



Effects of a Continuing Care Model for Older Adults with Stroke in Can Tho City, Vietnam

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Abstract

Stroke is a leading cause of death and disabilities in Vietnam. Although stroke care in the acute phase has been achieved; a continuing care model and its effect has not been developed and evaluated at the district hospitals in Vietnam. A mixed-method study was conducted to develop and examine effects of the continuing care program for older adults with stroke living in Can Tho City, Vietnam. First, a continuing care model was developed based on the qualitative data from in-depth interview and focus group discussion. Second, the proposed model was implemented among older adults with Stroke, who registered at the selected district hospitals in Can Tho City. The intervention group received a 12-week continuing care program, including 1) stroke care management, 2) family caregiver's training, 3) family caregiver's support 4) resource allocation, 5) monitoring for stroke, 6) rehabilitation care and 7) family reintegration. The comparison group received the usual care. According to Mann-Whitney U-test, quality of life and self-care agency of the intervention group (n=23) were better than the comparison group (n=32) and better than before the intervention ($p < 0.05$), respectively. The findings support that the continuing care model can improve health outcomes for older adults with stroke in Can Tho City. In addition, community nurses should be trained to manage and monitor stroke outcomes for older adults, after the first 3-month. Further research with larger sample size should be scaling to improve the quality of care and quality of life for older adults with stroke.

Keywords: Continuing care model, Older adults, Quality of life, Stroke, Vietnam

What was Known

- Stroke care requires more attention because of high prevalence of complication and poor quality of life.
- In Vietnam, hospitals are classified based on ownership (public or private), scope of service (general or specialty hospital), and functional capacity (special class); however evidence on stroke continuing care was inadequate, particularly at district hospital.

What's New and Next

- This study highlights the effects of the continuing care model on quality of life among older adults post stroke in Southern Vietnam.
- Future research should examine the long-term effects and functional outcomes of the stroke continuing care model among older adults during the first 6 month after discharge.

Introduction

Burden of stroke has become a challenging public health problem worldwide, particularly among ageing population. Similar to other Southeast Asian country, Vietnam has experienced increasing aging population, accompanied by a growing incidence of stroke⁽¹⁾. The increasing incidence of stroke in Vietnam was reported as 161 per 100,000 people in 2010 and 222 per 100,000 population in 2019⁽²⁾. It was found that the total number of First-Ever Stroke (FES) cases in Vietnam would increase 1.85 fold from 83,546 in 2010 to 154,777 in 2030.

In 2016, the Ministry of Health issued a statement guiding the establishment of stroke units, stroke departments, and stroke centers according to hospital hierarchy, as well as according to the scale of receiving and treating patients with stroke at each hospital in Vietnam⁽³⁾. Few health professionals have stroke specialist training, and the quality of care varied between hospitals across settings.

In Can Tho City, the prevalence of stroke was at the highest among eight core regions of the nation and higher than the country prevalence⁽²⁾. According to the Health Department of Can Tho City, there was only one stroke unit among 9 district hospitals. Most patients with stroke have been treated at emergency department in the nearest district hospitals, which had no specialized stroke unit. In addition, care for stroke survivors has not been extended beyond hospital after discharge. As a result, a substantial number of these individuals suffered from moderate to severe impairments, including cognitive decline, limitations in self-care, and difficulties in social and communication functions. This situation highlighted the critical need for continuing care, which

referred to the delivery of healthcare services in a coordinated and uninterrupted manner, tailored to meet the ongoing medical needs of stroke patients⁽³⁾.

From literature review, the continuing care model is of vital importance for stroke management as its core concepts focuses on coordination, connection, and consistency⁽⁴⁾. A review by McKay (2009) underscored the mixed effects of continuing care and highlighted several potential moderators that might account for variation in the results of existing studies^(5,6,7). Based on the literature review, most studies have demonstrated positive outcomes for hospitalized older adults through continuing care^(8,9,10). A discharge planning program has been demonstrated as a clinical pathway for effective continuing care⁽¹¹⁾. In Vietnam, stroke management was mostly provided at provincial hospital and lack of continuing care from hospital to home for stroke patients. Thus, this study was conducted to develop a continuing care model that was appropriate with the Vietnamese context and to evaluate its effects on the outcome of stroke among older adults in Can Tho City.

Materials and Methods

Study design : A two-phase, sequential mixed-method design was conducted to develop and evaluate effects of the continuing care program for older adults with stroke living in Can Tho City, Vietnam. Phase 1 involved situation analysis and model development using a qualitative approach to explore the existing services, barriers, needs, and supports for the stroke patients and their family in Can Tho City. Phase 2 involved model implementation and evaluation in the selected hospitals. Effects of the proposed model were evaluated before and after the implementation.

Study Setting

Can Tho City was selected as the study setting because of its high prevalence and high mortality of stroke. There were nine district hospitals and nine district centers for preventive health at district level in Can Tho City. Among nine district hospitals, three district hospitals were randomly assigned as an intervention group (Hospital A) and a comparison group (Hospital B and C), respectively. Each selected hospital had similar function and protocol for stroke management. Participants were assigned based on their registered hospitals using a Cluster Randomized Controlled Trial.

Phase 1: Model development

This phase comprised literature review, situation analysis, and model development based on qualitative data from in-dept interview and focus group discussion. First, older adults with stroke and their families were interviewed to explore the existing services, barriers, needs, and supports for stroke survivor and family care giver at home. Then, key stakeholders, including 5 medical doctors, 3 physical therapists, 3 hospital directors, 3 nurse managers, and 3 representatives from Red cross association, charity group, and senior association were interviewed about their practices of after-hospital discharge to home/community. These results were used to generate interview guideline for a focus group discussion of older adults with stroke and their families.

Subsequently, a community participatory workshop was conducted to draft, verify, and finalize the continuing care model by community representatives who had stroke care experienced. With mutual collaborations between healthcare providers at Can Tho City, patients, and families, seven components of the continuing care model were identified as 1) continuing care management, 2) family caregiver's training, 3) family caregiver's support 4) resource allocation, 5) monitoring for stroke, 6) rehabilitation care and 7) family reintegration.

Phase 2: Model Implementation and evaluation

This phase involved a two group, 12-week, quasi-experimental study with baseline and post-intervention assessment. Participants were older adults, aged 60 and over who got stroke diagnosed, had a Glasgow score >8, and registered under the selected hospital in Can Tho City, Vietnam. The sample size was calculated using G*Power analysis software, with power set at 0.8 and an effect size of 0.8 from the prior study. A minimum of 25 for each group was required. We anticipated 30% attrition of participants, so 35 subjects were allotted to each group. Finally, a total of 55 older adults with stroke, who met inclusion criteria remained for data analysis. About 3 subjects died and 6 subjects loose contact.

At week 1, the older adults with stroke and their family caregivers were explained about the research purposes before recruitment and completed the consent form after 72-hour of stroke onset. The comparison group, participants received usual care provided by physicians and nurses at the inpatient department. The intervention group received an individual continuing care plan, developed by the nurse researcher applying Orem's Self-Care Deficit Nursing Theory. At week 2, family caregiver's training and family caregiver's support was conducted to ensure care for stroke patients to be well managed. Before discharge, an individual continuing care plan was reviewed by the nurse manager and linkage from hospital to commune health stations was established.

After discharge, resource allocation and community reintegration was arranged. During the third and 12th week, ADL and rehabilitation care for stroke patients were performed in a stroke patient's home. Family caregivers practiced post-stroke care with supporting information from stroke team in the hospital and supporting from local resources with their available capitals. Family care-givers received 2 telephone follow-up and 2 home visits from stroke team.

After signing the informed consent forms, the participants were interviewed by the researcher using a 4-part questionnaire as baseline data. The instrument for data collection were 1) the Glasgow Coma Scale (GCS), 2) Personal Information and Stroke Situation, 3) Quality of Life, and 4) Self-Care Agency.

The Glasgow Coma Scale was applied to recruit participants to predict the progression of a person's condition.¹² The total GCS scores represent levels of Traumatic Brain Injuries: Mild (14–15); Moderate (9–13) or Severe (3–8). This study recruited those who had more than 8 scores.

Quality of Life (QoL) was measured with SS-QoL-12¹³, which had 12 items with physical and psychosocial subscales. Physical subscale consisted of six items on self-care, mobility, upper extremity function, language, vision, work; and psychosocial subscale also consists of six items on thinking, family roles, social roles, personality, mood, energy.

Self-Care Agency was assessed by the Appraisal of Self Care Agency Scale Revised (ASASR), consisting of 24 Likert-type items, and each item has response options ranging from 1 (disagree) to 5 (agree). All items are summed, a higher score indicated a higher level of SCA.¹⁴

Materials for training caregivers, including a discharge plan, caregiver's handbook, basic tools, and devices, were developed and prepared by the research team. The 4-part handbook was like a picture book, consisting of key information, prevention of complications, physical rehabilitation, and reintegration. Basic tools for physical therapy were also used to strengthen patients' limbs. The devices included parallel bars and mirrors for walking practice, patients' beds that were modified as privacy beds, and wheelchairs.

All research instruments were initially evaluated by six experts including 2 Vietnamese doctors, 2 nurses specialized in stroke, a geriatric physician and an expert in primary health care management, for their content validity with the acceptable CVI of 0.8. Then, those instruments were translated into Vietnamese by bio language translator using back-translation. After checking for its similarities, the revised questionnaire was tried out with the 30 subjects who had similar characteristics with the subjects. It was found that the Cronbach's Alpha for quality of life and self-care agency were .714 and .913, respectively.

Data collection and data analysis

The researcher collected data before and after the interventions. Quantitative data were analyzed via SPSS version 20. The chi-square and Fisher's exact test were used to compare participant characteristics between groups. After testing data assumption: no normally distributed; then the Wilcoxon Signed-Rank Test, and Mann Whitney U test were used to compare the differences within-group and between-group participants. Statistical significance was set at equal to 5%.

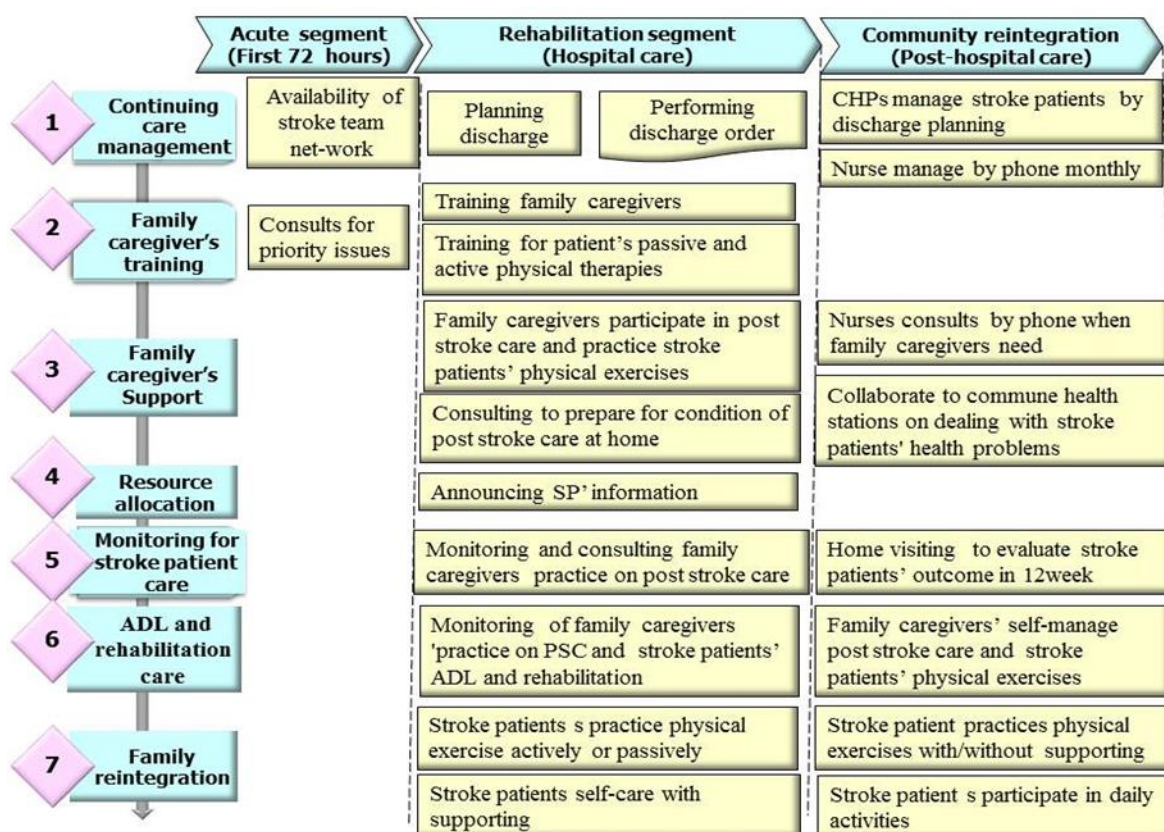


Figure 1 Continuing care model for older adults with stroke by segment of the continuum of care

Result

Phase 1: Model development

According to matrix analysis, seven themes were identified as the key components of the continuing care model for older adults with stroke. As shown in Figure 1, seven components of the continuum of care were 1) Continuing Care Management, 2) Family caregiver's training, 3) Family caregiver's support, 4) Resource allocation, 5) Monitoring for stroke patient care, 6) ADL and rehabilitation care, and 7) Family reintegration. Each components were described as follows.

1) Continuing Care Management

This component is the prerequisite for the model. It links the stroke team network's activities from hospitals to commune health stations, performed by stroke team members in hospital and kept on doing by assigned health staffs in commune health stations. To perform this component, a stroke team's capacity on post-stroke care was built.

2) Family caregiver's training

Family caregiver's training is mostly conducted in hospital stroke team. Family caregivers and/or stroke patients were trained to build their capacity to self- manage post-stroke care at home.

3) Family caregiver's support

Family caregiver's support, in term of information, is performed by stroke team, according to discharge planning. Family caregivers call stroke team when necessary to get consults on post-stroke care

4) Resource allocation

Stroke team selects stroke patient needing nonprofessional supports on post-stroke care to announce to resources allocation. They directly give support to stroke patient's families, based on stroke patient's circumstances and their available supporting resources.

5) Monitoring for stroke patient care

Monitoring for stroke patient care – stroke patients is performed by (1) phoning from stroke team in hospital monthly within 3 months and (2) updating from health personnel in commune health station to solve stroke patients' health problems, which are feedback from stroke patient's families

6) Activity of Daily Living (ADL) and rehabilitation care

Activity of Daily Living and rehabilitation care is mostly performed in stroke patient's home. Family caregivers practiced post-stroke care with supporting information from stroke team in the hospital and supporting from local resources with their available capitals.

7) Family reintegration

Stroke patient's family reintegration was performed by stroke patients with help from stroke team at hospital care and from family caregivers at care after discharge.

Phase 2: Model Implementation and evaluation: Effects of the continuing care model

Effects of the continuing care model were measured in terms of changes in self-care agency (SCA) and quality of life (QoL) before and after model implementation. As shown in Table 1, no significant differences in subject's characteristics and severity of stroke between the intervention and comparison groups (p -value >0.05). Most subjects were female (61.0%), and aged between 60–79 years old (61.5%). About 95% of subjects reported moderate Glasgow coma score at admission. However, there were differences of demographic characteristics in terms of marital status, education, and occupation (p -value >0.05).

Table 1 Characteristics of the subjects, classified by personal characteristics, severity of stroke and length of hospital stay

Characteristics	Com. Group (n=32)	Int. Group (n=23)	χ ²	p-value
	No (%)	No (%)		
Personal characteristics				
Gender			0.470	0.493
Male	11 (34.38)	10 (43.48)		
Female	21 (65.63)	13 (56.52)		
Age			0.591	0.744
60 - 69	11 (34.38)	6 (26.09)		
70 - 79	10 (31.25)	7 (30.43)		
80 and over	11 (34.38)	10 (43.48)		
Marital status			8.419	0.006*
Married	28 (87.50)	12 (52.17)		
Single/divorces/widow	4 (12.50)	11 (47.83)		
Education			12.358	<0.0001*
Less than elementary	29 (90.63)	11 (47.83)		
Elementary and over	3 (9.38)	12 (52.17)		
Occupation			25.811	<0.0001*
Business	25 (78.13)	2 (8.70)		
None or others	7 (21.88)	21 (91.30)		
Glasgow coma score when admission			1.373	0.426*
Moderate (9-13)	31 (100.00)	22 (95.65)		
Mild (14-15)	0 (0.00)	1 (4.35)		
Length of hospital stay			1.454	0.224
< 7 days	13 (41.94)	6 (26.09)		
7 days and over	18 (58.06)	17 (73.91)		

As shown in Table 2, Wilcoxon Signed-Rank test revealed that quality of life within the comparison group decreased after three months ($p<0.05$). In addition, self-care agency had no differences before and after intervention ($p=0.944$). Within the intervention group, self-care agency and quality of life showed improvement after the intervention ($p<0.05$).

Table 2 Effects of a continuing care program on stroke outcomes within intervention and comparison groups pre-post intervention

Effects of Continuing care	n	Wilcoxon Statistic	Estimated Median	P-Value
Comparison group				
SCA	32	19.0	0.00	0.944
Quality of Life	32	0.00	-6.00	$<0.001^b$
Intervention group				
SCA	23	33.00	-10	0.003^a
Quality of Life (QoL)	23	45.5	-7.00	0.009^a

a: Wilcoxon Signed-Rank Test is very significant at $p<0.05$

b: Wilcoxon Signed-Rank Test is significant at $p<0.001$

In order to examine the differences in mean rank of stroke outcomes between the two groups, Mann-Whitney U test showed that SCA and quality of life were different between the two groups before and after the intervention ($p<0.05$). The current study showed that the mean rank of Quality of Life after model implementation in a comparison group (24.78) was statically significant less than that in an intervention group (32.48) at $p=0.022$ as shown in Table 3.

Table 3 Comparison of stroke outcomes before and after the intervention between the intervention and comparison groups.

Effects of Continuing care	Comparison		Intervention	P-Value
	group		group	
	Median	Mean Rank	Mean Rank	
Before experiment				
SCA	72	32.55	21.67	0.002 ^a
Quality of Life	32	25.23	31.85	0.099
After experiment				
SCA	72	21.63	36.87	<0.001 ^b
Quality of Life	38	24.78	32.48	0.022 ^a

a. Mann-Whitney Test is statistically significant at $p < 0.05$

b. Mann-Whitney Test is very statistically significant at $p < 0.001$

Discussion

The findings indicate that the continuing care model yielded statistically significant improvements in Quality of Life (QoL) and Self-Care Agency (SCA) within the intervention group compared to the comparison group. The continuing care plans were executed through coordination with commune health stations, which managed patients based on individualized discharge plans. Methodological rigour was maintained through monthly home-based monitoring and telephonic evaluations, culminating in a comprehensive 12-week assessment of stroke outcomes.

The study findings demonstrated the effectiveness of this continuing care model, applying Orem's Self-Care Deficit Nursing Theory. Outcomes measures in the intervention group improved significantly and much greater than those in the comparison group. The continuing care model for older adults with stroke follows a trajectory path of the stroke patients from acute hospital treatment to rehabilitation and long-term management. It integrated both acute care, specialty care management, home-based care, and primary care to strengthen outcome monitoring, self-care, and recovery of stroke patients. This model added a component of "Supporting for the transition of care", which family caregivers were trained and supported by a nurse manager for better post-stroke care at home.

Stroke patients were also encouraged to participate in daily activities throughout the intervention⁽¹⁵⁾. Quality of life of stroke patients was an important health care outcome, which were influenced by several factors, such as individual demographic and health, family and community support, or health services⁽¹⁶⁾. The intervention group in the current study had better QOL, which may be a result from receiving a family caregiver's training, family caregiver's support, and outcome monitoring by a nurse researcher.

Self-care agency was significantly influenced by an individual's personal abilities, cognitive and developmental stage, physical and psychosocial readiness, and their perception of personal needs and desires related to self-care⁽¹⁷⁾. Similar to other studies, capacity building for family caregivers was very important and can help improve self-care agency of stroke patients at home. Following the intervention, SCA among participants in the experimental group showed a marked and statistically significant improvement. Stroke care workshop, skill training, and guideline of stroke care can improve self-care agency of the family caregivers and lead to stroke outcome. Thus, this continuing care model supported the significant role of family caregivers management and family caregiver's support for self-care agency improvement. In addition, functional outcomes and activities of daily living of the older adults should be continuously monitored to improve quality of life for those older adults with stroke.

This study demonstrated the benefits of Orem's Self-Care Deficit Nursing Theory, which focused on self-care deficits and how to promote well-being of the stroke patients. Roles of nurse manager are clearly recognized as a key player to manage and fill the gaps between needs and support for older stroke patients and their family caregivers at different point of trajectory.

Conclusion

This continuing care model for older adults with stroke demonstrates a comprehensive, integrated framework designed to strengthen recovery and management by prioritizing rehabilitation and self-care improvement. Thus, this continuing care model should be integrated into the standard service plans for stroke management at the community hospital level. In addition, capacity building should be strengthened for community nurses and multidisciplinary stroke team to better facilitate family support and outcomes management, particularly during the critical three-month post stroke period. Although the findings support that the 3-month continuing care model is effective in improving self-care agency and quality of life among older stroke patients, further study involving larger sample size is warranted to evaluate long-term effects across diverse regions of Vietnam.

Ethical Approval Statement

This study was approved by the Ethical Committee of the Faculty of Public Health, Mahidol University, Thailand (MUPH 2016-139, Protocol number 175/2559) and the Scientific Committee of Department for Science and Technology of Can Tho City, Vietnam. The study was conducted in accordance with the principles of the Declaration of Helsinki.

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Conflicts of Interest

All contributing authors declare no conflicts of interest.

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