

ASSESSMENT OF EMERGENCY NURSES' KNOWLEDGE ABOUT EVIDENCE BASED NURSING PRACTICE FOR ISCHEMIC STROKE PATIENTS

Sarah R. A. Mohammed¹, Mohamed A. A. Sultan², Karima F.S. Elshamy³
and Hanaa H.E Ahmed¹

¹Critical Care and Emergency Nursing, Faculty of Nursing, Mansoura University.

²Anaesthesia and Intensive Care, Faculty of Medicine, Mansoura University.

³Medical Surgical Nursing, Faculty of Nursing, Mansoura University.

Abstract:

Ischemic stroke is a medical emergency, which represents a sudden and catastrophic event, carrying a significant risk of death. Emergency nurses are in the forefront of providing interventions to preserve ischemic cerebral tissue and prevent further neurological deficits. The up to date knowledge and awareness of evidence based management of stroke can significantly reduce the morbidity and mortality from stroke. So it is important to assess emergency nurse's knowledge about evidence-based nursing practice of ischemic stroke patients as this knowledge has a direct effect on nurse's practice affecting the general care given for patients. Identifying insufficient knowledge may foster an opportunity for the continuing education of emergency department nurses. **Aim of the study:** The aim of this study was to assess emergency nurse's knowledge about evidence-based nursing practice of ischemic stroke patients. **Materials and methods:** This study was carried out in Emergency Department, Emergency Hospital, Mansoura University. Subjects of the study comprised 50 nurse in the emergency department who have experience from two years and more and involved in providing care for ischemic stroke patients in the above mentioned setting were included in the study. **Results:** The results of the study showed that more than three quarters of emergency nurses (78%) had unsatisfactory knowledge about evidence-based nursing practice of ischemic stroke patients. Additionally, there were statistically significant relation between nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients and age, level of education and job title, years of experience and attending training programs, conferences or workshops about nursing care of ischemic stroke patients. **Conclusion:** it is important to provide in-service training programs for emergency nurses about care of ischemic stroke patients in order to optimize patient outcomes

Key word: Evidence Based Practice, Emergency Nursing, Ischemic Stroke Care

Introduction:

A stroke is the brain equivalent of a heart attack which can be a sudden and catastrophic event. Blood must flow to and through the brain to function. If its flow is obstructed, by a blood clot moving to the brain, or by narrowing or bursting of blood vessels, the brain loses its energy supply, causing damage to tissues leading to occurrence of stroke. The longer blood flow to the brain is interrupted the greater

chance of permanent brain damage. Within minutes, brain cells begin to die. ^(1,2,3)

According to WHO, 15 million people worldwide are diagnosed with stroke annually, about 4.5 million patient die from stroke every year and five million remain permanently disabled placing a burden on family and community. Stroke accounts for 9% of all deaths worldwide

and is a major cause of severe disability^(4, 5).

The two main types of stroke are ischemic and hemorrhagic, accounting for approximately 87% and 13%, respectively⁽⁶⁾. Strokes caused by blocked blood vessels to the brain, or ischemic strokes, lead to cerebral infarction, whereas hemorrhagic strokes caused by ruptured vessels in and around the brain lead to ICH and SAH. Ischemic strokes are commonly caused by atherosclerotic disease of extracranial or intracranial vessels that circulate blood to the brain^(7, 8).

The overall goal of care of ischemic stroke patients is to minimize acute brain injury and maximize patient recovery⁽⁹⁾. The time-sensitive nature of ischemic stroke care is central to establish successful stroke care systems, hence the commonly used term "Time is Brain" necessitates that emergency nurses must have a complete understanding of strokes including risk factors, types of stroke, clinical manifestations, medical interventions, nursing interventions, and long term care^(10, 11).

In order to improve the emergency nursing management of ischemic stroke, guidelines and decision support tools for use in emergency nursing must be practical and have high levels of clinical utility for maximum uptake in a busy clinical environment^(12, 13). The ischemic stroke guideline acts as a guide for triage decision making, initial assessment, ongoing nursing care and specialist referrals⁽¹⁴⁾. Although elements of the ischemic stroke guideline may seem reflective of usual emergency nursing practice, the ischemic stroke guideline was aimed to assist all levels of staff to provide optimal care for patients with acute stroke⁽¹⁵⁾.

The current climate of prolonged time spent in the emergency department means that many aspects of stroke management are now the responsibility of emergency

nurses⁽¹⁶⁾. Emergency nurses can improve patients' recovery rates by recognizing the signs of stroke, initiating appropriate and timely treatment, and referring patient for direct admission to stroke units⁽¹⁷⁾. Evidence-based guideline can improve ischemic stroke care in the emergency department, decrease clinical risk associated with acute ischemic stroke and decrease stroke related mortality by prevention of complications in the first 24 to 48 hours after ischemic stroke attack^(18, 19).

The up to date knowledge and awareness of evidence based management of ischemic stroke can significantly reduce the morbidity and mortality from stroke⁽²⁰⁾. Evidence-based nursing education can strengthen the critical thinking and develop creativity over traditional nursing process to improve skills and knowledge between emergency nurses⁽²¹⁾.

Aim of the study:

The aim of this study was to assess emergency nurse's knowledge about evidence-based nursing practice of ischemic stroke patients .

Subjects and Methods

Design:

Descriptive cross sectional research design was used in this study.

Setting:

This study was carried out in Emergency Department , Emergency Hospital , Mansoura University.

Subjects:

All nurses (50) working in Emergency Department of the Emergency Hospital at Mansoura University, who had an experience two years and more, involved in providing direct care for ischemic stroke patients, accepted to participate voluntarily and gave a consent were included in the study.

Tools:

One tool was used in the study for data collection: "Nurses' Knowledge about Evidence-Based Nursing Practice of

Ischemic Stroke Patients". It was constructed and developed by the researcher to assess emergency nurse's knowledge about evidence-based nursing practice of ischemic stroke patients. This tool consists of three main parts and included 40 multiple choice questions in addition to socio-demographic data of the studied nurses.

Part I: "Nurses' general knowledge about ischemic stroke" this part involved 16 questions for example definition, incidence, risk factors, causes of stroke, pathophysiology, clinical manifestation, assessment and diagnostic studies.

Part II: " Nurses' knowledge about emergency nursing care of ischemic stroke patients" this part involved 21 questions for example priority of nursing care for ischemic stroke patient in emergency, types of intravenous fluid for patients with ischemic stroke, level of head of the bed for patients with ischemic stroke and nursing care during tissue plasminogen activator administration.

Part III: " Nurses' knowledge about complications of ischemic stroke" this part involved 3 questions for example acute complications ,sub-acute complications and the most serious complications of tissue plasminogen activator .

Nurses' socio-demographic data

This part included nurses' age , educational level, job title, years of experience in the emergency department and attending training programs conferences, or workshops about nursing care of ischemic stroke patients.

Scoring system: The total score was 40 marks each true answer was given (1)

mark and false or unknown answer was given (0). Total scoring was classified into four categories as follows:

Total Grades	Score	Level of knowledge
24 and less than 26	60 %- < 65%	Unsatisfactory knowledge
26 and less than 28	65 %- < 70%	Satisfactory knowledge
≥28	≥70%	Very satisfactory knowledge

Methods:

- Approval to conduct the study was obtained from the Research Ethical Committee of the Faculty of Nursing, Mansoura University.
- Tool was constructed and developed by the researcher after reviewing recent relevant literatures (American Stroke Association Council 2009⁽²²⁾; National Stroke Foundation, 2010⁽²³⁾; Traynelis L,2012⁽²⁴⁾; American Stroke Association Council 2013. ⁽¹⁶⁾); Face and content validity of the tool were ascertained by a panel of experts in medical-surgical nursing, critical care nursing, and emergency department who revised the tool for clarity, relevance, applicability, comprehensiveness, and ease for implementation. According to their opinions, minor modifications were applied.
- The tool was translated into simple Arabic language by the researcher before data collection then it was translated back into English to check the accuracy of translation.
- The overall reliability of the tool was tested using (α) Cronbach test on a sample of 20 subjects and found to be 0.87% .
- Permission to conduct the study was obtained from the hospital administrative authority after explanation of the aim and nature of the study.
- A pilot study was carried out on 5 nurses (nearly10% of the total sample) who

- were excluded from the study. The aim of the pilot study was to test the clarity and the applicability of the tool. Necessary modifications were carried out based on the findings.
- At the initial interview, the researchers introduced themselves to nurses; each potential nurse was informed about the nature, purpose, and benefits of the study. The researcher ensured that their participation is voluntary. Confidentiality and anonymity of the subjects were assured through coding of all data. The researcher assured that the data collected and information would be used only for the purpose of the study.
 - The nurses took about 30 - 45 minutes to answer the questionnaire completely. The participants were asked to complete the survey without resources or help from colleagues.

Ethical consideration

The ethical research considerations in this study were as follows

- The researcher explained the aim and nature of the study to nurses before data collection.
- The researcher assured privacy and confidentiality for nurses included in the study. Participants and their hospitals were not given the questionnaire results or scores.
- Nurses were allowed to withdraw from the study at any time without any responsibility.
- Informed consents were obtained from the nurses before the beginning of the study. Completion of the survey was considered consent to participate

Statistical analysis

Data entry and analysis was performed using the Statistical Package for Social Sciences version 16 (SPSS). The qualitative data were presented as numbers and percentage. The chi-square (χ^2) was used to find the correlation between variables of qualitative data.

Levels of significance:

For all above mentioned statistical tests done, the threshold of significance is fixed at 5% level (p-value). The results was considered:

- Significant when the probability of error is less than 5% ($p < 0.05$).
- Non-significant when the probability of error is more than 5% ($p > 0.05$).

Results:

regarding assessment of emergency nurses' knowledge about evidence-based nursing practice of ischemic stroke patients. Firstly, data yielded from nurses' socio demographic data were studied then the study presents data related to emergency nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients were presented. Finally study of relation between nurses' knowledge about evidence-based nursing practice of ischemic stroke patients and their socio-demographic data

Table 1: reveals that the total number of nurses participated in the study was 50 nurse. It is clear that nearly two thirds of nurses (60%) were in the age of 31-40 years, while small percentage (8%) of them were 41 years old and more.

Concerning their level of education, the majority of nurses (90%) were graduated from technical nursing school while the minority of them 10% graduated from faculty of nursing .

Regarding their job title the table shows that more than three quarters of nurses (90%) were technical nurses compared with 6% were specialist nurses.

In relation to their years of experience it was found that about three quarters (74%) of the nurses had more than 11 years of experience and 8% of them had from 6 to 10 years of experience.

Moreover the table shows that most of them (92%) didn't receive any training programs conferences, or workshops regarding care of ischemic stroke patients.

Table (2): illustrates that more than two thirds (68%) of nurses had unsatisfactory knowledge regarding general knowledge about ischemic comparing to only 4% of them had very satisfactory knowledge.

On the other hand almost all of nurses (92%) had unsatisfactory knowledge about emergency nursing care of ischemic stroke patients.

Regarding complications of ischemic stroke, the table shows that about three quarters of nurses (72%) had unsatisfactory knowledge comparing to (4%) had very satisfactory knowledge.

In relation to total knowledge about evidence-based nursing practice of ischemic stroke patients, the table reveals that more than three quarters of nurses (78%) of nurses had unsatisfactory knowledge in comparing to 2% of them had very satisfactory knowledge.

Table (3): reveals that the mean scores was more higher pertaining to total knowledge about evidence-based nursing practice of ischemic stroke patients than emergency nursing care of ischemic stroke patients and general knowledge about ischemic stroke (12.8 ± 7.3 & 6.04 ± 3.04 & 5.8 ± 4 respectively). While the least mean score was for complications of ischemic stroke (1.02 ± 0.8).

Table (4) : shows that there were statistically significant relations between total mean knowledge of nurses about evidence-based nursing practice of ischemic stroke patients and all their socio- demographic data ($\chi^2 = 7.5$ & 1.0 & 4.7 & 1.3 & 2.8 at $p < 0.05$).

Table (5) : Shows that there was statistically significant relation between scores of nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients and age ($r = 0.3$ at $p = 0.047$).

Table (1): Percentage distribution of socio-demographic data of the nurses (n=50)

Demographic data	n=50	%
Age		
20-30	16	32%
31-40	30	60%
≥41	4	8%
Mean ± SD=33.7±6.3		
Level of education		
Bachelor of nursing	5	10%
Technical Nursing Institute	0	0%
Technical Nursing School	45	90%
Job title		
Head nurse	2	4%
Specialist nurse	3	6%
Technical nurse	45	90%
Years of experience in emergency		
2-5 years	9	18%
6-10 years	4	8%
≥ 11 years	37	74%
Attending training programs conferences, or workshops about nursing care of ischemic stroke patients		
No	46	92%
Yes	4	8%

Table (2): Nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients

Item	No	%
General knowledge about ischemic stroke		
Un satisfactory knowledge	34	68%
Satisfactory knowledge	14	28%
Very satisfactory knowledge	2	4%
Emergency nursing care of ischemic stroke patients		
Un satisfactory knowledge	46	92%
Satisfactory knowledge	3	6%
Very satisfactory knowledge	1	2%
Complications of ischemic stroke		
Un satisfactory knowledge	36	72%
Satisfactory knowledge	12	24%
Very satisfactory knowledge	2	4%
Total level of knowledge		
Un satisfactory knowledge	39	78%
Satisfactory knowledge	10	20%
Very satisfactory knowledge	1	2%

Table (3): Mean scores of nurses' knowledge about evidence-based nursing practice of ischemic stroke patients

Item	Mean \pm SD	Range
General knowledge about ischemic stroke	5.8 \pm 4	1-14
Emergency nursing care of ischemic stroke patients	6.04 \pm 3.04	1-13
Complications of ischemic stroke	1.02 \pm 0.8	0-3
Total knowledge score	12.8 \pm 7.3	3-28

Table (4): Relation between total mean knowledge of nurses about evidence-based nursing practice of ischemic stroke patients and their socio-demographic data

Item	Mean	±SD	Range	χ^2	P
Age					
20-30	11.8	±6.9	3-27	7.5	0.002**
31-40	11.7	±6.4	4-28		
≥40	24.8	±3.9	19-27		
Level of education					
Bachelor of nursing	11.2	±8.7	7-27	1.0	0.04*
Technical Nursing Institute	0	0	0		
Technical Nursing School	10.2	±6.9	3-28		
Job title					
Head nurse	27	±0	27	4.7	0.013**
Specialist nurse	10.5	±5.3	5-15		
Technical nurse	12.4	±6.9	3-28		
Years of experience in emergency					
2-5 years	9.3	±5.2	3-17	1.3	0.03*
6-10 years	10.8	±7.6	9-26		
≥11 years	8.4	±7.5	4-28		
Attending training programs conferences, or workshops about nursing care of ischemic stroke patients					
No	9.5	±7.2	3-28	2.8	0.013**
yes	11.8	±8.4	9-28		

P value is considered significant if ≤ 0.05

Table (5): Correlation between scores of nurses' overall knowledge about evidence-based nursing practice of ischemic stroke patients and age

Item	r	p
Total Knowledge score	0.3	0.047*

Discussion

Stroke is a medical emergency, which represents a sudden and catastrophic event, carrying a significant risk of death. Appropriate initial management through recognizing and responding immediately

to the warning signs of ischemic stroke within three hours of the onset of symptoms can reduce disability and mortality resulting from stroke⁽²⁵⁾. Emergency nurses play a critical role in reducing the disability that may result from ischemic stroke. Recognition of ischemic stroke signs and symptoms, initiation of appropriate response efforts, and provision of interventions and education for preventing subsequent stroke are all the responsibilities of emergency nurses. Educating the emergency nurses to deal with ischemic stroke as a brain attack is crucial^(26, 27).

As the continuum of ischemic stroke care begins in the emergency department, detailed recommendations for evidence-based emergency nursing care should be included about all multidisciplinary guidelines for the management of acute ischemic stroke^(28,29).

The discussion of the findings covered three main parts: the first part concerned with socio-demographic data of the emergency nurses under the study, the second part concerned with the emergency nurses' knowledge about evidence-based nursing practice of ischemic stroke patients, and the third part discussed the relation between the emergency nurses' knowledge about evidence-based nursing practice of ischemic stroke patients and their demographic data.

Part I: Socio-demographic data of the emergency nurses under the study

Regarding demographic characteristics of the studied nurses, the result of the current study revealed that all the study nurses were females,

this result was consistent with **Ali (2010)**⁽³⁰⁾ and **Ibrahim (2012)**⁽³¹⁾, who mentioned that the majority of study nurses were females. Moreover, this result was in accordance with **Victor et al,(2012)**⁽³²⁾ who reported in his study about knowledge and behavior of nurses toward caring of elderly stroke patients that about two thirds of the study nurses were females. All of these results may suggest that there is a gender bias toward the nursing profession.

In relation to age of the studied nurses, the results of the current study revealed that about two thirds of nurses was between the age of 31 to 40 years this may suggest that nurses may have more experience and knowledge that can be reflected on their practice. This was not in agreement with **Ibrahim (2012)**⁽³¹⁾ who found that slightly less than three quarters

of nurses were between the age of 20-30 years old. In addition **Victor et al,(2012)**⁽³²⁾ reported that about two thirds of nurses were between 20-30 years old.

Concerning the level of education of the studied nurses, the result of the current study showed that the majority of nurses (90%) were technical nurses while small percentage of them were specialist nurses. This may have a notable effect on the quality of care delivered to patients in emergency because specialist nurses compared with technical nurses have good knowledge , professional nursing skills and can provide high quality nursing care for patients. The result of the current study was congruent with **Ali (2010)**⁽³⁰⁾ who stated that the majority of nurses were recruited as technical nurses in the majority of the clinical nursing positions in hospitals. However these results was not on the same line with **Harper (2007)**⁽³³⁾ who reported that more than two thirds of nurses in his study was specialist nurses.

As regard to years of experience in emergency, the result of the present study showed that about three quarters of nurses had more than 11 years of experience. Clinically expert nurses are distinguished from their colleagues by their ability to make critical decisions efficiently while evaluating the whole nature of a critical situation. Experience develops when nurses integrate both theoretical and practical knowledge in actual clinical situations which consequently influences nurses' clinical judgment and quality of care. For example, in a study that used the patient care unit as the level of analysis, researchers found that a higher proportion of nurses with ≥ 5 years of experience was associated with fewer medication errors and lower patient fall rates (**Blegen 2001**)⁽³⁴⁾. But **Aiken (2003)**⁽³⁵⁾ assessed the influence of the mean years of experience among nurses on surgical patient mortality in 168 hospitals, he found that the mean

experience level was not a significant predictor of mortality.

As for training courses of the studied nurses, the result of the present study showed that small percentage (8%) of nurses received training courses regarding care of ischemic stroke patients. This may be due to lack of in-service training programs which is very important in improving quality of care, achieve better therapeutic outcome and prevent ischemic stroke complications. This result was in harmony with **Harper (2007)**⁽³³⁾, who found that only 15% of emergency nurses reported that they had participated in continuing education on evidence-based ischemic stroke care. In contrast to **Tyranils (2012)**⁽²⁴⁾ who found that about three quarters of emergency nurses reported that they had completed stroke specific continuing education program.

The lack of training courses may be due to a manager's decision to fund training that may be determined by cost or number of staff in every shift because staff shortages made it difficult to undertake training. Also duration of training, skill deficit and knowledge acquisition required by medical and nursing staff factors that contribute to lack of training courses. Stroke education was seen as pivotal to improve patient care and job performance. In addition the nursing staff spend the most time with the patient and must have excellent knowledge about evidence-based nursing practice of ischemic stroke patients to provide competent care and work collaboratively with the physician and other team members.

Part II: Emergency nurses' knowledge about evidence-based nursing practice of ischemic stroke patients

Because of the narrow therapeutic windows for treatment of acute ischemic stroke, timely emergency department evaluation and diagnosis of ischemic stroke are paramount. Hospitals should

create efficient pathways based on evidence based practice to be able to manage stroke patients in the emergency department and inpatient settings effectively. This should include the ability to receive, identify, evaluate, treat, and/or refer patients with suspected stroke, as well as to obtain access to stroke expertise when necessary for diagnostic or treatment purposes^(13,16,18).

From the view of **McKenna, (2007)**⁽³⁶⁾ emphasized that nurses who had knowledge based on scientific evidence, have been able to make better decisions, higher quality care, shorten patient's hospital stay, reduce costs, and bring better cost effectiveness for the patient. Similarly **Oh et al., (2010)**⁽³⁷⁾ reported that the use of evidence-based education on nursing students resulted in high performance and good results. On the same line **Carlson (2010)**⁽³⁸⁾ reported that the use of evidence-based care for reducing anxiety in cancer patients beginning chemotherapy is highly effective

In this respect **Kenari (2014)**⁽³⁹⁾, in his study about Effect of Evidence Based Method Clinical Education on Patients Care Quality and Their Satisfaction; mentioned that the use of evidence based practice leads to improved critical thinking, independent clinical decisions and ultimately improve the quality of nursing care. Also, Kenari added that the major obstacles in using evidence-based approach in his study are lack of practical nursing research, nurses lack the skills to access and evaluate research evidence, lack of institutional support and time.

Concerning the nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients, the findings of the current study indicated that that more than three quarters of nurses had un satisfactory knowledge about evidence-based nursing practice of ischemic stroke patients. This lack of knowledge can be reflected on nurses' performance. In this

behave **Ali (2010)**⁽³⁰⁾ reported that nurses knowledge about stroke care was below average grade in half of nurses. This may be due to few training courses that were conducted in hospitals, also all of nurses may not be included, shortage of high qualified nurses and lack of close supervision. The same result was found in the study of **Ibrahim (2012)**⁽³²⁾ who mentioned that about two thirds of nurses at intensive care unit had unsatisfactory knowledge about care of cerebrovascular stroke.

Meanwhile, **Harper (2007)**⁽³⁶⁾ reported that mean test scores of ENs was 53% on multiple choice questions designed to assess knowledge of evidence-based ischemic stroke care. Similarly, **Westneat (2011)**⁽⁴⁰⁾ reported that mean test scores of emergency nurses was 58% on a scale of 0 to 100%. Westneat referred this to reading ischemic stroke care literature or attending continuous stroke-specific education programs. Furthermore this result was not on the same line with **victor et.al, (2012)**⁽³³⁾ who reported that less than one third (29%) of nurses had poor knowledge, he found also that near one third (32%) had excellent knowledge, he also added that the remaining 39% had a moderate level of knowledge about care of elderly stroke patient

Part III: Relation between the emergency nurses' knowledge about evidence-based nursing practice of ischemic stroke patients and their demographic data.

As regard to nurses age and job title, the current study finding revealed that there was a significant relation between nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients and both age and job title , which emphasizes the fact that the more increase in nurses age the more knowledge they had, also that means that the senior nurses, of higher age category don't take

administrative role only but also they are not away from the practical field. In contrast to **Taha (2007)**⁽⁴¹⁾ and **Ibrahim (2012)**⁽³²⁾ who found that there was no statistically significant relation between nurses' performance (knowledge and practice) and age. On the same view of **Taha (2007)**⁽⁴¹⁾ and **Ibrahim (2012)**⁽³²⁾, **victor et al, (2012)**⁽³³⁾ concluded that there was no statistical relation between nurses knowledge and their age, gender, educational qualification

The results of the current study showed that there was statistically significant relation between nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients and nurses educational level. The nurses who graduated from faculty of nursing take administrative role in emergency department beside their role in case management. In this respect, **Salah (1998)**⁽⁴²⁾ reported that the nurses' level of education had a great impact on their knowledge and skills regarding patient care. This result was not in harmony with **Alahmadi (2009)**⁽⁴³⁾ who showed that level of education is negatively correlated with job performance, indicating that the higher level of education, the lower job performance of nurses. Additionally this result was not supported by **Ibrahim (2012)**⁽³²⁾ who stated that there was no statistically significant relation between nurses' knowledge regarding care of patient with cerebrovascular stroke and their educational level.

The results of the present study revealed that there was statistically significant relation between nurses' overall knowledge about evidence-based nursing practice of ischemic stroke patients and their years of experience in ED. This result was supported by **Harper (2007)**⁽³⁶⁾ who documented that there was a significant relation between number of years worked in emergency nursing as a specialist nurse and test scores, nurses with more years

experience in emergency nursing had higher test scores. In another study of five hospitals, **Bobay et.al,(2009)** ⁽⁴⁴⁾ found that years of experience were associated with expertise. In addition **Matthew (2011)** ⁽⁴⁵⁾ reported that work experience influences nurses' performance. But this result was not in accordance with **Jones (2010)** ⁽⁴⁶⁾, who demonstrated that there was no statistically significant relation between nurses' knowledge regarding care of patient with cerebrovascular stroke and their years of experience. Moreover **Traynelis (2012)** ⁽²⁴⁾ reported that there was no statistically significant relation between ENs' knowledge of evidence-based ischemic stroke care and their years of experience.

Finally, the result of present study showed that there was statistically significant relation between nurses' total knowledge about evidence-based nursing practice of ischemic stroke patients and attending workshops about nursing care of ischemic stroke patient. This results was in the same line with **Harper (2007)** and **Westneat (2011)** ⁽⁴⁰⁾ who reported that emergency nurses who attend training programs about evidence-based ischemic stroke care had a significantly higher mean test score than did respondents who did not attend training programs about evidence-based ischemic stroke care.

Although the generalizability of the survey findings is limited, the knowledge deficit among the emergency nurses regarding evidence-based ischemic stroke care is of concern. Nurse educators and hospital administrations must continue to identify learning needs and provide opportunities for evidence-based continuing education to close the research practice gap. Nurses are accountable for life-long learning and must take every advantage of educational offerings. Only when research evidence is utilized in practice this can provide high quality care for patients. Nurses should be provided

with evidence-based education on ischemic stroke care and opportunities to participate in continuing education to ensure a positive clinical outcome.

Conclusion

The role of emergency nurses in stroke care is very vital and it is important because emergency nurses deliver evidence-based stroke care in order to optimize patient outcomes. From the current study it can be concluded that more than three quarters of emergency nurses had unsatisfactory knowledge about evidence-based nursing practice of ischemic stroke patients.

Recommendations

Based on the results of the present study the the following can be recommended

- Educational program is needed to increase nurses' knowledge about evidence-based nursing practice of ischemic stroke patients.
- A simplified and comprehensive booklet including guidelines about emergency nursing care for patients with ischemic stroke is needed.
- Examination of curriculum and course content related to EBP among the faculty of nursing approved programs.
- Nursing curriculum must step away from simply how research is conducted, but rather, it must reflect the use of such research conclusions in practice while enhancing EBP through curriculum integration, not course isolation.
- In-service training programs about evidence-based practice of ischemic stroke patients for emergency nurses should be initiated.
- Hospital libraries should also play an active role in providing materials that can help nurses to read about evidence-based practice of ischemic stroke patients.

References:

1. **Acker JE. (2007).** Implementation strategies for emergency medical services within stroke systems of care. A policy statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council. *Stroke*, 116, 3097–3115.
2. **Alberts MJ, Latchaw RE, Jagoda A, Wechsler LR, Crocco T, George MG, Walker MD. (2011).** Revised and updated recommendations for the establishment of primary stroke centers: a summary statement from the brain attack coalition. *Stroke* (00392499), 42(9), 2651–2665.
3. **Aoki J & Uchino K. (2011).** Treatment of risk factors to prevent stroke. *Neurotherapeutics*, 8(3), 463–474.
4. **Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Borden WB, Turner MB. (2013).** Heart disease and stroke statistics—2013 update: a report from the American Heart Association. *Circulation*, 127(1), e6–e245.
5. **Judd SE, Kleindorfer DO, McClure LA, Rhodes JD, Howard G, Cushman M, Howard VJ. (2013).** Self-report of stroke, transient ischemic attack, or stroke symptoms and risk of future stroke in the reasons for geographic and racial differences in stroke (REGARDS) study. 44(1), 55–60. strokeaha.112.675033.
6. **Sidney S, Rosamond WD, Howard VJ, Luepker RV. (2013).** The "heart disease and stroke statistics—2013 update" and the need for a national cardiovascular surveillance system. *Circulation*, 127(1), 21–23.
7. **Cha MJ, Kim YD, Nam HS, Kim J, Lee DH, Heo JH. (2012).** Stroke mechanism in patients with non-valvular atrial fibrillation according to the CHADS2 and CHA2DS2-VASc scores. *European Journal of Neurology*, 19(3), 473–79.
8. **Cameron V. (2013).** Best practices for stroke patient and family education in the acute care setting: a literature review. *MEDSURG Nursing*, 22(1), 51–55.
9. **Gilboy N, Tanabe P, Travers D, Rosenau A. (2011).** Emergency severity index (ESI): a triage tool for emergency department care implementation handbook (4th ed.). Rockville, MD: Agency for Healthcare Research and Quality.
10. **Alspach JG. (2013).** Improving recognition and response to the onset of stroke. *Critical Care Nurse*, 33(1), 9–13.
11. **Baldwin K, Orr S, Briand M, Piazza C, Veydt A, & McCoy S. (2010).** Acute ischemic stroke update. *Pharmacotherapy*, 30(5), 493–514.
12. **Beal CC. (2010).** Gender and stroke symptoms: a review of the current literature. *Journal of Neuroscience Nursing*, 42(2), 80–87.
13. **Summers D, et al. (2009).** Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient: a scientific statement from the American Heart Association. *Stroke*, 40, 2911–2944.
14. **Mc Gillivray B & Considine J (2009)** Implementation of evidence into practice: development of a tool to improve emergency nursing care of acute stroke. *Australasian Emergency Nursing Journal* 12, 110– 119.
15. **Mark Baker (2012):** Education requirements for nurses working with people with complex neurological conditions: Nurses' perceptions, *Nurse Education Today* (32) 71-77
16. **Jauch EC, Saver JL, Bruno A, Connors JB, Demaerschalk BM, et al. (2013).** Guidelines for the early management of patients with acute ischemic stroke: a guideline for

- healthcare professionals from the American Heart Association/American Stroke Association. *Stroke* (00392499), 44(3), 870–947.
- 17. Bergman D. (2011).** Preventing recurrent cerebrovascular events in patients with stroke or transient ischemic attack: the current data. *Journal of the American Academy of Nurse Practitioners*, 23(12), 659–666
- 18. Bronagh Byrne a, Peter O'Halloran b,*, Christopher Cardwell (2011):** Accuracy of stroke diagnosis by registered nurses using the ROSIER tool compared to doctors using neurological assessment on a stroke unit: A prospective audit *International Journal of Nursing Studies* (48) ,979-985
- 19. Lukovits TG & Goddeau RP, (2011).** Critical care of patients with acute ischemic and hemorrhagic stroke: update on recent evidence and international guidelines. *Chest*, 139(3), 694–700.
- 20. Robin P. Newhouse, Sandra L. Dearholt, Stephanie S. Poe, Linda C. Pugh, Kathleen M. White (2007):** Evidence-Based Practice Model and Guidelines p 3-15
- 21. Middleton S, McElduff P, Ward J, Grimshaw JM, Dale S, et al. (2011).** Implementation of evidence based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial. *Lancet*, 378(9804), 1699–1706.
- 22. Adams HP Jr, del Zoppo G, Alberts MJ, Bhatt DL, Brass L, Furlan A, Grubb RL, Higashida RT, Jauch EC, Kidwell C, Lyden PD, Morgenstern LB, Qureshi AI, Rosenwasser RH, Scott PA, Wijdicks EF. (2009):** Guidelines for the early management of adults with ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council, Clinical Cardiology Council, Cardiovascular Radiology and Intervention Council, and the Atherosclerotic Peripheral Vascular Disease and Quality of Care Outcomes in Research Interdisciplinary Working Groups: the American Academy of Neurology affirms the value of this guideline as an educational tool for neurologists [published corrections appear in *Stroke*. 2007;38:e38 and 2007;38:e96]. *Stroke*;38:1655–1711.
- 23. National Stroke Foundation, (2010):** Development of Clinical Guidelines for Stroke Management
- 24. Traynelis L (2012):** Emergency Department Nurses' Knowledge of Evidence-Based Ischemic Stroke Care. *Journal of kailodoscope* vol (10) article 44
- 25. Tan Y & Christensen M. (2012).** The pathophysiology of ischaemic stroke: considerations for emergency department advanced practice nursing. *Singapore Nursing Journal*, 39(2), 31–39.
- 26. Poslawsky IE, Schuurmans MJ, Lindeman E, & Hafsteinsdóttir TB. (2010).** A systematic review of nursing rehabilitation of stroke patients with aphasia. *Journal of Clinical Nursing*, 19(1–2), 17–32.
- 27. Janice L. Hinkle, PhD RN CNRN; Mary McKenna Guanci (2007):** Acute Ischemic Stroke Review, *Journal of Neuroscience Nursing* ;39(5):285-293, 310.
- 28. Gocan S & Fisher A. (2008).** Neurological assessment by nurses using the National Institutes of Health Stroke Scale: implementation of best practice guidelines. *Canadian Journal of Neuroscience Nursing*, 30(3), 31–42.
- 29. Berglund, A, Svensson, L, Sjöstrand, C, von Arbin, M, von Euler, M. et al. (2012).** Higher prehospital priority

- level of stroke improves thrombolysis frequency and time to stroke unit: the Hyper Acute Stroke Alarm (HASTA) study. *Stroke* (00392499), 43(10), 2666–2670.
- 30. Ali, E. (2010):** Establishing Standards of Nursing Care for Stroke Patients
- 31. Ebrahim, E (2012):** Assessment of Nurses Performance Caring for Patients with Cerebrovascular Stroke on Intensive Care Units.
- 32. Victor, Rose E , Adika J, Franco L, knowledge and behavior of nurses toward care of elderly stroke patients, 2012 international journal of tropical medicine** 7 (2) 74 79
- 33. Harper P. (2007):** Emergency Nurses' Knowledge of Evidence-Based Ischemic Stroke Care: A Pilot Study *Emergency Nurses Association*, (33), P: 202-7.
- 34. Blegen, MA.; Vaughn, TE. and Goode, CJ. (2001):** Nurse experience and education: Effect on quality of care. *Journal of Nursing Administration*, 40 (31): p 33–39
- 35. Aiken, LH.; Clarke, SP.; Cheung, RB.; Sloane, DM. and Silber, JH.(2003):** Educational levels of hospital nurses and surgical patient mortality, *JAMA*. 290 (75) : pp 1617–1623
- 36. McKenna, G. (2007):** Acute Ischemic Stroke Review, *Journal of Neuroscience Nursing* ,39(5): pp 285-293.
- 37. Oh, E. G., Kim, S., Kim, S.S., Kim, S., Cho, E. Y., Yoo, J.S., et al.(2010).** Integrating evidence-based practice into RN-to-BSN clinical nursing education. *Journal of Nursing Education*, 49, 387-392.
- 38. Carlson, C. (2010):** Prior conditions influencing nurses' decisions to adopt evidence-based postoperative pain assessment practices. *Pain Management Nursing*, 11(6): pp 245-258.
- 39. Kenari, M.(2014):** Effect of Evidence-Based Method Clinical Education on Patients Care Quality and Their Satisfaction., Vol.4, No.2, 59-62
- 40. Westneat S (2011):** Pre-Hospital and Emergency Department Registered Nurses and Paramedics Knowledge of Evidence- Based Ischemic Stroke Care , *Air Medical Journal*, P 256
- 41. Taha HA. (2007)** Nurses Performance in Emergency Management of Patient with Spinal Cord Injury. Master Thesis at Ain Shams University
- 42. Salah M. (1998):** Knowledge attitude and performance of nursing caring for burn victims pp 92-98
- 43. Al Ahmadi H. (2009):** Factors Affecting Performance of Hospital Nurses in Riyadh Region, Saudi Arabia, *International Journal of Health Care Quality Assurance* (22) pp. 40-54
- 44. Bobay K, Gentile DL, Hagle ME. (2009):** The relationship of nurses' professional characteristics to levels of clinical nursing expertise. *Applied Nursing Research*;22:48–53
- 45. Matthew D. McHugh1 and Eileen T. (2011):** Understanding Clinical Expertise: Nurse Education, Experience, and the Hospital Context Available at NIH public access
- 46. Jones, SP.; Jenkinson, AJ.; Leathley, MJ. and Watkins, CL. (2010):** Stroke knowledge and awareness: an integrative review of the evidence. *Age & Ageing*, 39(1): 11–22