Effects of the Transitional Care Program on Functional Ability and Quality of Life of Stroke Survivors

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ABSTRACT

Stroke causes deterioration of functional ability and a decreased quality of life in stroke survivors. The cares provided to stroke survivors during the transitional period are substantial improvements in functional ability and quality of life. This study was an experimental pretest-posttest control group design, aimed at determining whether the Transitional Care Program affected functional ability and quality of life in first stroke survivors. Sixty-seven stroke survivors from Hat Yai and Songkhla hospitals were randomly assigned into the Transitional Care Program intervention (n=33) and usual care (n=34). The Transitional Care Program was conducted in the hospital and extended to 4 weeks post discharge through 2 home visits and 2 telephone visits at stroke survivors' homes. Data were collected within 24-48 hours after admittance and 12 weeks post discharge. Functional ability and quality of life were measured using the Modified Barthel Index and Ferrans and Powers' Quality of Life Index Stroke Version. All instruments were tested for reliability and reported at .87. The effectiveness of the program was tested using the non-parametric Mann-Whitney U test, t-test and ANCOVA based on the distribution. The study revealed that the functional ability and quality of life of stroke survivors in the experimental group were significantly better than those in the control group (p < .01 and .05, respectively). These results suggest that the Transitional Care Program decreases disability and increases quality of life of stroke survivors and should be included as part of stroke care.

Key words: Transitional Care Program, Functional ability, Quality of life, Stroke survivors

INTRODUCTION

Stroke is still a serious health problem in Thailand similar to other countries. It is not only the third-leading cause of death (Health Information Unit, 2006), but also the major cause of serious long-term disability (Poungvarin, 2001). Even though the mortality rate from strokes has decreased, the incidence of stroke continues to increase. Stroke impacts basic activities of daily living including mobility and other self-care functions that a person must be able to perform to be independent (Knight, 2000). The limitations in functional ability decrease stroke survivors' independence which reduces the sense of well-being in their lives (King, 1996; Jaracz and Kozubski, 2003).

Most stroke survivors admitted for emergency treatments survive. After the critical period, they are expected to be discharged home. Care during the hospitalization usually emphasizes the provision of general nursing care, without the necessary information and training in daily essential skills for stroke patients and without serious consideration of facilitating the use of scarce resources outside the hospital (Pishitpornchai et al., 1999). The shortened hospitalization results in little time to adequately prepare stroke survivors for discharge or prepare caregivers to assist with recovery at home (Brereton, 1997; Chalermwannapong, 2004). Furthermore, stroke rehabilitation has been focused on managing the acute stage and evaluating short-term treatment. Kelly-Hayes et al., (1989) reported that discharged stroke survivors could still not ambulate without hands-on assistance, and over 50% needed more than supervision for ADL. Lack of knowledge and skills to provide good physical care can increase survivors' preventable complications and readmissions (Brereton, 1997). Some stroke survivors have been discharged and then readmitted in the same day (Chalermwannapong, 2004). Nursing interventions designed for smooth continuation of care received in the hospital to the home are thus needed.

The Transitional Care Program for stroke survivors was developed based on the Transitional Care Guideline for heart failure in elderly patients by Naylor and colleagues (Naylor et al., 1994; Naylor et al., 2004). This guideline was modified from Brooten and friends' Transitional Care Model for patients discharged early from the hospital (Brooten et al., 1988). The Transitional Care Model of Brooten et al., (1988) developed for substituting a portion of hospital care with a comprehensive program of transitional home follow-up by nurse specialists was utilized to develop the guideline. The Transitional Care Guideline was widely used in various groups of clients who needed extended care and was considered to be very effective for providing healthy transitional care (Naylor et al., 1994; Bixby et al., 2000; Naylor et al., 2004). The Transitional Care Program for Stroke Survivors included problem assessment, problem identification, patient education and special skill training, using home visits and telephone visits by a nurse specialist. In this case, the investigator primarily implemented specific interventions for stroke survivors with secondary focus on family caregivers. The program was expected to be effective in maintaining and/ or maximizing the stroke survivors' condition or functional ability. It was also expected to help stroke survivors and their caregivers undergoing transition perceive well-being in their lives by directly strengthening stroke survivors' and caregivers' knowledge and skills, their use of social supports and resources, and their problem solving and coping behaviors. Continuing physical therapy and preventing complications was also intended to improve the functional ability of stroke survivors. Improving independence in performing the activities of daily living was expected to increase stroke survivors' quality of life.

MATERIALS AND METHODS

Study Design and Sample

An experimental pretest-posttest control group design was used to determine the effects of the transitional care program on functional ability and quality of life of stroke survivors. The populations of this study were dyads of stroke survivors and their caregivers. The sample was recruited at Hat Yai and Songkhla hospitals between October 2007 and September 2008. They were survivors of a first stroke with moderate to severe disability, who lived in Songkhla province, within 50 kilometers of the hospitals. Dyads were enrolled if they had no other neuromusculoskeletal disorders or previous psychiatric history or alcoholism, were able to communicate in Thai language, and willing to participate in the study. The survivors were excluded if after the assessment, they died, were referred or moved to another setting, or if the investigator could not schedule a follow-up at home, or if they were readmitted to the hospital with complications from the stroke or co-morbid disease. Caregivers were family caregivers who lived with a patient and were identified them as the primary caregiver. The caregiver provided unpaid care, including the provision of assistance with activities of daily living (ADL). Caregivers, as well as the stroke survivors needed to be able to communicate in Thai language and be willing to participate in the study.

The sample size was estimated using power analysis in order to reduce the risk of type II error (Burns and Grove, 2001). In this study, the sample size was determined based on the effect size of .38 and a power of .90 of Khampolsiri's (2006) study. Hence, the criteria of the significance level of .05, power of .90, and effect size of .38 were used; the needed sample size from the power table was 34 for each group (Cohen, 1988).

In previous studies, the attrition rate of a 3-month study in stroke survivors varied between 15-27%. In order to increase the confidence in the results of the experiment, the anticipated attrition rate used in this study was 27%. The sample was increased in size in each group to 44.

Identified stroke survivors with family caregivers who met the study criteria were recruited. For controlling intrinsic extraneous variables, a randomization process was used (Polit and Hungler, 1999). Since the subjects arrived sequentially over a long period of time, and in order to increase the power of a study with an equal sample size (Shadish et al., 2002) and decrease some bias due to ending up with one group filling sooner than the other (Brink and Wood, 2001), dyads were randomized in blocks of 20 (Friedman et al., 1998).

Instruments

The research instruments used in this study consisted of the intervention instrument, the assessment instruments and the outcome measurement instruments.

The intervention instrument was the Transitional Care Program developed based on the Transitional Care Guideline for heart failure in elderly patients of Naylor and colleagues. The assessment instruments included the General Sociodemographic Questionnaire and the Information Related to Stroke Checklist.

The Information Related to Stroke Checklist contained checklists regarding information about stroke which included type of stroke, co-morbidity, side of paresis, and the severity of disability that was measured using the Barthel Index (BI). According to Jørgensen et al., (1995a, 1995b), very severe disability is defined as BI= 20, severe disability as BI = 25-45, moderate as BI = 50-70, mild disability as BI = 75-95 and no disability as BI = 100. The severity of stroke indicated the actual physical abilities that patients would be dealing with during post discharge phase and would affect patients' condition and recovery.

The outcome measurement instruments were the Modified Barthel Index (MBI) and the Polish version of Ferrans and Powers' Quality of Life Index Stroke Version (QLI- stroke version). The MBI was used for measuring performance of self-care including feeding, bathing, hygiene care, toileting, dressing, bowel and bladder care; and mobility including transferring, ambulating and stair climbing. In this study, the investigator did not measure stair climbing (similar to the study of Kliangklow, 2004) because some patients' houses had no stairs. The scores were ranged by performance ability. Mobility activities, transferring and ambulating were divided into 4 levels with score ranging from 0 to 6 (0 = absolutely unable to perform, 2 = need mostly assistance, 4 = need partial assistance, 6 = able to perform without assistance) (Yamvong, 1995). Self care activities, feeding, dressing, bathing, hygiene care, toileting, and bowel and bladder control were divided into 3 levels: level 1 was scored 0 (unable to perform), level 2 was scored 2 (need assistance), and level 3 was scored 4 (able to perform).

These nine items of self care activities and mobility activities had a total score ranging from 0-40. The sum of scores were interpreted as follow: 0-8 suggests severe dependency, unable to perform; 9-17 means able to perform slightly; 18-26 means able to perform moderately; 27-35 means able to perform mostly; and 36-40 means able to perform or independent (Yamvong, 1995).

QLI-stroke version was used to measure the psychological (subjective) quality of life (Ferrans and Powers, 1992); and was translated into Thai by the investigator. The QLI-stroke version was a 72-item questionnaire, composing of two parts: part 1 measured satisfaction with four domains of life including health and functioning, socioeconomic, psychological and spiritual, and family; and part 2 measured the importance of these four domains. Likert-scaled responses ranged from 1 (very unsatisfied/very unimportant) to 6 (very satisfied/very important). Quality of life scores were calculated by weighting every 'satisfied answer' with the corresponding 'important answer'. The possible range for the overall score and for each domain score was 0-30, with higher scores indicating a higher quality of life (Schuling et al., 2003).

Validity The Transitional Care Program and Information Related to Stroke Checklist were submitted to five clinical experts for content validity. The QLI-stroke version was translated but was not modified. In order to be equally natural and acceptable and practically performed in the same way, QLI-stroke version was forward-translated by the investigator and back-translated by a bilinguist (in English and Thai language for translation) whose mother tongue was English and who had no knowledge of the questionnaire (WHO, 2006).

Reliability The MBI and QLI-stroke version were assessed for the internal-consistency. They were tested with 13 stroke survivors who experienced the transitional period. Cronbach's alpha was the internal-consistency reliability coefficient used to indicate internal consistency of the MBI and QLI-stroke version. A high (≥ .80) coefficient indicates that the instrument has reliability (LaBiondo-Wood and Haber, 2002). In this study, the Cronbach's alpha was .87 for both MBI and QLI–stroke version.

Data Collection and Intervention Procedure

After obtaining permission from the Human Subjects Committee of Hat Yai and Songkla hospitals, the investigator coordinated with the supervisors of medical wards to gain support and cooperation. The nature and procedures of the study were explained to nursing staff and other personnel in order to receive their collaboration. After being recruited and randomly assigned into the experimental and the control groups, the participants were informed about the objectives and procedures in the study. The study was explained to them through the reading of the consent form. Once the informed consent was obtained, the next step of the study was conducted.

Both groups of stroke survivors were interviewed to obtain demographic characteristics including sociodemographic data, general health status data and previous use of health and social services. These data were obtained by utilizing the General Information Questionnaire, and information related to stroke was obtained by utilizing the Information Related to Stroke Checklist. Functional ability and quality of life of stroke survivors were assessed by research assistants who did not know the group of participants, using the MBI scale and QOL scale for pretest.

In the experimental group, stroke survivors and caregivers received routine hospital care and the Transition Care Program, which was consecutively provided to the stroke survivors and their caregivers in two periods, hospital and home periods. The main components of the Transition Care Program were comprehensive discharge planning, home follow-up and telephone visits.

To standardize the content of the Transition Care Program, 18 protocol guidelines were developed for providing education, support, skill training, counseling, and social and community linkages to stroke survivors and their caregivers. These protocol guidelines allowed for comparability across survivors while preserving substantial flexibility to meet the needs of the survivors and their caregivers. They can be used in any order. Eight protocol guidelines were developed for use with all stroke survivors including knowledge about stroke, home safety/ home modification, medication, stress management, mobility/ positioning, social support, activities of daily living and exercise/ physical activities. An additional 10 addressing specific issues were added for survivors dealing with specific issues. They were protocols to care for depression, diabetes mellitus, heart disease, incontinence, hypertension, hypercholesterolemia, unilateral neglect, pressure sores, dysphagia/ aspiration and communication problems. An expert panel approved all protocols.

The investigator provided the majority of the program, and other members of the health care team maintained contact with the stroke survivors and caregivers on a daily basis.

During hospitalization

Within 24-48 hours after being admitted to the hospital, stroke survivors and their caregivers were visited to assess their problems, concerns and discharge needs and expectations. Based on this assessment, the primary discharge plan was developed. The discharge planning covered medication, environment and economic issues, treatment, health, out-patient referral, and diet (METHOD). The short-term goal was: stroke survivors were ready to take care of themselves or the caregiver could take good care of stroke survivors and the long-term goal was: stroke survivors and the caregivers were confident to return to society; these were set to be included in the evaluation criteria.

On the second day of admission until their discharge, stroke survivors and caregivers were visited every day for 45-60 minutes in order to implement a discharge plan to prepare them for the transition. They were offered all essential information related to stroke and home self-management, and skill training was given according to the protocol. Teaching sessions were tailored to the needs of individual patients. The information including stroke information and its consequences, prevention and management options were provided, using booklets and pamphlets. Benefits and local services were discussed with stroke survivors and their families by the investigator. Moreover, caregivers were trained in lifting and handling techniques, facilitation of mobility and transfers, continence, assistance with personal activities of daily living and communication. Stroke survivors and caregivers' fears and concerns about their uncertain future were discussed. The meetings with the investigator were scheduled in order to assure their competency to perform activities and care. Stroke survivors and caregivers were visited for implementing the plan throughout hospitalization.

In addition, the collaboration with the health care team was done to implement the discharge planning and to facilitate the transitional care. The investigator collaborated with the health care team by attending team conferences, attending patient rounds with physicians and/ or physical therapists, or making a phone call to a dietician. Collaboration with nurses, physicians and other health care providers was done to implement and evaluate the discharge plan, and maintain communication with all team members regarding the patient's and caregiver's progress in meeting discharge goals.

Within 24 to 48 hours before discharge, the investigator visited the participants and contacted caregivers and relevant health care team members to finalize discharge preparations. Summaries about signs and symptoms of stroke, the continuous treatment, medication, diet, and resources in community were also given to the participants. A booklet and video were prepared and given to stroke survivors and caregivers. Nurses in the community health centers were contacted to gain their collaboration through the Social Medicine Department of the selected hospitals.

Home visit

The investigator made a first home visit to the stroke survivors and caregivers, together or alternately, with the community health care center nurse within 24-48 hours after discharge to address the problems that concerned them and answer their questions, including house adjustments for stroke survivors. The caregiver's performance at home also was evaluated. Caregivers and stroke survivors were invited to perform caring activities. If caregivers and stroke survivors were not confident to perform caring activities, they were partially assisted by the investigator.

The second home visit took place during the first 2 weeks after discharge in order to address any questions, reinforce instructions, monitor the stroke survivor's and caregiver's progress and modify the discharge plan.

Besides the personal visits, stroke survivors and caregivers were given the telephone number of the investigator so they could contact her by telephone from 8.00 am through 10.00 pm, Monday through Friday, and 8.00 am until 12.00 pm on weekends throughout the patients' hospitalization and twice a week for 2 weeks after discharge for any questions or concerns. Additionally, the telephone visit was also provided twice in the 2 weeks following the two home visits to address any questions, reinforce instructions and monitor the patient's and caregiver's progress.

The Usual Care

Usual care was provided to the stroke survivors and their caregivers in the control group. Usual care included routine care conducted by nursing staff and other health care providers in medical wards. The stroke survivors whose Glasgow Coma Score was more than 10 were assigned to stroke discharge planning which is run by a stroke advanced-practice nurse, who was the head of the ward or stroke manager. This usual care included providing information and general nursing care. The collaboration was in the form of patient rounds with a physician. The physical therapist and occupational therapist were consulted if there was a doctor's order. The dietitian was consulted if survivors had swallowing problems. On discharge day, nurses contacted stroke survivors and caregivers to notify them of the discharge date, prepare home medications and make an appointment for the post hospital check-up. Following this, nurses contacted the Social Medicine Department of the hospital to visit patients at home if there was an order.

On discharge day, the investigator visited the stroke survivors and their caregivers in order to schedule the data collection date. The map to stroke survivors' residences, the precise address as well as the stroke survivors and their caregivers' telephone numbers were also confirmed. Twelve weeks after discharge, the research assistants assessed functional ability and quality of life of stroke survivors again for posttest.

Data Analysis

The sociodemographic data, severity of dependency and quality of life were summarized using descriptive statistics for the intervention and control groups. Chi-square was used to test for the differences at baseline between the control and the experimental group on categorical variables that contained more than two sub-categories, whereas Fisher's exact test was used to test two sub-category variables.

Because the distribution of functional ability mean scores was not normal, the non-parametric Mann Whitney U test was used to examine the differences in scores of functional ability between groups and the Wilcoxon Signed-Ranks test was conducted to examine the differences in scores of function ability within the experimental group and control group. The distribution of scores of quality of life of both groups showed a normal curve at the pretest phase and at 12 weeks after discharge. A paired t-test was conducted to examine the differences in scores of quality of life within the control group and experimental group; whereas an independent t-test was used to test the differences between groups at pretest phase. One-way analysis of covariance (ANCOVA) was conducted (Mertler and Vannatta, 2002) to examine the differences in scores of quality of life of stroke survivors between the experimental group and control group in order to control for the pre-test scores of severity, functional ability and quality of life. These covariates were chosen because of their influence on the dependent variables.

RESULTS

Demographic Characteristics

There were 92 stroke survivors who were eligible to participate in the study. Of the 92, 45 were randomly assigned to the experimental group and 47 to the control group. Sixty-seven stroke survivors completed all aspects of the study. The attrition rate of 27% (n=25) was almost equally divided between the intervention (n=12) and the control (n=13) groups. In the experimental group, four died, two moved outside a 50 kilometer radius, 2 were re-hospitalized, one had a more severe stroke, one was cared for by a paid caregiver, and the investigator was unable to find the houses of two participants. Thirteen participants in the control group dropped out for the following reasons, five died, two did not have a diagnosis of stroke, 1 moved outside a 50 kilometer radius, and the investigator was unable to find the houses of five participants.

Of the 67 participants, the majority of the survivors were male and their mean age was 60.19 years. The majority were married, cared for by their son or daughter, had a primary school education and had a family income less than 6,000 Baht/ month. Most of them were the primary wage earners. They had sufficient income and had universal health coverage (Table 1). There were no significant differences between the groups at baseline.

Table 1. Demographic characteristics of participants.

Characteristic	Control (n=34)		Experiment (n=33)		Statistic test value	p-value
	n	%	n	%		
Gender						.141[b]
Male	23	67.6	16	48.5		
Female	11	32.4	17	51.5		
Age, years (mean ± SD)	60.24±11.13		60.15±10.23		-.032[t]	.975
Marital status	28	82.4	21	63.6	4.678[a]	.322
Married	6	17.6	17.6	36.3		
Single/ separated/ widowed						
Caregiver					2.905a	.407
Son or daughter	15	44.1	18	54.6		
Husband	3	8.8	5	15.2		
Wife	16	47.1	10	30.3		
Educational level					.595[a]	.964
Primary school	23	67.6	20	60.6		
Secondary school or above	6	17.6	8	24.2		
Current occupational status						.765[b]
No job	8	23.5	6	18.2		
Have job	26	76.5	27	81.8		
Type of job					4.580[a]	.469
Farmer	8	30.8	5	18.5		
Merchant	7	26.9	7	25.9		
Employee	4	15.4	10	37.0		
Business	4	15.4	4	14.8		
Retired or government officer	3	11.5	1	3.7		
Family income (Baht/ month)					1.488[a]	.829
2,001-6,000	15	44.1	12	36.3		
6,001-10,000	9	26.4	9	27.3		
> 10,000	10	29.4	12	36.4		
Source of income*						
Themselves	26	76.5	27	81.8		.765[b]
Spouse	18	52.9	11	33.3		.141[b]
Child	18	52.9	14	42.4		.466[b]
Others	1	2.9	2	6.1		.614[b]
Sufficiency of income						1.000b
Sufficient	33	97.1	32	97.0		
Insufficient	1	2.9	1	3.0		
Health expenditure					1.929[a]	.749
Civil servant medical benefit	7	20.6	6	18.2		
Universal health coverage	24	70.6	23	69.7		
Social security benefit	2	5.9	3	9.1		
Self paid or employer paid	1	2.9	1	3.0		

Note. a= Pearson Chi-Square b= Fisher's Exact test t= t-test

* Chose more than one item of source of income.

Most of the participants in both groups had a thrombic stroke. More than half of the participants had hypertension. The second most common co-morbidity was diabetes mellitus. The majority of the participants had severe disability. Most of them needed help with activities of daily living (ADL) such as feeding, dressing, transferring, taking a bath, toileting and climbing the stairs. The predominant predisposing factor of the participant was discontinuing medication taking (Table 2). There were no significant differences between the two groups in stroke-related characteristics.

Table 2. Stroke-related characteristics of participant.

Characteristic	Control (n=34)		Experiment (n=33)		Statistic test value	p-value
	n	%	n	%		
Type of stroke					3.552[a]	.169
Hemorrhage	7	20.6	2	6.1		
Thrombosis	25	73.5	30	90.9		
Embolism	2	5.9	1	3.0		
Co-morbidity*						
Hypertension	19	57.6	24	72.7		.301[b]
Heart disease	1	3.1	3	9.1		.613[b]
Diabetes Mellitus	6	18.2	7	21.2		1.000[b]
Hyperlipidemia	2	6.1	1	3.0		1.000[b]
Side of paresis						.131[b]
Left	18	52.9	24	72.7		
Right	16	47.1	9	27.3		
Severity of disability					2.293[a]	.514
Moderate disability	6	17.6	7	21.2		
Severe disability	27	79.4	25	75.8		
Very severe disability	1	2.9	1	3.0		
Need for ADL support**						
Feeding	32	94.1	29	87.8	.802[a]	.670
Dressing	34	100	31	94.0	2.139[a]	.343
Transferring	31	91.2	30	90.9	3.537[a]	.316
Walking	29	85.3	30	90.9	1.396[a]	.498
Grooming	15	44.1	11	33.3		.454[b]
Bathing	32	94.1	31	93.9		1.000[b]
Toileting	34	100	31	94.0	2.151[a]	.341
Climbing stair	31	93.9	30	90.9		1.000[b]
Predisposing factors***						
Smoking	11	32.4	6	18.2		.262[b]
Discontinued drug taking	8	23.5	14	42.4		.123[b]
Others (over weight, life style)	3	8.8	7	21.2		.186[b]

Note. a= Pearson Chi-Square b= Fisher's Exact test

*Some patients had more than one item of co-morbidity and some did not have any co-morbidity problem.

**Some patients wanted care for functional ability on ADL for more than 1 item.

***Some patients had more than one predisposing factor and some did not have any predisposing factor

Effect of the Transitional Care Program on Functional Ability

The functional ability scores of both groups increased significantly ($p < .001$) between baseline and week-12, as shown in Table 3.

Table 3. Comparison of functional ability within control and experimental groups between baseline and week-12.

Group	Functional ability		Z^d	p-value
	Baseline	Week-12		
	mean±SD (mean rank)	mean±SD (mean rank)		
Control group (n=34)	16.06±4.92 (32.41)	27.79±9.97 (27.50)	-4.785	.000
Experimental group (n=33)	16.67±5.42 (35.64)	33.77±5.02 (40.70)	-4.941	.000

Note. d= Wilcoxon Signed Ranks Test

There was no significant difference between the two groups in functional ability at baseline ($t = .481$, $p > .05$), as shown in Table 4. When function ability scores were compared at the week-12 follow up, the experimental group had significantly higher scores than the control group ($Z = -2.974$, $p = .003$). Stroke survivors who received the Transitional Care Program reported better functional ability than those who did not receive the program.

Table 4. Comparison of functional ability between control and experimental group at baseline and at week-12.

	Functional ability		Statistic test value	p-value
	Control group (n=34)	Experimental group (n=33)		
Baseline (mean score)	16.06	16.67	$.481^t$	.632
Week-12 (mean rank)	27.50	40.70	-2.974^d	.003

Note. t = t-test, d = Mann-Whitney test

Effect of the Transitional Care Program on Quality of Life

In the control group, the overall score of quality of life and subscale scores at week-12 did not differ from those of baseline. Mean scores of overall quality of life and subscale scores of the control group only slightly increased at week-12 (see Table 5).

Table 5. Change of quality of life within the control group.

Quality of life	baseline		Week-12		Statistic test value	df	p-value
	mean	SD	mean	SD			
Overall score	18.51	4.68	19.84	5.89	-1.33[b]	33	.193
Health and functioning	14.72	5.45	17.12	7.42	-1.667[b]	33	.105
Socioeconomic	20.78	4.71	20.79	3.56	-.009[b]	33	.993
Psychological/spiritual	19.46	7.30	20.68	8.59	-.793[b]	33	.433
Family	25.61	3.98	25.80	4.99	-.587[e]		.557

Note. b = paired sample t-test, e = Wilcoxon Signed Ranks test, p >.05

The overall QOL score and the health and functioning subscale, socioeconomic and psychological/spiritual scores of participants in the experimental group at week-12 were significantly higher than the scores at baseline. The subscale score that did not change significantly was the family sub-scale (see Table 6).

Table 6. Change of quality of life within the experimental group.

Quality of life	baseline		Week-12		Statistic test value	df	p-value
	mean	SD	mean	SD			
Overall score	18.02	4.18	23.27	4.09	-5.713[b]	32	.000**
Health and functioning	13.72	4.78	22.00	5.02	-7.115[b]	32	.000**
Socioeconomic	19.7	3.94	21.80	4.10	-2.197[b]	32	.035*
Psychological/spiritual	20.36	6.06	25.08	5.20	-3.733[e]		.000**
Family	25.44	5.29	27.07	4.31	-1.817[e]		.069

Note. b= paired sample t-test, e = Wilcoxon Signed Ranks test, **p <.01, *p<.05

At baseline, there was no significant difference of the overall quality of life score between the experimental group and the control group (see Table 7).

Table 7. Comparison of quality of life at baseline between the control group and the experimental group.

Group	Quality of life		t	df	p-value
	mean	SD			
Control (n=34)	18.51	4.68	-.449	65	.655
Experiment (n=33)	18.02	4.18			

Note. P > .05

Twelve weeks after the program, the quality of life of participants in the experimental group was significantly higher than that of the control group (Table 8) when controlling for the covariates of severity of stroke, functional ability and quality of life at baseline. The results have shown that stroke survivors who received the Transitional Care Program reported higher quality of life than those who did not receive the program.

Table 8. Comparison of quality of life between the control and experimental groups at week-12.

Source	Type III Sum of Squares	df	Mean Square	F	p-value
Corrected Model	466.304(a)	4	116.576	5.127	.001
Intercept	106.998	1	106.998	4.706	.034
fa1	27.463	1	27.463	1.208	.276
qol1	117.810	1	117.810	5.181	.026
Severity	13.623	1	13.623	.599	.442
Group	196.144	1	196.144	8.627	.005
Error	1409.701	62	22.737		
Total	32932.767	67			
Corrected Total	1876.004	66			

Note. a R Squared = .249 (Adjusted R Squared = .200), $p < .05$

DISCUSSION AND CONCLUSION

Effect of the Transitional Care Program on Functional Ability

Results from the study have demonstrated that the Transitional Care Program significantly improved functional ability of stroke survivors. The increase of scores on functional ability from 16.67 (SD = 5.42) at the baseline to 33.77 (SD = 5.02) at the week-12 confirmed the significant change in survivors' abilities. When they became more competent in performing vital tasks, they gained independence. As shown in this study, 12 weeks after baseline, 66.7% of stroke survivors who received the Transitional Care Program were able to perform essential daily activities without any assistance. There were many reasons that the Transitional Care Program may have affected the function ability of the stroke survivors. Possible explanations include the following.

Stroke survivors and caregivers were prepared for the transition since hospitalization. Many protocols of transitional care were used as a guideline to teach and train stroke survivors and caregivers. The information on the stroke guidelines were used to teach about consequences of stroke and how to prevent and manage stroke-related complications. Some stroke survivors and caregivers misunderstood that the cause of stroke was 'karma' (evil deed) and the loss of function caused them to be dependent on other persons for the rest of their lives (Thongbaiprasath et al., 2007). This misunderstanding might cause them to resist performing activities and thus not demonstrate any improvement in their functional capability. Thus, the causes of stroke and the potential for functional improvement were explained in order to correct survivors and caregivers' misunderstandings and prevent post stroke complications.

The activities of daily living protocols were used for the hygiene care. The mobility/positioning protocol was used to train stroke survivors and caregivers to transfer techniques. The exercise/physical activities protocol was used for teaching exercises, preventing complications and improving survivors' ADL ability. On each visit, the investigator continued with encouragement, support, reinforcement and sometimes stimulating survivors to adapt self-care activities. The caregivers had an important role to care for stroke survivors at homes; they should be induced to participate in the discharge process. They were trained to assist survivors in exercising, moving and transferring. They also were encouraged to motivate stroke survivors to regularly perform activities within the limitation of their physical impairments. Provision of the Transitional Care Program in the early recovery period improves the functional abilities of stroke survivors as shown in this study. Caregivers were encouraged to let stroke survivors do self-care by themselves first and help when survivors were really unable to perform them. Besides the knowledge and skill, the home safety/ home modification protocol was used by the investigator to increase the survivors' safety and independence.

After discharge, at the patients' home, the home safety/ home modification protocol guideline were used to encourage environmental adaptations or modifications in the home so that stroke survivors could perform ADLs safely and independently. Adaptation of floors, bathrooms and bedrooms should be done if necessary to maximize the independence of survivors. Handrails should be installed to help survivors pull themselves up or to hold when they walked. These strategies helped survivors improve their functions.

Stroke survivors were encouraged to maintain their functional ability. The caregivers were also encouraged to provide care for the stroke survivors as they were trained to do in the hospital. They were partially assisted by the investigator if caregivers were not confident to perform caring activities. During the first home visit, stroke survivors were encouraged to stand and walk, move their arms and fingers, grasp their hands and lift things in order to increase the strength of the muscle. The effort of using the affected arm improved the motor function.

These findings were congruent with Boonkerd's (1997) research, which studied the effectiveness of discharge planning by comparing abilities of stroke patients and caregivers before and after providing discharge planning and home visits. The study revealed that the ability to perform daily activities was higher among stroke survivors and caregivers who received discharge planning.

Effect of the Transitional Care Program on Quality of Life

The findings of the study revealed that the Transitional Care Program significantly increased stroke survivors' quality of life. The scores of quality of life, overall and subscales, except family subscale, increased significantly after the program provision. Potential explanations include the following.

The ability to perform daily life activities and self-care reduce survivors' stress, and increased personal value and personal satisfaction (Studenski et al., 2005). Therefore, it is possible that stroke survivors in this study had higher quality of life 12 weeks after receiving the Transitional Care Program due to the improvement of functional ability. In the experimental group, stroke survivors and caregivers were supported by the investigator. Psychological support and stress management were provided. They modified their system of preferences, setting realistic goals and learning to accept residual deficits. Helping stroke survivors to adjust their aspirations to real possibilities could improve quality of life. Additionally, their problems and concerns could be addressed during each visit and by the phone calls. The stress management protocol was used to help survivors and caregivers solve their problems. Before discharge, their needs and remaining problems were assessed again and summarized in order to target assistance after discharge.

The investigator's visits offered the chance for stroke survivors and caregivers to consult about their problems. Home visits also helped them feel reassured. During home visits, family members were also encouraged to participate in supporting the stroke survivor. Most participants in this study mentioned that emotional support from the family members was most important. Consequently, helping caregivers and families understand stroke survivors and supporting stroke survivors could increase their QOL. In the experimental group, the QOL family subscale increased quite high at week-12, whereas it increased very slightly in the control group. This finding was similar to the study of Jaracz and Kozubski (2003) in that the highest-scoring area of QOL in the intervention and control groups was the family dimension of the QOL, suggesting that the family relationship and emotional support were main sources of satisfaction.

The caregivers' burden of emotional support for stroke survivors was discussed with caregivers and the issues solved together. Resources available from family members, friends and society and community were suggested for use by caregivers when they needed additional assistance. After the second home visit, the telephone visit confirmed their competence. Stroke survivors reported that they were satisfied with the Transitional Care Program. The home visits and telephone visits by the investigator provided the professional support for survivors and families. This showed the effectiveness of Transitional Care Program on improving QOL. The findings were consistent with a previous study that stroke survivors who received greater social support reported higher quality of life (Kim et al., 1999; Mant et al., 2000). Therefore, the professional support to caregivers is extremely important in helping caregivers to continue their supportive role for stroke survivors (Ahlsio et al., 1984; Scholte op Reimer et al., 1998; Jaracz and Kozubski, 2003).

Study findings confirmed that the Transitional Care Program which facilitated stroke survivors' functional recovery and quality of life is needed to optimize the care outcome. The health care team, not only nurses, but also all levels of personnel should be concerned and aware of the discharge process. The collaboration with staff who are responsible for promoting transitional care in the community should be emphasized.

Community networks should also be trained to use the Transitional Care Program as a guide to transition stroke survivors smoothly between the hospital and home.

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