Effectiveness of a Home-Based Coping Enhancement Program for Stroke Survivors: A Randomized Controlled Trial

Sunanta Tangnitipong, Nuttamon Vuttanon, Linchong Pothiban, Rojanee Chintanawat*

Abstract: Stoke is serious and causes disability and dependence, resulting in survivor stress and lack of motivation for self-rehabilitation. Assisting survivors to maintain psychological well-being and adhere to rehabilitation is essential. This randomized control trial investigated the effectiveness of a home-based coping enhancement program on psychological well-being and adherence to rehabilitation in stroke survivors in northern Thailand. The program is based on the Stress Process Model. Sixty-two stroke survivors were randomly assigned to either an experimental (n = 30) or control group (n = 32). The experimental group received the Home-based Coping Enhancement Program in addition to usual care, while the control group received only usual care. Data were collected using the Psychological Well-Being Scale and the Adherence to Rehabilitation Scale, and analyzed using descriptive statistics, t-test, and two-way repeated measures ANOVA.

Results indicated that the psychological well-being and adherence to rehabilitation mean scores of the experimental group significantly increased at weeks 6 and 12 after intervention completion. In addition, mean psychological well-being scores in the experimental group were significantly higher than those in the control group at weeks 6 and 12, but not significantly different between groups in the mean adherence to rehabilitation scores. The results revealed that the program could improve psychological well-being among stroke survivors. Further testing of the program is needed before it is incorporated into practice.

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Introduction

Stroke or cerebrovascular disease (CVD) is a major cause of death and disability globally. Each year, more than 13.7 million people experience cerebrovascular disease, leading to 5.8 million deaths and 80 million survivors with disability.[1] The incidence of stroke in Thailand between 2009-2021 was 172-328 per 100,000 people with a 10.2-14.7% mortality rate.[2] Approximately 80.1% of stroke survivors were left with a disability.[3]

Since stroke occurs as a result of a disruption in cerebral blood flow, an individual who experiences a stroke always suddenly has physical disabilities depending on which part of the brain is damaged. Additionally, strokes can affect emotional and cognitive functioning.[4] Consequently, stroke survivors might suffer life-long disabilities. The impact on basic daily activities and other self-care functions[5] may lead to restricted participation in activities,[6-7] and psychological distress.[8] Chronic disabilities from stroke also mean survivors need to adhere strictly to rehabilitation protocols after discharge from hospital. However, most studies have reported that adherence to rehabilitation was less than 50% and most patients quit their treatment programs after six months.[9-10] This may cause permanent disabilities, resulting in psychological distress, which in turn worsens physical functions.[11] These long-term consequences bring stressful life events and negatively affect psychological well-being of the stroke survivors and their families.[12-13] At-home support for stroke survivors and their families is absolutely essential. It also encourages greater adherence to home-based rehabilitation as well as increases psychological well-being.[14]

Psychological well-being (PWB) is a multi-dimensional concept about living well. It is the combination of feeling good and functioning effectively.[15] PWB consists of six dimensions: self-acceptance, environmental mastery, positive relationships, personal growth, purpose in life, and autonomy.[16] According to the literature, stroke survivors had lower psychological well-being as compared with non-stroke group.[17-19] Poor psychological well-being in stroke survivors reduces frequency of activities, activity participation,[20] functional communication,[21] participation in rehabilitation, and adjustment.[22]

To improve physical functionality, it is vital that the survivor consistently performs the physical training as recommended in the rehabilitation plan. Hence, adherence to rehabilitation is an important concept when caring for stroke survivors in the stroke care arena. Patient adherence has been defined as the degree to which a patient follows the instructions given by a healthcare professional about a prescribed treatment.[23]

Stroke survivors are prone to have diminished psychological well-being and a lower level of rehabilitation adherence due to their inability to deal with tremendous stress. Currently, there are very few interventions available for improving psychological well-being of this population. The existing intervention technique, an education program for stroke survivors and the family caregiver showed positive effects on knowledge but no significant beneficial effects on the psychological outcomes.[24-26] Therefore, an additional psychological strategy such as a coping intervention, is needed to improve these outcomes. Coping strategies are generally used to mediate behavior between a stressor and the physical or psychological outcome of an individual.[27] Reinforcing coping through multiple strategies may result in increased psychological well-being. Thus, this study sought to answer whether the Home-based Coping Enhancement Program (HBCEP) could improve the psychological well-being and adherence to rehabilitation in stroke survivors.

Conceptual Framework and Review of Literature

Many models and theories have been put forward to describe the complex construct of stress. One influential model is the Stress Process Model (SPM), which has served as a framework for understanding mechanisms by which stressors lead to health outcomes, including psychological well-being and adherence to rehabilitation. Therefore, the SPM was used as a framework to guide this study.[28] The SPM contains four interconnected concepts: 1) background and context of stress, 2) stressors – primary and secondary, 3) moderating resources, and 4) outcomes or manifestations of stress.

According to the SPM, psychological well-being is the outcome related to the background and context of stress, stressors, and moderating resources. The background and context of stress include demographic characteristics of stroke survivors such as age, gender, educational level, family income, and the health history. The stressors, the intrinsic nature of the stress process, are defined as the conditions, experiences, and activities that are problematic for people. These include failed efforts, threats to health and well-being, and unrealized dreams. Stressors can be primary and/or secondary.

Primary stressors stem directly from the needs of the person, and the nature and magnitude of the care demanded by those needs. Secondary stressors include role strains and intrapsychic strains. The moderating resources include coping, social support, and self-efficacy. Finally, the outcomes of stress include effects to stroke survivors regarding their health, well-being, and ability to continue regular activities and social roles.

Regarding moderating resources, coping is a process to deal successfully with problems or difficult situations (i.e., managing threats and challenges). An individual's appraisal of a threatening event and resulting problem solving protocol, and coping responses contribute to the impact of the stressor on their lives. When survivors are faced with stressful situation—such as stroke and stroke sequelae—they can use several coping strategies to deal with various situations. Thus, coping can positively affect psychological states of survivors. Social support is the available assistance from family, friends, and healthcare providers; this includes emotional, informational, and tangible support.[29] Social support is also relatively efficacious in reducing stress and successfully dealing with the stressful situations. The stroke survivors' perceived social support may help them deem the stressful situations as manageable, thereby reducing stress and enhancing psychological well-being and adherence to rehabilitation. Self-efficacy was introduced by Bandura and is defined as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives."[30, p.421] Belief in one's personal capabilities is conducive to achieving success and providing additional energy for action. The stronger the conviction of one's self-efficacy, the higher the self-goals and the stronger the commitment to achieving them, despite adversities. Strong self-efficacy results in increased psychological well-being and adherence to rehabilitation.

Moderating resources can be manipulated and strengthened so that, in the event of an apparently overwhelming stressor, forces can be marshaled to protect the survivor and their family. The HBCEP used in this study employed multiple strategies including stroke education, skill building, counseling, and motivational method to enhance coping, self-efficacy, and social support from their family. The moderating resources in the model increased the outcome of psychological well-being and adherence to rehabilitation. The HBCEP can be employed indirectly and directly via moderating resources by: (1) providing knowledge of the illness to participants using teaching and counseling techniques, (2) increasing self-efficacy using skill training, guiding, and self-efficacy enhancement strategies (3) improving coping skill using skill training and guiding techniques, (4) strengthening social support from family members using teaching and motivating techniques, and (5) expanding financial resource information using teaching and counseling techniques. It was expected that an increase in coping would lead to enhanced psychological well-being and adherence to rehabilitation.

Another outcome of SPM is psychological stress.[31] Research on stroke survivors' psychological stress indicated negative impacts on adherence to home rehabilitation.[32] Home rehabilitation for stroke survivors from Canadian best practice stroke recommendations consisted of five dimensions: physical, psychosocial, cognitive, survival capability, and attitude.[33] According to the rehabilitation guidelines, adherence strengthens survivors and makes them more readily able to manage physical functioning for improved recovery. Non-adherence to rehabilitation is a risk factor for delayed recovery and stroke recurrence.

From a literature review, the SPM seems to be appropriate for guiding an intervention to increase psychological well-being and adherence to rehabilitation in stroke survivors. To our knowledge, there are no published studies using SPM for investigating the effectiveness of a coping program to promote the psychological well-being and adherence to rehabilitation after stroke, hence, this study was undertaken.

Study Aim and Hypothesis

This study aimed to test the effectiveness of HBCEP on psychological well-being and adherence to rehabilitation in stroke survivors. The following hypothesis was set:

Stroke survivors in the experimental group would have significantly higher mean scores of psychological well-being and adherence to rehabilitation than before engaging in the program and after completion of same.

Methods

Study Design: A randomized controlled trial (RCT) was used. This study followed the CONSORT 2010 checklist of information to include when reporting a randomized trial.

Sample and Setting: The sample consisted of adults who survived a first-time ischemic stroke within the last year and received continuous follow up at any of the 11 primary health-promoting hospitals in the northern Thailand. The inclusion criteria were being ≥40 years old; having normal cognitive function assessed by the Chula Mental Test, with a score of 15 and over,[34] being able to read and communicate in Thai; willing to participate in the research project; and having at least one family caregiver staying with them. Family caregivers were included if they were ≥20 years old, identified as an unpaid primary caregiver, able to read and communicate in Thai, and willing to participate in this study.

The sample size was estimated using power analysis method for ANOVA. The researcher set the criteria for the significance level of .05 and a power of .80. Based on the effect size of .30 calculated from a previous study,[35] the minimum total sample size required was 62. Considering attrition of 15% from the previous study, the chosen sample size was n = 72 (36 participants per group).

From statistics, the province with the highest number of strokes in the northern Thailand was Chiang Mai. Simple random sampling was used to select one district in Chiang Mai province. There were 11 health-promoting hospitals in the selected district so proportional random sampling was used to calculate the sample size at each hospital.

Participants who met the inclusion criteria were randomly assigned into either the experimental or the control group using four permuted block randomizations with allocation ratio of 1:1 in each block. The flow of the study is shown in **Figure 1**.

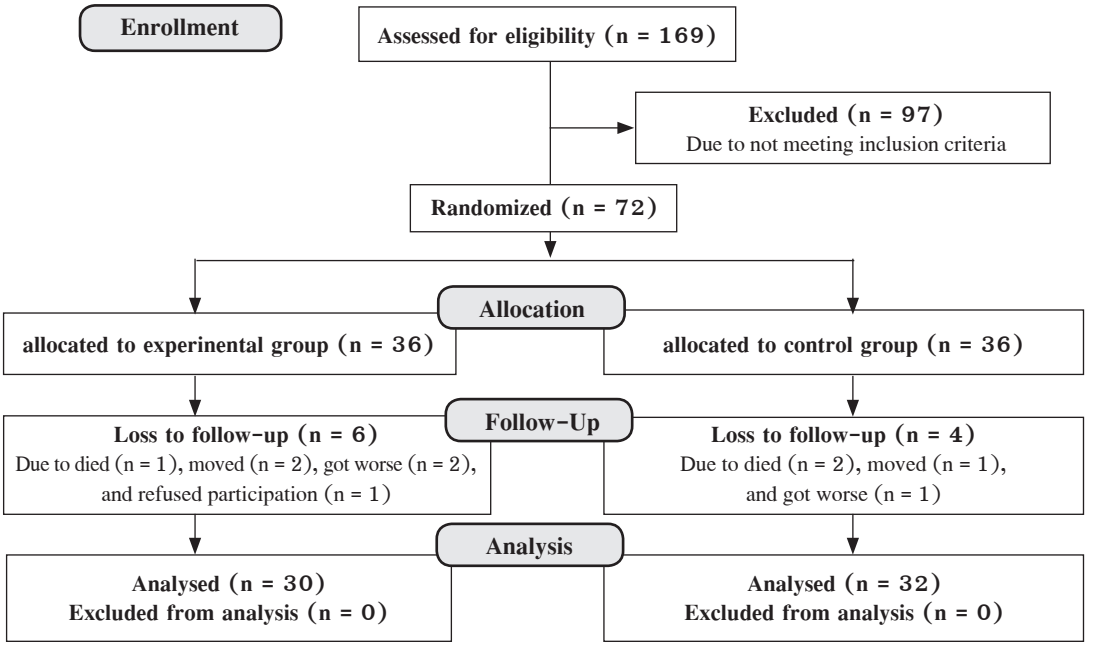

Figure 1. The study flow of the participants

Ethical Considerations: This study was approved by the Institutional Review Board (IRB) of the Faculty of Nursing, Chiang Mai University (2562-Full038). All eligible participants were informed of the objectives and processes of the study, the benefits and potential risks, the time required for the study, their rights to privacy, confidentiality, and ability to withdraw from the study without losing healthcare service benefits. The participants were also given opportunities to ask questions. All participants signed a consent for before the study began.

Research instruments: Three instruments were used to obtain data: a Demographic Data Questionnaire, the Psychological Well-Being Scale (PWBS), and the Adherence to Rehabilitation Scale (ARS). The intervention was the Home-based Coping Enhancement Program (HBCEP). The screening instrument was the Chula Mental Test (CMT).

Demographic Data Questionnaire: This instrument was developed by the primary investigator (PI) to collect patients' personal data, including gender, age, education level, marital status, occupation, income, source of income, sufficiency of income, duration of illness, relationship to caregiver, and co-morbidities.

The Psychological Well-Being Scale (PWBS): The instrument was developed by Ryff and Keyes[16] and was translated into Thai by the PI with permission. It was then back-translated by two bilingual experts. The PWBS is a 42-item scale that encompasses six dimensions of psychological well-being: self-acceptance, relations with others, autonomy, environmental mastery, purpose in life, and personal growth (e.g., "I'm not afraid to comment, although that opinion is contrary to the opinions of most people"). Each item has a 4-point response option from 1 (strongly disagree) to 4 (strongly agree). The possible range of the total score is between 42 and 168. A higher score indicates higher psychological well-being. For the level of psychological well-being, a score between 127-168 indicates high psychological well-being, a score between 85-126 indicates moderate psychological well-being, and a score between 42-84 indicates low psychological well-being. The instrument was reviewed for content validity by the six experts in stroke: two physicians, two advanced practice nurses, and two nursing instructors. The result of CVI was .98. The internal consistency reliability was tested with 10 participants who met the same criteria as the study participants, yielding a Cronbach's alpha of 0.84 for reliability. Cronbach's alpha reliability in the actual study was 0.81.

The Adherence to Rehabilitation Scale (ARS): This instrument was developed by the PI based on a literature review. This 18-item scale has five dimensions: physical, psychosocial, cognitive, capability to live, and attitude (e.g., "You take care of personal hygiene such as bathing, brushing your teeth, washing your hair, cutting your nails, and shaving regularly"). Each item has a 5-point response option from 1 (never) to 5 (always). The possible range of the total score is between 18 and 90. A higher score indicates higher adherence. For interpretation of the level, a score from 67 to 90 indicates high adherence, a score from 43 to 66 indicates moderate adherence, and a score from 18 to 42 indicates low adherence. The instrument was reviewed for content validity by the same experts as the PWBS. The result of CVI was .96. The internal consistency reliability was tested with 10 participants who met the same criteria as the study participants, yielding a Cronbach's alpha of 0.89 for reliability. In this study, Cronbach's alpha of the ARS was 0.91.

The Home-Based Coping Enhancement Program (HBCEP):

The 6-week HBCEP was developed by the PI based on the SPM of Pearlin et al.[28] The HBCEP aims to facilitate coping with a stressful life by manipulating moderating resources comprising coping, perceived social support, and perceived self-efficacy using multiple educational strategies, including stroke education, skill-building, counseling, and motivating techniques. The content was put in a booklet, as well as a video containing an overview of the program's schedule, an action plan template for weekly planning, presentation content, successful strategies in effective coping

management with stress, perceived social support, and perceived self-efficacy. This was provided for the experimental group in the first week of home-visits. The program was validated by the same experts as the PWBS and ARS. The details of the intervention program are shown in **Table 1**.

Table 1. Protocol of the home-based coping enhancement program

Week	Activities
Week 1: Home visit (120 minutes)	- Stroke education: recovery, rehabilitation, and personal goal setting - Skill building for rehabilitation (self-survey, planning and goal setting, writing rehabilitation action plan) - Identifying the problems, formulating goal selection, and action plan
Week 2: Home visit (120 minutes)	- Stroke education: coping skills, stress management, problem solving, emotional support - Skill building for coping with stressful event, emotional and stress management (meditation, and chanting) - Identifying the problems, formulating goal selection, and action plan - Enhancing perceived self-efficacy
Week 3: Home visit (120 minutes)	- Stroke education: social support from family members, social and financial resources, role and responsibilities of family members, strategies for providing support, and food for stroke survivor - Skill building for family support and strategies for providing support communication skills, food preparation - Adjusting individual plan and realistic goals setting relating to the problems - Enhancing perceived self-efficacy: experience mastery, verbal persuasion, and emotional arousal - Verbal reinforcement and advice
Week 4: Home visit (120 minutes)	- Stroke education: exercise, ADLs, and exercise by caregivers - Skill building for family support and providing care, exercises for the upper and lower extremities, ADLs, and exercise by caregivers - Adjusting the individual plan and realistic goals setting relating to the problems - Enhancing perceived self-efficacy: experience mastery, verbal persuasion, and emotional arousal - Verbal reinforcement and advice
Weeks 5 and 6: Telephone call (5-15 minutes)	- Telephone calls to the participants - Motivating and reinforcing the knowledge and practice - Reviewing knowledge and practice for regularly performing and maintaining the protocols

The Chula Mental Test (CMT): This tool was used to screen the eligibility of the prospective participants in terms of the cognitive abilities. The CMT was developed by Jitapunkul et al.[34] and contains 13 items for assessing severe domains of cognitive functions including remote memory, orientation, attention, language, abstract thinking, judgment, and general knowledge. The range of the total score is between 1-19, with a score from 15-19 indicating normal cognitive function, 10-14 indicating mild cognitive impairment, 5-9 indicating moderate cognitive impairment, and 0-4 indicating severe cognitive impairment. The stroke survivors who had CMT scores ≥15 were included in this study.

Usual care: This refers to activities by the healthcare providers for stroke survivors at home, consisting of patient self-efficacy assessment and re-education for a patient if needed, as well as activities for a caregiver on how to support and encourage the stroke survivor to do daily rehabilitation exercise.

Data Collection: After the IRB approval, the HBCEP was implemented by the PI and data were collected by two trained research assistants (RAs). Both RAs assisted solely in collecting data and were unaware of participants' experimental status. After commiting to the study, the participants were asked to complete the questionnaires as a baseline (week 0) and at weeks 6 and 12. The experimental group received a 6-week intervention comprising four consecutive days of home education and two weeks of telephone follow-up by the PI. The control group received usual care.

Data Analysis: Descriptive statistics were used to describe characteristics of participants. Comparisons between the control and experimental participants' characteristics were analyzed using t-test. Two-way repeated measures analysis of variance (ANOVA) was used to examine the difference of psychological well-being and adherence to rehabilitation mean scores at baseline between the control group and experimental group. Comparison was done again at weeks 6 and 12 after completion of the program. Before testing the hypotheses, the data were tested for the assumption of normal distribution and homogeneity of variance. Normality distribution of psychological well-being and adherence of rehabilitation were tested with one-sample Kolmogorov-Smirnov test. The results showed non-significance ($p > .05$). Homogeneity of variance was tested using Levene's test and showed no significant differences among dependent variables ($p > .05$).

Results

Basic characteristics: In total, 62 participants completed the program (30 participants in the experimental group and 32 participants in the control group). There were no significant differences in participant characteristics between the two groups (**Table 2**).

Table 2. Basic characteristics of stroke survivors between the experimental and control groups (n = 62)

Characteristics	Group				p-value
	Control (n = 32)		Experimental (n = 30)		
	n	%	n	%	
Age (years) M±SD	64.38±11.96		62.67±9.47		0.537[b]
(Range)	(41-86)		(40-80)		
Gender					0.960[a]
Male	19	59.40	18	60.00	
Female	13	40.60	12	40.00	
Marital Status					0.276[a]
Single/Widowed/Divorced/Separated	13	40.60	9	30.00	
Married	19	59.40	21	70.00	
Education					1.000[c]
No	1	3.10	0	0	
Education	31	96.90	30	100.00	
Primary school	27	84.40	26	86.70	
Secondary school	3	9.40	4	13.30	
Diploma/College	1	3.10	0	0	

Table 2. Basic characteristics of stroke survivors between the experimental and control groups (n = 62) (Cont.)

Characteristics	Group				p-value
	Control (n = 32)		Experimental (n = 30)		
	n	%	n	%	
Occupation					0.861[a]
Housewife	22	68.80	20	66.70	
Government officer	3	9.40	3	10.00	
Farmer	3	9.40	4	13.30	
Merchant	4	12.50	3	10.00	
Family Income (per month)					0.518[a]
≤ 6,000 baht (≤ 169.05 US$)	20	62.50	23	76.70	
≥ 6,000 baht (≥ 169.05 US$)	12	37.50	7	23.30	
Sufficiency of income					0.599[a]
Sufficient	16	50.00	13	43.30	
Insufficient	16	50.00	17	56.70	
Caregivers					0.457[a]
Child	15	46.8	9	30.0	
Spouse	14	43.8	18	60.0	
Grandchild	1	3.1	2	6.7	
Other (Relative)	2	6.3	1	3.3	
Comorbid disease					0.667[a]
(More than one answer)					
No Disease	9	28.10	7	23.30	
Comorbid disease	23	71.90	23	76.70	
Hypertension	20	62.50	18	60.00	
Heart disease	0	0	1	3.30	
Diabetes mellitus	9	28.10	2	6.70	
Hyperlipidemia	6	18.80	9	30.00	
Other (Gout, Asthma, etc.)	5	15.60	3	10.00	
Duration of stroke (months)					0.857[b]
M±SD	6.75±3.02		6.90±3.50		
(Range)	(1-11)		(1-12)		
Side of paralysis					0.640[a]
Left	12	37.50	13	43.30	
Right	20	62.50	17	56.70	

Note: a = Pearson Chi-Square test, b = independent t-test, c = Fisher's exact test

Effectiveness of the HBCEP on psychological well-being and adherence to rehabilitation: The mean scores of psychological well-being of the experimental group at all points of measurement were higher than the control group and both groups were at a moderate level. After completing the program, the

mean scores of psychological well-being in the experimental group increased from baseline to week 6 and then week 12. The mean scores of psychological well-being in the control group slightly decreased from baseline. For adherence to rehabilitation, after receiving the program, the mean score of adherence to rehabilitation in the experimental group increased at week 6 and slightly decreased at week 12, whereas in the control group, this increased slightly from baseline and slightly decreased at week 12. The adherence to rehabilitation scores at all points of measurement were at a high level in both groups (**Table 3**).

An independent t-test showed that there were no differences in the mean scores of psychological well-being and adherence to rehabilitation between the experimental and the control groups at baseline ($p = 0.101$ and 0.788, respectively). The two-way repeated measures ANOVA was used to test the differences of the psychological well-being and adherence to rehabilitation scores before and after engaging in the program in both groups. The results showed that the psychological well-being scores at each measurement point between the experimental group and the control group were significantly different ($F = 60.99$, $p < .001$) In addition, the time-group interaction was also significant different ($F = 70.07$, $p < .001$; $F = 92.43$, $p < .001$, respectively). For adherence to rehabilitation, the scores of the experimental group were not different from the control group ($F = 1.32$, $p = .255$). However, over time, the time-group interaction was statistically different ($F = 67.07$, $p < .001$; $F = 29.80$, $p < .001$, respectively) (**Table 3**).

Table 3. Comparison of psychological well-being and adherence to rehabilitation scores at each point of measurement between the two groups

Out comes	Time points	CG	EG	t-test		Two-way repeated measures ANOVA					
						Between groups		Time		Time*Group	
		M (SD)	M (SD)	t-value	p-value	F^r	p-value	F^r	p-value	F^r	p-value
PWB	T0	107.44 (4.85)	109.73 (5.97)	1.667	0.101	60.99	0.000*	70.07	< 0.001	92.43	< 0.001
	T1	106.47 (5.82)	118.83 (7.05)	7.552	0.000*						
	T2	106.63 (4.41)	122.90 (6.01)	12.204	0.000*						
AR	T0	67.69 (9.09)	67.10 (7.97)	0.270	0.788	1.32	0.255	67.07	< 0.001	29.80	< 0.001
	T1	68.88 (8.81)	72.97 (7.38)	1.975	0.053						
	T2	68.69 (8.18)	72.20 (7.16)	1.795	0.078						

ANOVA = analysis of variance; PWB = Psychological Well-being; AR = Adherence to Rehabilitation; T0 = Baseline; T1 = Week 6; T2 = Week 12; CG = Control group; EG = Experimental group; M(SD) = Mean (SD)

The one-way ANOVA was used to test the difference in scores between baseline, week 6, and week 12 in each group. The results revealed that the psychological well-being scores in the experimental group significantly increased over time. However, in the control group, the scores did not significantly change over time (**Figure 2**).

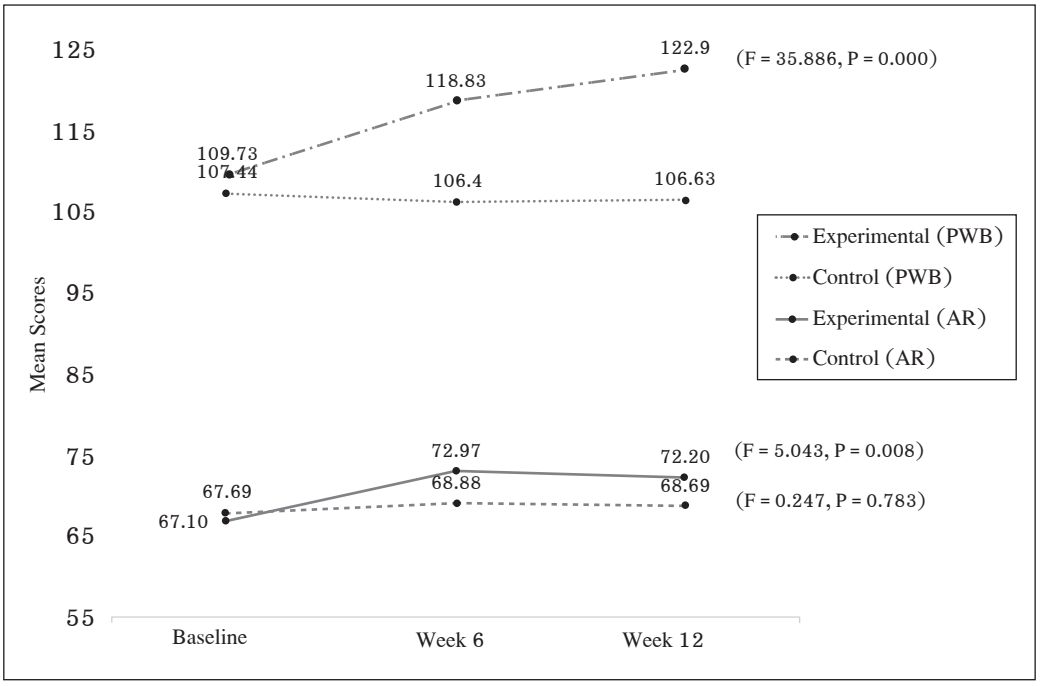

Figure 2. Changes in psychological well-being and adherence to rehabilitation of control and experimental groups over time

Discussion

This study's findings indicated the effectiveness of HBCEP in improving psychological well-being and adherence to rehabilitation, confirming the hypotheses and supporting the SPM. Increased psychological well-being resulted from the intervention designed to facilitate three moderating resources in the stress process, including coping, self-efficacy, and perceived social support. Increasing those moderating resources could reduce stress and increase psychological well-being. The intervention modified the three moderating resources using multiple strategies in the program encompassing stroke education, skill-building, counseling, and motivating.

Regarding coping, education plays a key role in improving patients' ability to cope with illness. This education was conducted by means of individual at-home visits with instruction and discussion. The teaching provided information about stroke events, stroke recovery, stroke rehabilitation, stress management using positive thinking, meditation, chanting, and coping skills. Recent research indicated that psychoeducation could enhance coping of stroke survivors.[36]

In order to improve self-efficacy, the PI motivated perceived self-efficacy by experiencing mastery, verbal persuasion, and emotional arousal. Verbal reinforcement and advice were used. The use of self-efficacy, especially in psychosocial functioning, can influence the psychological well-being of stroke survivors.[37] Moreover, increased self-efficacy contributes to self-acceptance, autonomy, and environmental master, which help survivors have clear purposes in life and personal growth.

Social support is a safeguard for stress. Increased perceived social support reflects a positive relation with others, which is a dimension of psychological well-being. Social support is also the most beneficial factor for functional recovery.[38] Additionally, this intervention used four home visits and two telephone conversations.

This process of the intervention to enhance coping skill and self-efficacy resulted in increased PWB and adherence to rehabilitation. The participants were able to call the PI at any time for consultation about their problems and assistance with problem-solving. Previous studies with similar interventions supported this finding. For instance, a community-based program could increase five of the six dimensions of psychological well-being in both clients and family members,[39] and home care was effective in improving psychological outcomes of the patients by lowering depression and anxiety levels during the first six months of treatment.[40] Furthermore a transitional care program for stroke survivors, with an emphasis on knowledge, exercise and physical activity, stress management, and social support, resulted in better functional ability than the control group.[41]

In this study, the survivors and family caregivers needed help from others, especially from health care providers. The discussion between the PI and stroke survivors about their illness helped them better understand their problems. In addition, this study provided education, skill training, counseling, and motivating methods to teach the stroke survivors and their caregivers how to control and correct these problems, and how to manage their stress in stressful situation, especially through Buddha-Dhamma for stress therapy.[42] During the intervention, a good relationship developed between the PI and the survivors. The stroke survivors and family caregivers became active participants in the stroke survivor's care. With regards to empowering and encouraging the survivors and their caregivers while emphasizing their self-care, the PI could successfully develop their capacity for self-care and their coping skills. After completing the study, the survivors and caregivers could apply knowledge and skills from the program to solve their health and emotional problems in their own way.

Regarding the effectiveness of the HBCEP on adherence to rehabilitation, although the adherence to rehabilitation scores at each measurement point of the experimental and the control group were not significantly different, the results showed greater adherence to rehabilitation in the experimental group at week 6, despite a reduction in the adherence scores from week 6 to week 12 in both the groups. This is aligned with the trajectory of adherence to stroke rehabilitation which is a dynamic behavioral process that continuously changes over time, with a regular pattern of an 'S' curve including a rapid initial increase, a slow decrease, and a stable phase.[43]

It is possible that stroke illness changed an individual from being healthy to becoming disabled abruptly. Therefore, survivors needed adherence to rehabilitation to recover quickly and become healthy again. In addition, they had strong confidence in rehabilitation from the supervision of the PI from home visits between week 1 and week 6. As a result, during the first six weeks, their adherence levels increased rapidly. However, rehabilitation is a long-term process. After a certain period, the survivors were likely to find that they failed to reach their ideal goal. A lack of motivation also ensued after the home visits were over. As a result, stroke survivors were likely to give up rehabilitation. During this period, the adherence to rehabilitation rate declined gradually. This finding was consistent with the adherence to home exercises and rehabilitation[44] that used personalized strategies such as education, exercise, cognitive techniques, self-efficacy, reminder, motivation, feedback, supervision, and the involvement of family and community. The results showed better exercise adherence at 6 and 12 weeks, with a slight decrease at week 12.

Limitations

The findings from the present study are limited in generalizability only to first-time stroke survivors with mild and moderate disabilities who have good cognitive function. The effectiveness of this program may not be generalized to the survivors with severe disability and low cognitive abilities. The generalizability is also limited since it was conducted in only one rural community in the northern region. The data collection

period (12 weeks) might have been too short to observe a sustainable change in psychological well-being and adherence to rehabilitation.

Conclusions and Implications for Nursing Practice

The findings from this study revealed that the HBCEP has positive benefits for psychological well-being and adherence to rehabilitation in stroke survivors. The program needs to be tested further with different samples before implementation into practice. The healthcare professionals may start the program at the first appointment with survivors for further testing its effectiveness in different situations.

The HBCEP in this study involved exercises for the upper and lower extremities. In future studies, it could be beneficial to combine other exercises, which are recommended after stroke such as an aerobic exercise to reduce activity limitations. The effectiveness of the program should be assessed over longer periods to assess the sustainability of psychological well-being and adherence to rehabilitation among stroke survivors. Additionally, developing teaching materials through online platforms, and social networking is needed for more accessibility.

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ผลของโปรแกรมการส่งเสริมการเผชิญปัญหาที่บ้านในผู้รอดชีวิตจากโรคหลอดเลือดสมอง : การวิจัยเชิงทดลองแบบสุ่มชนิดมีกลุ่มควบคุม

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บทคัดย่อ: โรคหลอดเลือดสมองเป็นสาเหตุสำคัญของการเกิดภาวะทุพพลภาพและพึ่งพิง ส่งผลให้ผู้รอดชีวิตเกิดความเครียดและขาดแรงจูงใจในการฟื้นฟูสภาพของตนเอง การช่วยให้ผู้รอดชีวิตคงไว้ซึ่งความผาสุกทางใจและความร่วมมือในการฟื้นฟูสภาพเป็นสิ่งจำเป็น การวิจัยเชิงทดลองแบบสุ่มชนิดมีกลุ่มควบคุมนี้มีวัตถุประสงค์เพื่อศึกษาผลของโปรแกรมการส่งเสริมการเผชิญปัญหาที่บ้านต่อความผาสุกทางใจและความร่วมมือในการฟื้นฟูสภาพในผู้รอดชีวิตจากโรคหลอดเลือดสมองทางภาคเหนือของประเทศไทย โปรแกรมนี้พัฒนาจากรูปแบบกระบวนการความเครียด ผู้รอดชีวิตจากโรคหลอดเลือดสมองจำนวน 62 คน ได้รับการสุ่มเข้ากลุ่มทดลอง (n = 30) และกลุ่มควบคุม (n = 32) กลุ่มทดลองได้รับโปรแกรมการส่งเสริมการเผชิญปัญหาที่บ้านร่วมกับการดูแลตามปกติ ในขณะที่กลุ่มควบคุมได้รับการดูแลตามปกติเท่านั้น การเก็บรวบรวมข้อมูลโดยใช้แบบวัดความผาสุกทางใจ และแบบวัดความร่วมมือในการฟื้นฟูสภาพ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา การทดสอบที และการวิเคราะห์ความแปรปรวนสองทางแบบวัดซ้ำ

ผลการศึกษาพบว่าคะแนนเฉลี่ยความผาสุกทางใจและความร่วมมือในการฟื้นฟูสภาพของกลุ่มทดลองเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติ ในสัปดาห์ที่ 6 และ 12 หลังสิ้นสุดโปรแกรม นอกจากนี้พบว่าค่าเฉลี่ยคะแนนความผาสุกทางใจของกลุ่มทดลองสูงกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติในสัปดาห์ที่ 6 และสัปดาห์ที่ 12 ขณะที่ค่าเฉลี่ยคะแนนความร่วมมือในการฟื้นฟูสภาพระหว่างกลุ่มไม่แตกต่างกัน ผลการศึกษานี้แสดงให้เห็นว่าโปรแกรมสามารถเพิ่มความผาสุกทางใจแก่ผู้รอดชีวิตจากโรคหลอดเลือดสมองได้ ทั้งนี้โปรแกรมควรจะได้รับการทดสอบเพิ่มก่อนจะนำไปใช้

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คำสำคัญ: ความร่วมมือในการฟื้นฟูสภาพ การดูแลที่บ้าน การเผชิญปัญหา ความผาสุกทางใจ ผู้รอดชีวิตจากโรคหลอดเลือดสมอง

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