สมรรถนะของพยาบาลในระบบทางด่วนโรคหลอดเลือดสมอง ตามการรับรู้ของพยาบาลฉุกเฉินที่โรงพยาบาลแห่งชาติ ประเทศกัมพูชา*

Nurse competency in stroke fast track perceived by emergency nurses at national hospitals in Cambodia

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บทคัดย่อ

การวิจัยเชิงพรรณนาครั้งนี้มีวัตถุประสงค์เพื่อประเมินสมรรถนะของพยาบาลในระบบทางด่วนโรคหลอดเลือดสมอง คัดเลือกพยาบาลที่มีคุณสมบัติตามเกณฑ์ที่กำหนดจากแผนกฉุกเฉิน 3 แห่งของโรงพยาบาลแห่งชาติ ประเทศกัมพูชา จำนวน 83 คน ตรวจสอบความตรงตามเนื้อหาของแบบสอบถามสมรรถนะพยาบาลฉุกเฉินในระบบทางด่วนโรคหลอดเลือดสมองได้ค่า CVI = 1.0 ทดสอบความน่าเชื่อถือของเครื่องมือโดยสัมประสิทธิ์อัลฟาของครอนบาค ได้ค่า 0.94 วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา ผลการศึกษาพบว่า สมรรถนะโดยรวมของพยาบาลฉุกเฉินอยู่ในระดับปานกลาง (E.$\bar{x}$= 3.01, E.SD = 0.58) สมรรถนะรายด้านที่อยู่ในระดับปานกลาง คือ ด้านการจัดการ (E.$\bar{x}$= 3.26, E.SD = 0.70) และด้านการสื่อสารและประสานงาน (E.$\bar{x}$= 3.43, E.SD = 0.62) สมรรถนะรายด้านที่อยู่ในระดับต่ำ คือ ด้านปฏิบัติการพยาบาล (E.$\bar{x}$= 2.91, E.SD = 0.71) ด้านการพัฒนาวิชาชีพ (E.$\bar{x}$= 2.36, E.SD = 0.74) และด้านการคิดวิเคราะห์ (E.$\bar{x}$= 2.93, E.SD = 0.76) ข้อเสนอแนะสำหรับผู้นำนโยบายการดูแลสุขภาพควรส่งเสริมให้พยาบาลมีการศึกษาต่อเนื่องและจัดอบรมโปรแกรมการดูแลผู้ป่วยโรคหลอดเลือดสมอง และควรมีการนำใช้แนวปฏิบัติการดูแลในระบบทางด่วนโรคหลอดเลือดสมองในประเทศกัมพูชา

คำสำคัญ: สมรรถนะของพยาบาล ระบบทางด่วนโรคหลอดเลือดสมอง โรคหลอดเลือดสมอง

Abstract

This descriptive research aimed to evaluate emergency nurse competency in stroke fast track. Eighty-three eligible emergency nurses were recruited from three emergency departments (EDs) of national hospitals in Cambodia. Content validity index of the Emergency Nurse Competency in Stroke Fast Track questionnaire was 1.00 and Cronbach's alpha reliability was 0.94. The study findings showed that overall competency level of emergency nurses was moderate (E.$\bar{x}$=3.01, E.SD=0.58). The emergency nurses had moderate competency level in management (E.$\bar{x}$=3.26, E.SD=0.70) and communication and coordination

(E.$\bar{x}$=3.43, E.SD=0.62). They had low level in professional practice (E.$\bar{x}$=2.91, E.SD=0.71), professional development (E.$\bar{x}$=2.36, E.SD=0.74), and critical thinking (E.$\bar{x}$=2.93, E.SD=0.76). It is recommended that health care policy makers should promote continuing education and training in stroke and guidelines for stroke fast track should be implemented in Cambodia.

keywords: nurse competency, stroke fast track, cerebrovascular disease

Introduction

Stroke or cerebrovascular disease is one of the most significant illnesses caused by the interruption of the blood supply to the brain and blood vessel rupture or blockage by a clot.[1] In 2010, stroke was the 2nd leading cause of death worldwide and was the 3rd leading cause of death in Cambodia.[2,3] The prevalence of stroke is 27,381/100,000 people in Cambodia, 2010.[2] There is global attempt to increase intravenous recombinant tissue plasminogen activator (rt-PA) receiving rate in acute ischemic stroke in order to prevent long term effect of stroke. A study reported that ischemic stroke patients who received rt-PA treatment had the better clinical outcomes, lower complications, and lower mortality.[4]

Stroke fast track is used to rapidly recognized signs and symptoms of stroke.[5] Onset of stroke symptoms is within 4.5 hours, emergency nurses (ENs) need immediately put the patient in stroke fast track in order to process for rt-PA receiving.[6] The European Cooperative Acute Stroke Study found that 52.4% of 821 acute ischemic stroke patients who received rt-PA recovered and returned to an independent activities of daily living (28%).[7] Therefore, ENs play a vital role in stroke fast track to improve door to needle time and achieve neurological recovery. They are expected to deliberate professional competency to hand over nursing care based on professional standards.[8]

Competency of nurses associates with health and safety of all patients, in case lack of competency can be result in medical errors and poor outcome for the patients.[9] ENs require knowledge and professional skills for clinical practice in stroke fast track. It includes knowledge about stroke disease, assessment, intervention and management for acute ischemic stroke.[10] Management includes situational control and coordination with health care team in order to rapidly detect acute ischemic stroke, confirm diagnosis, and promptly start rt-PA treatment.[6] ENs require capacity to communicate and coordinate with stroke patients and family, and health care team to achieve care goal and effective stroke fast track.[11] Professional development requires active enrollment in professional training and career improvement.[12] Critical thinking includes appraisal, analysis, synthesis, and judgment to find solutions in dealing with patient's complex situations which need decision making.[12]

Research evaluated ENs' competencies in stroke fast track is sparse and nurse competency in stroke fast track is hindered. A study revealed that nurses lacked of knowledge about standard of door to needle time and how to manage during rt-PA administration such as monitoring neurological signs and blood pressure control.[13] Another study reported that nurses addressed unfamiliarity and difficulty in assessment of stroke patients using National Institutes

of Health Stroke Scale (NIHSS).[14] An additional study found that ENs were illiterate about stroke guideline and rt-PA administration.[15] These findings reflect that ENs had deficient competency in stroke fast track. In Cambodia, guideline for stroke fast track is not yet implemented. Therefore, this study was conducted to establish emergency nurse competency in stroke fast track.

Objective of Study

To evaluate nurse competency in stroke fast track perceived by ENs at national hospitals in Cambodia.

Material and methods

The study settings were three essential national hospitals in Phnom Penh, Cambodia. These hospitals were tertiary hospitals which provide health care services for clients across the country and international.[16] As the number of population (N=83) was limited and calculated sample size was very close to the population. Therefore, the researcher recruited all the 83 ENs. The inclusion criteria included at least one year of working either part-time or full-time in the setting and willingness to participate in the study.

Research instruments

The research instrument included demographic form and the emergency nurse competency in stroke fast track questionnaire developed by the researcher. The tool consisted of 35 items including 5 domains base on Fan et al.[12]: professional practice (9 items), management (7 items), communication and coordination (8 items), professional development (6 items), and

critical thinking (5 items). The Likert-type scale ranges from excellent (5) to need considerable improvement (1). The total score ranges from 35 to 175. Nurse competency levels were categorized by using estimated mean (E.$\bar{x}$) and Bloom's cut-off point of 60%-80%.[17] Overall competency level and domain competency levels were categorized into 3 levels: low level (E.$\bar{x}$<3), moderate level (E.$\bar{x}$= 3-4), and high level (E.$\bar{x}$>4). Content validity was examined by 3 experts with CVI of 1.00. Cronbach's α reliability was 0.94. The tool was translated from English version to Khmer version by two Cambodian bilinguals and then the researcher compared two versions to find conceptual equivalent.[18]

Data collection

Research project was approved by Khon Kaen University Ethics Committee for Human Research and Ministry of Health of Cambodia. The nurses completed the questionnaire by themselves and returned it in the questionnaire box to protect data loss. Data collection took approximately 10-15 minutes.

Data analysis

Descriptive statistics was used for data analysis. Item scores were calculated using mean and standard deviation (SD). The total items of each domain were different. Therefore, the levels of nurse competency in stroke fast track were analyzed using estimated mean (E.$\bar{x}$), and estimated SD (E.SD).

Results

The study finding showed that 53% of ENs were female. The majority of the participants were

full-time nurses (66.27%) and all were Cambodian. The average age was 30.41 years old ($\bar{x}$= 30.41, SD = 7.43), ranged from 21-58 years old. Most of them were married (61.4%) and earned diploma (71.1%). Most of them worked in the EDs and average year of working experience in ED was 4 years, ranged from 1 to 40 years (Median = 4.0), 71.35% worked less than 5 years. Most of them had never trained in stroke fast track training (88%). The average income per month was $250 which is considered as lower middle-income.

Table 1 presents that the level of overall competency of ENs was moderate. Competency levels of management and communication and coordination were moderate. Competency levels of professional practice, professional development, and critical thinking were low.

Table 1 Levels of overall competency and each domain of competency of ENs in stroke fast track (n = 83)

Competency	Mean ($\bar{x}$)	SD	Estimated mean (E.$\bar{x}$)	Estimated SD (E.SD)	Competency level
– Overall competency	105.28	20.18	3.01	0.58	Moderate
– Professional practice	26.20	6.42	2.91	0.71	Low
– Management	22.82	4.87	3.26	0.70	Moderate
– Communication and coordination	27.43	4.94	3.43	0.62	Moderate
– Professional development	14.17	4.44	2.36	0.74	Low
– Critical thinking	14.65	3.81	2.93	0.76	Low

As shown in Table 2, the ENs rated professional practice competency as low. Three highest score rated were items "rapidly triage", "recognize risk factors", and "understand stroke treatment". Three lowest score rated were items "recognize FAST", "recognize inclusion and exclusion criteria", and "know how to administer rt-PA". They rated management competency as moderate. Three highest score rated were items "understand assessing and managing blood glucose levels", "can demonstrate how to run ECG 12 leads", and "be capable in acute stroke management". Three lowest score rated were items "be able to manage to get the stroke patient for CT scan done", "be capable to manage the stroke patient's condition change", and "be able to monitor VS and neurological signs"

They rated communication and coordination competency as moderate. Three highest score rated were items "notify general physician when CT scan is done", "move patient to ICU or stroke unit", and "if suspect stroke fast track, notify general physician". Three lowest score rated were items "notify neurologist for rt-PA administration", "perform informed consent form for rt-PA receiving", "collaborate with pharmacist for rt-PA". They rated professional development competency as low. Two highest score rated were items "find out solution from expert opinions" and "use best practices to implement in stroke fast track". Two lowest score rated were items "participate in stroke fast track training" and "enroll in annual conference in stroke fast track". The ENs rated critical thinking

as low. Two highest score rated were items "be able to differentiate" and "can decide how to monitor vital signs and neurological signs". Two lowest score rated were items "be able to set priority" and "know how to solve problems during rt-PA administering".

Table 2 Domain competency of emergency nurses in stroke fast track (n = 83)

Domain competency	Mean	SD
Professional practice (Low competency level)		
Rapidly triage	3.27	0.88
Recognize risk factors	3.25	0.96
Understand stroke treatment	3.16	0.93
Do physical examination	3.07	0.96
Act fast	3.01	0.86
Aware "Time is brain"	2.92	0.91
Recognize FAST	2.65	1.09
Recognize inclusion and exclusion criteria	2.46	0.90
Know how to administer rt-PA	2.42	0.87
Management (Moderate competency level)		
Assess and manage blood glucose level	3.53	0.80
Run ECG 12 leads	3.49	0.92
Manage acute stroke	3.45	0.91
Manage potential hypertension	3.34	0.85
Manage to get the stroke patient for CT scan done	3.27	0.94
Manage the stroke patient's condition change	3.01	0.93
Monitor VS and neurological signs	2.74	0.99
Communication and coordination (Moderate competency level)		
Notify general physician when CT scan is done	4.02	0.66
Move patient to ICU or stroke unit	3.71	0.89
If suspect stroke fast track, notify general physician	3.70	0.88
Coordinate with radiologist and send the patient for CT scan	3.60	0.80
Communicate with the stroke patient	3.39	3.39
Notify neurologist for rt-PA administration	3.14	1.15
Perform informed consent form for rt-PA receiving	3.05	1.07
Collaborate with pharmacist for rt-PA	2.82	1.04
Professional development (Low competency level)		
Find out solution from expert opinions	3.18	1.13
Use best practices to implement in stroke fast track	2.95	0.99
Enroll in emergency training	2.40	1.07
Enroll in hospital training in stroke	2.07	1.00
Participate in stroke fast track training	1.90	0.98
Enroll in annual conference in stroke fast track	1.66	0.77
Critical thinking (Low competency level)		
Be able to differentiate	3.25	0.93
Can decide how to monitor VS and neurological signs	3.05	0.92
Be able to decide how to take medical history	2.96	0.82
Be able to set priority	2.78	0.91
Know how to solve problems during rt-PA administering	2.60	1.04

Discussions

The discussions were made according to the study findings. Overall competency and other domains which were moderate competency level such as management and communication and coordination can be explained as below.

One of possible explanations is that level of education might facilitate to their competency. Most of the ENs hold diploma nursing in which three years school attending. Diploma nursing program focuses on clinical practice more than in-depth into clinical appraisal and conceptualization. Hence, this can contribute to their knowledge, skills, and appraisal to provide care for acute ischemic stroke patients. Nightingale College proposed that the nurses who earned bachelor nursing were better understanding patient conditions than those who earned diploma nursing.[19] A study unfolded that the nurses who hold diploma degree had lower competence than those who hold bachelor degree.[20] Another reason is years of working experience. Nursing working experience is established to improve nurse competency in clinical practice.[21] ENs had average 4 years of working experience and 71.35% of them worked less than 5 years. A study found that the more years of working experience the higher nurse competency.[22] Another study unfolded that competency level of the nurses who had more than 5 years working experience was higher than those who had fewer.[23] Morning brief activity might be one of advantage supports overall and domains competency. One of the hospitals holds morning brief every day before shift change, either by head nurse or general physician who share their knowledge. Especially, if there is an ischemic stroke patient presented with complicated conditions, they will pick up the case to discuss and find out solutions for intervention. Agency for Healthcare Research and Quality mentioned that morning brief promotes effective communication which result in building capacity and improve competency.[24]

Low competency level which were professional practice, professional development, and critical thinking can be explained as below.

One possible explanation is that experience in stroke training can support their competency level. The majority of them did not have experience in stroke training such as emergency training, hospital training, stroke fast track training, or any conferences related to stroke training. The study data reflected that ENs were lack of stroke training. Most of nurse competency items which were perceived as high were the items favored basic skills such as rapidly triage, assess and manage blood glucose levels, and notify general physician when CT scan is done. The items which were perceived as low were the items considered as specific skills such as recognize FAST, know how to administer rt-PA, and participate in stroke fast track training. Another possible explanation is having guideline or protocol of stroke fast track. Having guideline or protocol promote work standard and quality of care.[25] Improving nursing care can also promote nurse competency. A study revealed that after evidence-based practice was implemented to improve nursing care of acute stroke patient, all the ENs improved their competency.[26] There was no stroke fast track guideline in EDs to guide nurses for assessment or intervention for ischemic stroke patients. A study reported that there was no acute ischemic stroke guideline for ischemic stroke management.[27] Medical equipment shortage can be

explained that all the EDs still lack of equipment to facilitate duty such as lack of VS monitoring machine, oxygen pipeline, and ventilator machine. A study pointed that medical equipment inadequacy influenced on the nurses' work and that led to low quality of nursing care and service delivery.[28] Busy working environment might be a possible explanation. Many disease types of patients visit ED. ENs need to apply various areas of knowledge, skills, and ability to provide care for such patients. They may have troubles applying particular knowledge and skills on ischemic stroke patients. As a result, their professional practice competency may be deficit. Two studies reported that busy environment affected negatively on emergency nurse competency in caring acute stroke patient in EDs.[14,15] Another reason is working overload, working 12 hours per shift can be overloaded and exhausted. Sometimes it can impact both physical and mental health such as depression. It might influence critical thinking and inability to find solutions or management for stroke fast track. A study reported that the nurses who worked overtime had both physical and mental health problems such as exhausted, fatigue, depression, and insomnia.[29]

Conclusion

In conclusion, the ENs had overall moderate competency level in stroke fast track. They had moderate competency level in management and communication and coordination. They had low competency level in professional practice, professional development, and critical thinking.

Implications

Based on the findings, nurse leaders or hospital administrators should focus on competency improvement by providing continuing education and stroke training programs. It is important to implement the guideline in stroke fast track in EDs in order to improve knowledge, skills, and ability of ENs in stroke fast track which can lead to competency development. Health policy makers should promote ENs to continue education in order to increase ability and capacity which lead to career and competency improvement. Further studies should focus on factors influence ENs competency in stroke fast track and development of guideline for ENs in stroke fast track.

Acknowledgements

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