone injury. The body balance affects to improvement of motor functions in patients after stroke. Besides, Psychological stress appears to negatively impact the stroke recovery and caregivers may experience stress and anxiety while they take care patient at home. The mental health improvement was an essential part of stress management. (McCurley JL, Funes CJ..2019,Alexander H Nave 2019) For the environment management in home such as bathrooms, beds, and walking areas of stroke directly related to a stroke-survivor. Some stroke patients use wheelchairs and they have a limitation for movement. Therefore, the environment design both inside and outside of the home should improve to support continuing recovery and safety for the survivor. (Patrick Kitzman, Keisha Hudson 2017,Patrick Kitzman, Keisha Hudson 2017) For preventing the complication of stroke, the most common complications of stroke are bedsores that were pressure ulcers that result from decreased ability to move and pressure on areas of the body because of immobility. Prevention of pressure sores was very important by minimizing the risk to progress of other complications of stroke. (Saunders DH, Sanderson M, Hayes S, Johnson L,2020) This study has shown that in stroke patients, the Barthel ADL Index scores increased after the engagement program implementation. Public health volunteer and caregivers played an important role to support the health care team to perform the Barthel ADL assessment. (Stinear CM, Lang CE,2020) The engagement program of public health volunteer and caregiver in home care service for stroke patients was a promising strategy that has had positive effects on the management of stroke in home care. Public health volunteer and caregivers who close to stroke patients (Tung YJ, 2 0 2 1) and can enhance the stroke survivor' well-being via health education and promotion. (Belagaje SR 2017,Saunders DH,2020) This engagement programs built the coordination of people in community to support stroke survivors and self-management in home by health volunteer and family.

Conclusions

The engagement program of public health volunteers and caregivers in home care service for stroke patients can improve the movement for the body balance, the mental health, the environment at home, and preventing the complication of stroke, including the Barthel ADL index of patients, public health volunteers and caregivers had a crucial role to support the rehabilitation of stroke patients at home in the community. The findings suggested that health care professionals should apply this program to promote the public health volunteers to care for stroke patients at home.

Article Information

Conflicts of Interest

Ethical consideration

The study was approved by the Human Research Ethics Committee of the Human research ethical consideration of Thammasat University number of COA 236/2020.

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