ปัจจัยที่มีผลต่อภาวะสุขภาพและความผาสุกของผู้ป่วยโรคหลอดเลือดสมองที่ได้รับการดูแลอย่างต่อเนื่องจากโรงพยาบาลส่งเสริมสุขภาพตำบล

FACTORS INFLUENCING FUNCTIONAL HEALTH STATUS OF STROKE PERSONS RECEIVING CONTINUITY OF CARE AT TUMBON HEALTH PROMOTING HOSPITALS (THPHs)

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บทคัดย่อ

การวิจัยครั้งนี้เป็นการวิจัยแบบพรรณนาโดยการทดสอบโมเดลเชิงโครงสร้างมีวัตถุประสงค์เพื่อทดสอบอิทธิพลของปัจจัยที่มีผลต่อภาวะสุขภาพและความผาสุกของผู้ป่วยโรคหลอดเลือดสมองที่ได้รับการดูแลอย่างต่อเนื่องจากโรงพยาบาลส่งเสริมสุขภาพตำบล และตรวจสอบความสัมพันธ์ระหว่างตัวแปรโครงสร้าง (อายุของผู้ป่วยและผู้ดูแล) ตัวแปรกระบวนการ (การรับรู้ของผู้ป่วยต่อการได้รับการบริการพยาบาล การดูแลอย่างต่อเนื่อง และการประสานการดูแล) และตัวแปรผลลัพธ์ทางการดูแล (ภาวะสุขภาพและความผาสุก) โดยใช้ Nursing Role Effectiveness Model (NREM) ของ Irvine, Sidani, และ Hall (1998) เป็นกรอบแนวคิดการวิจัยในครั้งนี้ กลุ่มตัวอย่าง คือ ผู้ป่วยโรคหลอดเลือดสมองที่ได้รับการดูแลอย่างต่อเนื่องจากโรงพยาบาลส่งเสริมสุขภาพตำบลใน จ.เชียงใหม่ จำนวน 200 คน แบบสอบถาม จำนวน 3 ชุด ประกอบด้วย ข้อมูลส่วนบุคคล แบบประเมินการรับรู้ของผู้ป่วยโรคหลอดเลือดสมองต่อการได้รับการดูแลอย่างต่อเนื่องจากพยาบาลวิชาชีพและแบบประเมินสุขภาพและความผาสุก การวิเคราะห์ข้อมูลใช้สถิติเชิงบรรยายและการวิเคราะห์โมเดลสมการโครงสร้าง

ผลการวิจัยพบว่า อายุของผู้ป่วยและผู้ดูแลมีอิทธิพลโดยตรงต่อภาวะสุขภาพและความผาสุกของผู้ป่วยโรคหลอดเลือดสมองอย่างมีนัยสำคัญทางสถิติ โดยการรับรู้ของผู้ป่วยต่อการได้รับการบริการพยาบาล การได้รับการดูแลอย่างต่อเนื่อง และการประสานการดูแล เป็นตัวแปรคั่นกลางระหว่างอายุของผู้ป่วยและผู้ดูแลและภาวะสุขภาพและความผาสุกของผู้ป่วยโรคหลอดเลือดสมอง สุดท้ายผลรวมของความแปรปรวนของตัวแปรทั้งหมดต่อการพยากรณ์ภาวะสุขภาพและความผาสุกของผู้ป่วยโรคหลอดเลือดสมองที่ได้รับการดูแลอย่างต่อเนื่องจากโรงพยาบาลส่งเสริมสุขภาพตำบลเท่ากับร้อยละ 7 ผลการศึกษาครั้งนี้เสนอแนะว่า เพื่อส่งเสริมภาวะสุขภาพและความผาสุกของผู้ป่วยโรคหลอดเลือดสมอง พยาบาลวิชาชีพควรให้การดูแลอย่างต่อเนื่องที่บ้านโดยให้ความสำคัญกับอายุของผู้ป่วยและผู้ดูแล และการประสานความร่วมมือให้การดูแลแบบสหสาขาวิชาชีพของโรงพยาบาลส่งเสริมสุขภาพตำบล

คำสำคัญ: ภาวะสุขภาพและความผาสุก; โรคหลอดเลือดสมอง; การดูแลอย่างต่อเนื่อง

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Abstract

This descriptive model testing, cross-sectional study design, aimed to test the model depicting the pattern of relationships among structural variables (patients' age and caregiver) and process variables (patients' perception of quality of nursing care, patients' perception of continuity of care, and patients' perception of co-ordination of care) to influence the outcome variable (functional health status) of stroke persons receiving continuity of care at TumbonHealth Promoting Hospitals (THPHs). Nursing Role Effectiveness Model (NREM) was used as the conceptual framework of this study. Multi-stage random sampling was employed to obtain 200 stroke persons living in Chiangmai province. Data were collected by three questionnaires including 1) demographic information; 2) the modified of Chronic Care Competency Scale (CCCS); and 3) the Short Form-12 (SF-12 version 2) health survey. The AMOS software program was utilized to test the study model by using bootstrap method. The final model showed that functional health status influenced by patients' age through patients' perception of quality of nursing care and caregivers through patients' perception of continuityof care, co-ordination of care, and quality of nursing care. The model explained 7% (R2=.07) of the variance for functional health status. The findings suggested that to improve functional health status of stroke persons, professional nurses who worked at THPHs should provide quality of stroke care concerning stroke's age, their caregivers, and working as a collaborator and coordinating team with other health care providers.

Keywords: nursing outcomes; stroke; continuity of care; functional health status; Nursing Role Effectiveness Model

Introduction

Stroke was one of the top causes of mortality and Disability-Adjusted Life-Years (DALYs) in Thailand (Bureau of Non Communicable Disease, 2013; Bureau of Policy and Strategy, 2012). The number of stroke patients was increasing radically becoming one of the leading major health problems. In 2010, death rate of stroke patients was 31.4 per 100,000 population .The incidence of stroke admission in the hospital had been reported to be 354.54 per 100,000 populations in 2012 (Bureau of Non Communicable Disease, 2013).

The severe of physical or cognitive residual disability from pathophysiology of stroke required continuous care after discharge from hospitals (Hill, Twiddy, Hewison, & House, 2014).

After stroke attack, restoring and maintaining physical, cognitive, and emotional function would be important for increasing functional health status and quality of life (National Stroke Association, 2013). Stroke persons had difficulties to care for themselves at homes such as feeding, dressing, ormoving around (National Institute of Neurological Disorder and Stroke [NIH]). Some stroke persons had

speaking problem, or problems in their ability to thinkor reason, behavior changes, sleep patterns, memory and judgment, with relationship, or depression (Catangui & Slark, 2012; National Stroke Association, 2013). Therefore, stroke persons and their caregivers needed to learn how to manage their daily life to cope with post stroke conditions.

Since the rate of stroke patients who needed long-term care was constantly increasing, home care delivered from health care providers as well as professional nurses in community was important for supporting and helping them to improve their day-to-day activities and functional health status. Tumbon Health Promoting Hospital (THPH) had been one of the policies of Thailand's healthcare reform since 2009 to support a long term care by extending health care sectors to Tumbon hospitals. Health care service had shifted from inpatient admission to be home ward. Home ward was a proactivepolicy for chronically ill persons without critical conditions (Ministry of Public Health [MOPH], 2009). Home ward activity helped stroke persons to improve their function and live independently, enhance optimal level of well-being, and assist them to remain at homes avoiding admission (MOPH, 2009; Supawong, 2013).

Health care providersat Tumbon Health Promoting Hospitals [THPHs] had been prepared to serve to stroke persons and their families. The main activities tosolve actual problems and develop new skills focusing on safe and risk management at patients' homes (Supawong, 2013). Stroke care was complex and required multi-disciplinary care (National Stroke Association, 2013). However, professional nurses were the major group of health care providers working at THPHs. Professional nurses at THPHs worked both independently within scope of nursing practice and collaborated dependently with other health care providers. While collaborating and coordinating with other health care providers, nursing roles and services might be overlap with those care providers at THPHs (Chunthai, 2014; Srisuphan & Chunthai, 2013). As nursing service at THPHs was unique and the specialty of nursing care delivery (Srisuphan & Chunthai, 2013), little was known about nursing outcomes and its influenced factors. Thus, a future study of nursing outcomes needs to add or at least include the improvement of nursing care to stroke persons at homes. In addition, the study should be based on existing models that include; structure, process, and outcome so that most of relevant variables are captured. Therefore, the Nursing Role Effectiveness Model [NREM] as proposed by Irvine, Sidani, and Hall (1998) was used to guide this study.

The purposes of the study were to test the model depicting the pattern of relationships among structural variables (patients' age and caregiver) and process variables (patients' perception of quality of nursing care, patients' perception of continuity of care, and patients' perception of co-ordination of care) to influence the outcome variable (functional health status).

This study aimed to test the following hypotheses, which were drawn from the model depicted as below:

1. Patients' age has a direct negative effect on functional health status.

2. Caregiver has a direct positive effect on functional health status.

3. Patients' perception of quality of nursing care has a direct positive effect on functional health status.

4. Patients' perception of continuity of

care has a direct positive effect on functional health status.

5. Patients' perception of co-ordination of care has a direct positive effect on functional health status.

6. Patients' age and caregiver influence functional health status through patients' perception of quality of nursing care, patients' continuity of care, and patients' perception of co-ordination of care.

Conceptual Framework

The conceptual framework of this study was the Nursing Role Effectiveness Model [NREM]. NREM was developed by Irvine, Sidani, and Hall (1998) that base on Donabedian's theory quality of care. NREM specified relationships among structure, process, and outcome of care and emphasized on examination and explanation of the link between nursing processes and patient outcomes (Irvine et al., 1998).

InNREM, structure component was about setting or factors within health care system included nurse, organization, and patient characteristics. Nurse component like experience, knowledge, and skill level normally influenced quality of nursing care. Organization component focused on nurse staffing patterns measures which affected quality of nursing care. Patient component such as age, co-morbidities, and morbidity could affect quality health outcomes. Furthermore, the NREM was a conceptualization of nursing practice in terms of nurses' roles assumed in patient carethat had a direct effect on patient outcomes. Nurses' role had three subcomponents including nurses' independent role, nurses' dependent role, and nurses' interdependent role. Nurses' independent role was nursing role functions and responsibilities that nurses were held accountable. Nurses' independent role functions involved nursing role functions and responsibilities related to implementing medical orders and treatments. Nurses' interdependent role functions were the activities that nurses involved with other health care providers (Irvine et al., 1998). In addition to outcome of care, outcome component consisted of the measurable results of the end of nursing care. It involved nursing-sensitive patient outcomes which were outcomes that sensitive to nursing care provided (Doran, 2011; Irvine et al., 1998).

As mentioned above, the proposition of NREM represented the multidimensional nature of nursing care that could be used to guide and investigate into nursing care's influence over patient outcomes. Thus, NREM was the most suitable framework for this studyin selecting the appropriate variables to evaluate the model of nursing outcome of stroke persons receiving continuity of care at THPHs. Structure variables included patients' age and caregiver. Process of care component consisted of patients' perception of quality of nursing care, patients' perception of continuity of care, and patients' perception of co-ordination of care. These three processes of care variables derived from nursing's roles, independent and interdependent roles, at THPHs. Outcome component was functional health status of stroke persons as shown in Figure 1.

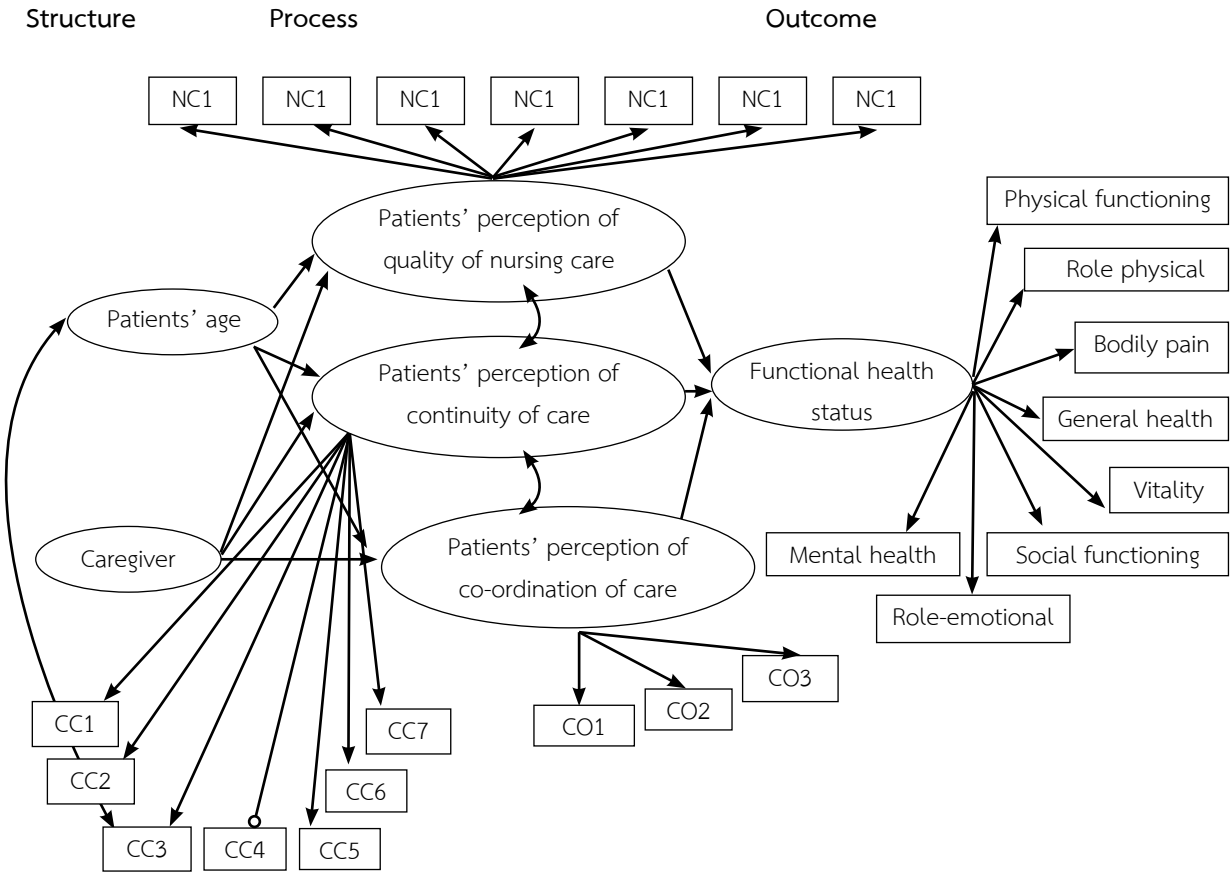

Figure 1 The hypothesized model of nursing outcomes of stroke persons receiving continuity of care at THPHs

Definition of terms

Patients' age referred to age in years of stroke persons.

Caregiver referred to a person who provided direct care for stroke person at home.

Patients' perception of quality of nursing care referred to stroke persons' opinion on how they satisfied with nursing care provided at home to their physical, emotional, social, spiritual needs, and expectations. It was measured by the modified of basic care domain of Chronic Care Competency Scale [CCCS] (Ruksaphram, Isaramalai, & Bunyasopun, 2014).

Patients' perception of continuity of care referred to stroke persons' opinion and experience of care they had received continuously and coherently over time whether it was consistent to the patients' needs and personal circumstances. It was measured by the modified of health risk management and symptom control domain of Chronic Care Competency Scale [CCCS] (Ruksaphram et al., 2014).

Patients' perception of co-ordination of carereferred to stroke persons' opinion on how nursing activities were coordinated within and among professional nurse, patient, family, and/or

community including referral system and network. It was measured by the modified of community resources management domain of Chronic Care Competency Scale [CCCS] (Ruksaphram et al., 2014).

Functional health status referred to stroke persons' ability to maintain and increase individual capacity to achieve functional and independent personal care, mobility, and social activities such as hobbies, recreation time, or work . It was measured by the Short Form-12 (SF-12 version 2) health survey (Ware, Kosinski, & Keller, 1996). The SF-12 included eight health domains: physical functioning, role participation with physical health problems (Role physical), bodily pain, general health, vitality, social functioning, role participation with emotional health problems (Role-emotional), and mental health.

Research methodology

Design and setting

A descriptive model-testing, cross-sectional study design, was used to test thehypothesized model. This study took place at 169 THPHs out of 244 THPHs which having professional nurses in Chiangmai province (Bureau of Policy and Strategy, 2012) in Chiangmai province at the northern part of Thailand.

Population and sample

The target population was stroke persons who had been receiving nursing services at home in Chiangmai Province. Sample of 200 stroke persons were drawn from the target population by using a multi-stage random sampling technique. The inclusion criteria were as following: 1) being diagnosed as stroke at least 6 months; 2) receiving home service by professional nurses from THPHs at least twice per 3 months; 3) having sufficient mental capacity to complete the questionnaires screening by professional nurse of each THPH; and 4) being able to communicate and understand Thai language.

Sampling

Stroke persons were recruited by multi-stage sampling technique as follows: 1) the researcher sought 244 THPHs that had professional nurses working in Chiangmai province; 2) a simple random sampling technique was employed to select 200 THPHs out of 244 THPHs. The technique was to sort out only odd number THPHs from the THPHs' list and repeated the technique until we had obtained 200 THPHS; and 3) then, one stroke person from each of the 200 THPHs was randomly selected. If the first pick did not meet the inclusion criteria, the following number would be drawn until met the inclusion criteria and reached 200 stroke persons. Therefore, the sample of this study was 200 stroke persons.

Instruments for data collection

1. Demographic questionnaire, developed by the researcher, included patients' personal data such as gender, age, education, occupation, caregiver, history of stroke disease and care, health and risk factor, and experience of complication incidences.

2. Patients' perception of quality of nursing care, patients' perception of continuity of care, and patients' perception of co-ordination of care were measured by the modified of Chronic Care Competency Scale [CCCS]. The CCCS was developed by Ruksaphram, Isaramalai, and Bunyasopun (2014) to measure a chronic care competency scale for primary care team. The modified version of CCCS included 17 items, score ranging from 0 (never) - 3 (usually), with a total score of 51.Patients' perception

of quality of nursing care was measured by the modified of basic care domain from the CCCS questionnaire including 7 items (item 8 - item 14), with a total score of 21. The possible score of patients' perception of quality of nursing care ranged from 5 to 13.50, with higher scores indicating greater perceived of quality of nursing care. Patients' perception of continuity of care was measured by the modified of health risk management and symptom control domain from the CCCS, including 7 items (item 1 - item 7) with a total score of 21. The total sum of the scores of patients' perception of continuity of care ranged from 5 to 14, with higher scores indicating greater perceived of continuity of care. Patients' perception of co-ordination of care was measured by the modified community resources management domain from the CCCS questionnaire including 3 items (item 15 - item 17), with a total score of 9. The possible scores of patients' perception of co-ordination of care ranged from 3 to 6, with higher scores indicating greater perceived of co-ordination of care.

3. Functional health status was measured by the Short Form-12 (SF-12 version 2) health survey which was a shorter form of SF-36. The SF-12 (version 2) was a tool to measure functional health and well-being from patients' point of viewby characterizing physical and mental-emotional (Ware et al., 1996). It contained 12 items from the original SF-36, across all 8 dimensions including physical functioning, role participation with physical health problems (role physical), bodily pain, general health, vitality, social functioning, role participation with emotional health problems (role-emotional), and mental health. The SF-12 (version 2) hadfive-level response choices. The possible scores ranged from 14 to 40, with a high score indicating a high level of functional health status and a low score indicating a low level of functional health status of stroke persons.

Quality of measurements

Validity

The modified of CCCS was validated by 5 experts including one physician and four nursing instructors. The Content Validity Index [CVI] of the modified of CCCS was .83 which was accepted for content validity (Lynn, 1986; Polit, Beck, & Owen, 2007). The SF-12 (Version 2) was acceptable content validity as a standard instrument.

Reliability

The reliability of the modified- CCCS was test by administered to 30 stroke persons who had been receiving nursing service at homes from professional nurses who work at THPHs. The Cronbach's alpha of the modified-CCCS was .80. In the actual study, the Cronbach's alpha of the modified-CCCS and the Short Form-12 (SF-12 version 2) health survey were .94 and .82, respectively, indicating both instruments were acceptable (Lynn, 1986).

Ethical considerations

Institutional Review Board (IRB) was approved by Faculty of Nursing, Burapha University. After obtaining the permission to conduct the study, the researcher submitted it to Chiangmai Provincial Public Health Office. After obtaining the permission, stroke persons were recruited to participate in the study. The researcher informed participants of study's objectives, risks, benefits, voluntary participation, and confidentiality. Stroke persons were also assured that the study would not affect the quality of their care or their access to future nursing care at THPHs. Participants had the right to refuse participation in this study. They were asked to sign consent forms after receiving the given information.

All information acquired from this study would be kept confidential. The identification of participants would disclose and no one would have access to this data except the researcher. The questionnaires of stroke persons were assigned code numbers for confidentiality purpose. The reports were presented in an aggregated data without mentioning of personal or institutional identities. Data would be used only for this research study. The data would be erased after completion of the study.

Data collection procedures

The researcher collected data in this phase using the following procedures. The researcher gave the research assistant a comprehensive training before collecting data. After receiving IRB approval, then the researcher contacted the director of Chiangmai Provincial Public Health Office in Chiangmai province to ask for a permission to collect data. After receiving permission, the researcher contacted the director of each THPH in Chiangmai province. Next, the researcher visited THPHs and informed the objectives of the study to health care team at each THPH. Then, the researcher recruited stroke persons who had been receiving nursing services at homes from professional nurses of THPHs and met the inclusion criteria.

The researcher and the research assistant would inform each of the willing stroke participants of the objectives of this study as well as risks, benefits, voluntary participation, and confidentiality. Later, each stroke participant would be asked to sign consent forms. Then, the researcher and the research assistant asked stroke persons to fill out the questionnaires and helped them complete the questionnaires in case they could not write.

Data analysis

1. A statistical computer program was used to analyze demographic data and health risk factors by using descriptive statistics and perform data management and analysis.

2. Structural Equation Modeling [SEM], AMOS software application, was used to test the relationships of the study variables in the model and examine the magnitude of causal effects, both direct and indirect, on functional health status. The analysis of AMOS program was tested based on statistical significance level throughout the analysis at $p < .05$.

Results

Demographic characteristics of stroke persons and health risk factors were as follows. The majority of the participants were female and married. Most of them were in their 51 to 60 with a mean of 59.24 of years age group (*SD* = 8.47). Their formal education were secondary school level with a mean of 3.36 years of education (*SD* = 1.42). They were unemployed and living with off spring, grandchildren, and spouse with a mean 3.06 of caregiver (*SD* = .33).

Their family's income was between 20,001-30,000 baht per month which was a sufficient perception. Most of the strokes did not smoke nor drink alcohol. Stroke persons had comorbidities including hypertension and diabetes mellitus and have been diagnosed with stroke for 1-5 years. The majority of them were disability and weak muscle on the right side.

Model testing and results

In testing the model using AMOS program, bootstrap method was performed in order to solve the problem of violating multivariate normality assumption and having small sample size (Byrne, 2013).

Model fit indices

In SEM, the overall model fit-indices were used to measure goodness-of-fit to see whether the model can reproduce the observed covariance matrix among the indicator items (Blunch, 2013; Hair, Black,Babin, & Anderson,2010).

The hypothesized model

Hypothesized model as in Figure 1 was entered into SEM analysis. The results showed that CMIN score 1575.53 (p = .00, df = 29), CMIN/ df was 5.51, PGFI was .48, NFI was .67, CFI was .70, and RMSEA was .15, indicating the hypothesized model did not fit the data as shown in Table 1. Thirty-seven percent of total variance was account for the hypothesized model.

The modified model

Additionally, the hypothesized model was modified based on Chi-squares and modification indices. Trimming model was performed in deleting the paths with levels of significance higher than .05 (Blunch, 2013; Shumacker & Lomax, 2010). Finally, the modified model tested until the model accomplished significant goodness-of-fit coefficients and specified parameters. The overall model fit indexes of the modified model denoted that CMIN score 268.66 (p< .05, df = 136), CMIN/ df was 1.98, GFI was .90, NFI was .94, CFI was .97, and RMSEA was .07. The modified model fitted the data exceptionally well. Therefore, GFI (.90), NFI (.94), CFI (.97), and RMSEA (.07) were acceptable as shown in Table 1.

Table 1 Statistics of model fit index of the hypothesized model (n = 200)

Model fit criterion	Acceptable Threshold Levels	Hypothesized model	Modified model
CMIN	p> .05	χ^2 = 1575.53	χ^2 = 268.66
		p = .00 (df = 286)	p< .05 (df = 136)
CMIN/ df	< 2	5.51	1.98
GFI	.90-1.00	.64	.90
NFI	.90-1.00	.67	.94
CFI	.90-1.00	.70	.97
RMSEA	05 to .08 = fair	.15	.07

Note CMIN = Minimum Chi-square, GFI = Goodness-of-Fit Index, NFI = Norm-Fit Indices, CFI = Comparative Fit Index, RMSEA = Root-Mean-Square Error of Approximation

The final model

The final model showed that seven percent of the total variance was explained the modified model. Functional health status influenced by patients' age through patients' perception of quality of nursing care and caregiver through patients' perception of continuityof care, co-ordination of care, and quality of nursing care.

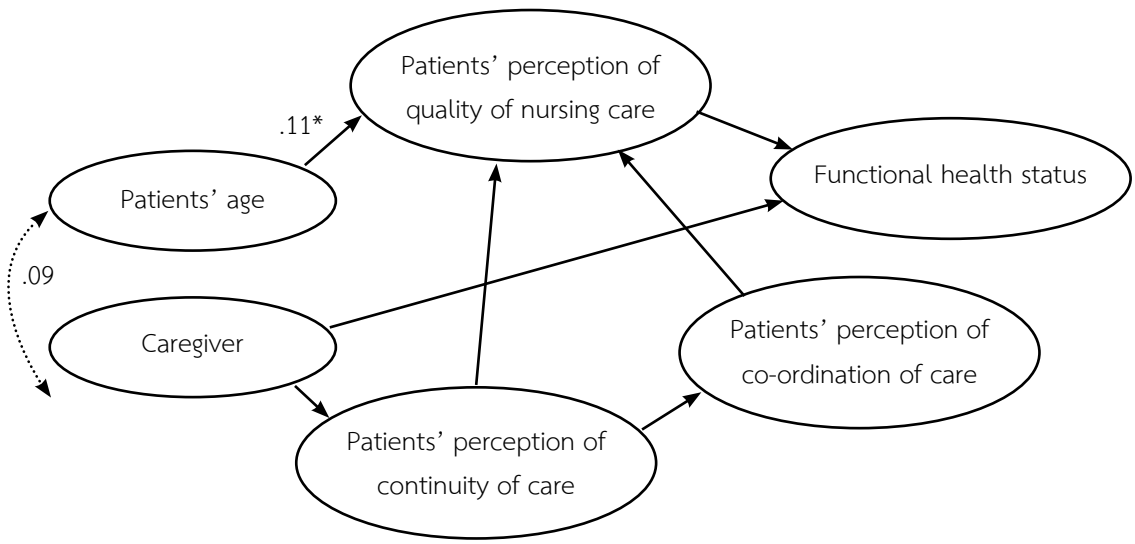

Figure 2 The final model of functional health status of stroke persons receiving continuity of care at THPHs
Note * $p < .05$, ** $p < .01$

Discussion: the research findings of this study discussed for each research hypothesis.

Hypothesis one: Patients' age has a direct negative effect on functional health status.

This hypothesis was not supported because the finding showed a non-significant correlationfor the estimated parameter describing the relationship between patients' age and functional health status. It indicated that stroke's age did not affect functional health status. This finding was inconsistent with the prior study which found that stroke's age was associated with functional health status (Chumbler et al., 2013). There was a study found that stroke's age was a major determinant of functional status outcome (Hope, Seghier, Leff, & Price, 2013).

Hypothesis two: Caregiver has a direct positive effect on functional health status.

This hypothesis was supported by the finding an estimated parameter indicating correlation between caregiver and functional health status. Caregiver showed a significant direct positive effect on functional health status. This finding indicated that stroke persons who had been taking care by caregivers had higher level of functional health status. It was consistent with the prior studies which found that caregiver was an important factor

determining functional health status after stroke. Stroke persons who had lower level of functional abilities might be improved over time, caregiver had to provide appropriate care for stroke persons and enhance their functional abilities (Dutrieux et al., 2016; Tomasevic-Todorovic et al., 2015). Moreover, Mierlo et al. (2014) found that a caregiver was an environment factor that had influence on stroke persons' functional status.

Hypothesis three: Patients' perception of quality of nursing care has a direct positive effect on functional health status.

This hypothesis was supported by the finding a parameter estimation indicating correlation between patients' perception of quality of nursing care and functional health status.This correlation showed a significant direct positive effect on functional health status. The finding indicated that stroke persons perceived higher level of quality of nursing care had higher level of functional health status. There was a study found that patients' perception of quality of nursing care had influenced on functional health status. Patient who had better functional health status was associated with perceived quality of nursing care (Alrubaiee and Alkaa'idaa, 2011).

Hypothesis four: Patients' perception of continuity of care has a direct positive effect on functional health status.

This hypothesis was not supported by the finding based on the parameter estimate indicating a lack of correlation between patients' perception of continuity of care and functional health status. The finding indicated that stroke persons perceived continuity of care did not affect functional health status. This finding was inconsistent with the previous study that found patients who perceived higher level of continuity of care had better functional health status (Wagle et al., 2011). Furthermore, Tomasevic-Todorovic et al. (2015) found that providing continuity of care after stroke improved well-being and functional status of stroke persons.

Hypothesis five: Patients' perception of co-ordination of care has a direct positive effect on functional health status.

This hypothesis was not supported by the findings based on the estimated parameter indicating a lack of correlation between patients' perception of co-ordination of care and functional health status. The finding implied that stroke persons' perceived co-ordination of care did not affect functional health status. The finding was inconsistent with prior study that found providing co-ordination of care affected on quality of patient care and better functional status outcome (Carayon et al., 2012). Queralt-Tomas et al. (2015) found that providing coordination of care for stroke persons across stroke recovery improved their functional health status.

Hypothesis six: Patients' age and caregiver influence functional health status through patients' perception of quality of nursing care, patients' continuity of care, and patients' perception of co-ordination of care.

This hypothesis was discussed as a mediator of the relationships between structure variables (patients' age and caregiver) and outcome variable (functional health status).

The findings demonstrated that functional health status was a nursing outcome of stroke persons receiving continuity of care at THPHs. The findings found that caregiver had both direct and

indirect influence over functional health status through stroke persons' perception of continuity of care, co-ordination of care, and quality of nursing care. Additionally, the findings showed that stroke's age indirectly affected functional health status through stroke persons' perception of quality of nursing care. The findings indicated that stroke persons who had been taking care by caregivers perceived greater continuity, coordination, and quality of nursing care and had higher level of functional health status. Old stroke persons needed caregivers'care and assistance with their everyday lives.The involvement of family members as caregivers helped stroke persons improving their functional health (Cramm, Strating, & Nieboer, 2012). Dutrieux et al. (2016) studied discharged stroke survivors after stroke found that the presence of spouses was an important factor determining their fates after discharged home from a hospital in the older stroke group. Further, they also found that 71% of younger stroke persons had spouses, whereas only 40% of the older stroke persons had spouses. Hussain et al. (2014) found that the caregiver was an important factor for stroke persons.

From research findings, a set of predictors of nursing outcomes including stroke's age, caregiver, and stroke persons' perception of continuity of care, co-ordination of care, and quality of nursing care had influenced over functional health status. This result was supported by Fens et al. (2015) who found that caregivers affected stroke outcomes. Most of older stroke persons needed a long-term care which could be complex because of many functions were affected and needed assistance from caregivers and multidisciplinary care team. Likewise, Cramm et al. (2014) found that enhancing co-ordination of care between community nurses and other primary care professionals had improved the delivery of care to persons who had suffered from stroke. Alleret al. (2013) also found that elderly patients with better health status perceived higher level of continuity of care and were satisfied with care provided.

In order to generalize the study's results and findings, there was a limitation needed to be taken into account. The shortcomings were a limitation in recruiting participants and collecting data selected in only one province as well as having a small sample size which limited the ability of generalization. The future research should be replicated based on recruiting a larger sample size and conducting at a nationwide level.

Recommendation from the study

The findings suggest to develop nursing intervention by integrating a set of predictors, especially caregiver,and also evaluating the nursing programs.

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