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Original Article

Assessment of evidence-based knowledge and attitude needs for acute ischemic stroke management among nurses at Prince Mohammed Bin Nasir Hospital, Jazan, KSA

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ABSTRACT

Background and Aim: Cerebrovascular accidents, or strokes, are the fourth most common cause of disability worldwide. As crucial stroke team members, nurses often spend the most time with patients, providing invaluable care and support. This study aimed to evaluate the vital role of nurses in evidence-based knowledge and attitude needs for acute stroke management.

Methods: This cross-sectional analytical study was conducted on 80 nurses at Prince Bin Nasir Hospital in the Jazan region, Kingdom of Saudi Arabia (KSA). The study utilized a questionnaire about identifying and diagnosing ischemic strokes. Data were analyzed using SPSS software version 26. Descriptive statistics were used to measure personal information, while inferential statistics, including Chi-square tests, were used to assess knowledge and attitude.

Results: The average age of the nurses was 36 years, with 45% aged between 21 and 25 years. Additionally, 65% of the participants were postgraduates. The study found that nurses have good knowledge regarding evidence-based practices for managing patients with acute ischemic stroke, with a mean knowledge score of 67 (83.8%), $p = 0.001$. However, their knowledge of improving attitudes towards stroke management was fair, with a score of 45 (56.3%), $p = 0.005$.

Conclusion: The study concludes that Prince Bin Nasir Hospital nurses possess strong evidence-based knowledge of acute ischemic stroke management. However, significant gaps in their understanding of specific areas highlight the need for enhanced training to improve stroke management practices.

Keywords: Stroke management, ischemia, nurse, evidence-based practice

INTRODUCTION

Stroke is a rapidly developing clinical condition characterized by the interruption of blood flow to the brain, resulting in the deprivation of neurons from essential substances such as oxygen and glucose.^[1] Recognized as the most common vascular brain disorder globally, stroke is a critical health concern due to its significant impact on mortality, dependency, and long-term disability in adults.^[2] Despite advancements in medical science, stroke remains the fourth most common cause of death and a significant cause of disability, with low- and middle-income countries approximately two-thirds of

deaths bearing a disproportionate burden.^[3] Globally, 70% of strokes and 87% of both stroke-related deaths and disability-adjusted life years occur in low- and middle-income countries.^[4]

In 2020 alone, the World Health Organization (WHO) estimated that 61 million people died from stroke, underscoring the urgent need for effective prevention and treatment strategies.^[5] The treatment of strokes is a dynamic process in which time is the most critical factor impacting the appropriate performance of interventions for acute stroke and determining the patient's final prognosis. Many patients do not receive treatment due to hospital presentation delays, exceeding the effective treatment period.^[6] One of the main reasons for this delay, from the onset of symptoms to hospital arrival, is the lack of knowledge regarding the warning signs and risk factors (RFs) associated with stroke. Despite the high prevalence and severity of stroke, public knowledge about the disease is lower compared to other conditions, such as acute coronary syndrome (ACS), cancer, or acquired immunodeficiency syndrome (AIDS), even among patients who have already experienced a stroke.^[7,8] The most important predictor of the response to treatment is the interval between the emergence of acute ischemic stroke symptoms and the onset of treatment. Research indicates that for every 15-minute delay in treatment, patients experience a one-month delay in regaining independent life after a stroke.^[9]

For over two decades, evidence-based stroke care has proven to save lives, reduce disability, and shorten hospital stays, improving patient outcomes. Evidence-based practices, which integrate clinical expertise with the best external evidence from systematic research, are crucial in stroke care's acute and rehabilitation phases. These practices ensure high-quality, interdisciplinary care and optimal patient outcomes.^[10,11] However, several factors, including rising healthcare costs, inconsistent care, and traditional approaches, have necessitated a stronger emphasis on evidence-based clinical guidelines.^[12] For instance, administering intravenous recombinant tissue plasminogen activator (TPA) as the initial therapy for acute ischemic stroke has been shown to reduce mortality and disability rates significantly.^[13] Nurses are vital in managing stroke patients, from the acute phase to rehabilitation. They are often the first healthcare professionals to identify stroke symptoms in inpatients and are responsible for providing continuous care.^[14] Despite their crucial role, nurses face challenges such as delays in hospital presentation, often caused by a lack of knowledge about stroke warning signs and risk factors.^[15]

This study aims to assess the knowledge levels of nurses in emergency departments regarding evidence-based care for patients with acute ischemic stroke. By evaluating the extent to which nurses are informed about evidence-based guidelines, this research seeks to identify areas for improvement and enhance the quality of stroke care. The findings are expected to significantly contribute to developing targeted educational programs and interventions, ultimately improving patient outcomes and reducing the global burden of stroke.

METHODS

Study Design and Area

This cross-sectional analytical study aimed to evaluate the vital role of nurses in evidence-based knowledge and attitude needs for acute stroke management. It was conducted at Bin Nasir Hospital in the Jazan region of the Kingdom of Saudi Arabia (KSA). The hospital has a capacity of 200 beds, spans three floors, and consists of several sections. The nursing staff includes 200 nurses.

Sample Size

The study includes 80 nurses from the hospital's medical and surgical wards and emergency room (ER).

Data Collection

Data were collected using a demographic information questionnaire and the acute stroke knowledge level assessment and awareness sections.

The demographic section of the questionnaire includes questions regarding age, gender, marital status, education level, years of professional experience, and area of expertise. The subsequent section evaluated the nurses' understanding of the fundamental principles for caring for cerebrovascular accident patients during the critical first hour. With the first nine questions, this evaluation covered early diagnosis, time management, imaging, and laboratory studies. Additionally, it assessed supportive therapy, vital signs, neurological follow-up, activity, nutrition, and dysphagia screening with fourteen questions. The section also included five questions regarding the nurses' attitudes toward improving their knowledge through professional publications, evidence-based guidelines, research, and literature.

Statistical Analysis

Data were analyzed using SPSS version 26. Descriptive statistics were employed, and data are presented as frequency and percentage. In addition, inferential statistics, including Spearman rank correlation and chi-square test, were used to examine the relationships between variables. A significance level of p values < 0.05 indicated statistical significance. Knowledge and Attitude Scoring includes the following criteria: Good: $\geq 75\%$, Fair: $50\% - < 75\%$, Poor: $< 50\%$.

Ethical Consideration

All respondents gave verbal informed consent. Before agreeing to participate, participants have fully explained the study's objectives. The confidentiality of the gathered information was assured, and participants' right to refuse participation was respected. Ethical approval for the study was also obtained.

RESULTS

The participants varied widely, with 45% between 21 and 25 years. Most participants (77.5%) were female, and the majority (60%) were unmarried. Educational levels ranged from nursing certificates (2.5%) to postgraduate degrees (65%). The years of experience also varied, with 70% having more than four years. Experience areas included medical wards (11.3%), ICUs (38.8%), surgical wards (1.3%), and emergency units (48.8%) as shown in Table 1.

Table 1: Demographic Information

Variable	Characteristics	Frequency	%
Age	21-25	36	45
	> 25-30	11	13.8
	> 30	33	41.2
Gender	Male	18	22.5
	Female	62	77.5
Marital status	Unmarried	48	60
	Married	32	40
Education level	Nursing certificate	2	2.5
	Graduate	26	32.5
	Postgraduate	52	65
Years of experience	1-4	24	30
	>4	56	70
Experience area	Medical ward	9	11.3
	ICU	31	38.8
	Surgical ward	1	1.3
	Emergency unit	39	48.8

Table 1: Knowledge of nurses regarding Evidence-based guidelines in the management of patients with Acute Ischemic Stroke

Variable	Frequency	%
1. Which one is ischemic stroke triage?		
Decreased level of consciousness, decreased strength in left leg/right arm	30	37.5
Unilateral arm/leg weakness, droopy or asymmetrical face, difficulty speaking	36	45
Seizures, dizziness, vomiting	14	17.5
2. How long does it take before the case can be diagnosed as a possible acute stroke?		
6 hours	14	17.5
12 hours	30	37.5
24 hours	27	33.8
48 hours	9	11.2
3. Which stroke scale is preferably used?		
Glasgow Coma scale	31	38.8
NIHSS (National Institutes of Health Stroke scale)	24	30
Glasgow Coma scale, NIHSS	20	25
I do not know	5	6.3
4. How long should the CBT be completed and interpreted following the emergency application?		
25 minutes	17	21.3
35 minutes	29	36.3
45 minutes	30	37.5
60 minutes	4	5
7. What is the recommended IV TPA (tissue plasminogen activator) dosage for patients with ischemic stroke?		
0.3 mg/kg	8	10
0.5 mg/kg	36	45
0.7 mg/kg	25	31.3
0.9 mg/kg	11	13.8
8. How long after the onset of stroke symptoms should IV TPA be initiated?		
3 hours	28	35
3.5 hours	31	38.8
4 hours	19	13.8
4.5 hours	2	12.4
9. Which of the following types of intravenous fluid is recommended for patients with ischemic stroke?		
D5W	28	35
0.9% Normal saline solution	33	41.2
Lactated Ringer's	19	23.8
10. How long should the patients be frequently evaluated after IV TPA administration in acute stroke?		
12 hours	58	72.5
24 hours	12	15
36 hours	0	0
48 hours	10	2.5
11. Which of the following medications is recommended within 24-48 hours of ischemic stroke onset?		
Heparin	34	42.5
Plavix	14	17.5
Asprin	32	40
Aggrenox	0	0
Mean knowledge		
Good ($\geq 75\%$)	67	83.8
Fair (50% - < 75%)	4	5
Poor (< 50%)	9	11.3

The nurses' knowledge regarding evidence-based guidelines for acute ischemic stroke management is presented in Table 2. The majority of them correctly identified symptoms and the timeline for diagnosis,

with 45% recognizing unilateral arm/leg weakness, droopy or asymmetrical face, and difficulty speaking as signs of stroke. Most nurses (37.5%) knew a case could be diagnosed as a possible acute stroke within 12 hours. Preferred stroke scales included the Glasgow Coma Scale (38.8%) and the National Institutes of Health Stroke Scale (NIHSS) (30%). Nurses were also knowledgeable about the recommended computerized brain tomography (CBT) completion time (45 minutes, 37.5%) and the correct Intravenous tissue plasminogen activator (IV TPA) dosage (0.5 mg/kg, 45%). The recommended IV fluid was identified correctly by 41.2% as 0.9% normal saline solution. Frequent evaluations after IV TPA administration were known by 72.5% of nurses, who indicated it should be done every 12 hours. Regarding post-stroke medications, 42.5% recommended Heparin within 24-48 hours. 83.8% of participants had good knowledge ($\geq 75\%$).

The nurses' attitudes toward improving their professional knowledge, with significant p-values indicating their importance, are shown in Table 3. Most participants agreed on the need for follow-ups after recanalization therapy (97.5%), performing a CBT after 24 hours of IV TPA (77.5%), and neurological follow-ups post-treatment (70%). Screening for dysphagia within 24 hours was supported by 70%, and reaching daily calorie and protein intake levels within 72 hours was considered necessary by 40%. High blood pressure treatment levels were identified by varying percentages, with the most common being 185/110 mmHg (37.5%). Mobilizing the patient within the first 24 hours was seen as crucial by 85%, and 90% acknowledged that high fever, seizure activity, and hyperglycemia worsen stroke prognosis. Following professional publications and attending related courses were both valued by 70% of participants. In total, 40% had a good attitude ($\geq 75\%$).

Table 2: Nurses' attitudes toward improving their professional knowledge

Variables	True	False
	Frequency (%)	Frequency (%)
1. Vital signs should be followed up after treatment in patients undergoing recanalization therapy	78 (97.5%)	2 (2.5)
2. Patients given IV TPA should have CBT after 24 hours	62 (77.5%)	18 (22.5%)
3. Neurological follow-up should be done after treatment in patients undergoing recanalization therapy	56 (70%)	24 (30%)
4. A coagulation test should only be performed when hospitalized	62 (77.5%)	18 (22.5%)
5. Dysphagia screening should be done within 24 hours after hospitalization	56 (70%)	24 (30%)
6. It should be aimed to reach daily calorie and protein intake levels within 72 hours	32 (40%)	48 (60%)
7. What blood pressure level should be lowered, and what level needs treatment?		
185/110 mmHg	30 (37.5%)	50 (62.5%)
200/115 mmHg	21 (26.3%)	59 (73.7%)
215/120 mmHg	11 (13.7%)	69 (86.2%)
8. The patient must be mobilized within the first 24 hours	68 (85%)	12 (15%)
9. High fever, seizure activity, and hyperglycemia worsen the prognosis of stroke	72 (90%)	8 (10%)
10. Following professional publications	56 (70%)	24 (30%)
11. Attending a certificate/course program related to neurology	56 (70%)	24 (30%)
12. Following evidence-based guidelines/research/literature in the last 6 months	41 (51.3%)	39 (48.7%)
13. Attending congresses/symposiums/courses	56 (70%)	24 (30%)
14. Being aware of the stroke protocol	44 (55%)	36 (45%)

Mean attitude		
Good ($\geq 75\%$)	32	40
Fair ($50\% < 75\%$)	45	56.3
Poor ($< 50\%$)	3	3.8

Table 4 highlights the data analysis for participant knowledge and attitude. The mean knowledge score was 21.5 ± 0.38291 , with a significant p-value of 0.001. The mean attitude score was 25 ± 0.02831 , with a significant p-value of 0.005, underscoring the critical role of these factors in the professional development of nurses.

Table 3: Participant knowledge

Variable	Mean	SD	P-value
Knowledge	21.5	0.38291	0.001
Attitude	25	0.02831	0.005

DISCUSSION

The findings of this study align with existing literature in several key areas, highlighting both the strengths and areas for improvement in nurses' knowledge and practices regarding ischemic stroke care. The predominance of female nurses (77.5%) is consistent with global nursing demographics, where the profession is predominantly female, while 45% are aged between 20 and 25 years. In contrast, research conducted at General Hospital and King Khalid Hospital in KSA showed 66.2% of nurses aged between 28 and 33 years.^[16] This study indicates a high percentage of postgraduates (65%), depicting a well-educated workforce crucial for delivering high-quality care. However, the small number of nurses with a nursing certificate (2.5%) suggests a potential gap in specialized training, which is essential for advanced clinical roles. Additionally, 70% of the sample had more than four years of experience, whereas the comparative study indicated that 31.8% had between 6 and 10 years of experience.

Regarding training on cerebrovascular accidents, 70.20% of our sample had previously received training, while 29.80% had not. Notably, 87.7% of our participants reported obtaining knowledge about cerebrovascular accidents from college, compared to 8.80% who cited literature as their source. These figures differ significantly from the study by Harvey Karadeniz, where 95.5% had training in cerebral vascular accidents.^[17]

37.5% of nurses identify decreased consciousness, unilateral weakness, facial droop, and speech difficulties as primary indicators of ischemic stroke, which aligns with standard clinical guidelines. However, most nurses do not recognize other symptoms like seizures, dizziness, and vomiting, which indicates a need for comprehensive training in stroke symptomatology. The variation in recommended diagnosis timing (12 hours by 37.5% and 24 hours by 33.8%) suggests differing levels of understanding about the urgency of stroke diagnosis, which could impact patient outcomes. Applying evidence-based approaches and care to stroke patients facilitates patient-centered decision-making and enhances the integrity of patient care. Such approaches effectively reduce mortality and optimize resource utilization during treatment.^[17] Our study found that 51.3% of nurses followed evidence-based guidelines, research, and literature within the last six months. However, the level of evidence-based acute stroke knowledge among 25.7% of nurses did not significantly differ based on their adherence to evidence-based practices over the same period ($p > 0.050$). This contrasts with Harper's study, which found that 45% of emergency nurses followed evidence-based literature on ischemic stroke care the previous year.^[18] The preference for the Glasgow Coma Scale and NIHSS by 38.8% of nurses in our study aligns with the literature advocating these tools for assessing stroke severity. However, the uncertainty among 6.3% of nurses

highlights a need for further education on standardized assessment tools. The varied recommendations for IV TPA dosage and administration timing reflect a lack of consensus or awareness of updated protocols, emphasizing the importance of regular training updates. Our findings also revealed a higher mean test score for nurses who adhered to evidence-based guidelines, unlike the study by Travels, where 83% of participants read ischemic stroke literature in the last year. However, their test scores showed no significant difference.^[19]

Regarding monitoring vital signs and neurological follow-up after IV TPA administration in acute stroke, 97.5% of nurses answered correctly about vital signs follow-up, 70% on neurological follow-up, and 72.5% on the duration of frequent evaluation post-IV TPA administration. This study assumed that patients receiving IV TPA were monitored without electronic equipment support, aligning with Harvey Gardenia's study. A 97.5% of nurses correctly identified vital sign monitoring post-recanalization therapy, which shows strong adherence to protocol. However, 40% of nurses misunderstood blood pressure management before IV TPA administration, which indicates a critical knowledge gap, as proper blood pressure control is vital for patient safety. The varied responses regarding the recommended fluid for ischemic stroke patients also suggest inconsistencies in practice that could be addressed through standardized guidelines.^[20]

The diversity in recommended medications within 24-48 hours post-stroke (Heparin, aspirin, Plavix) reflects differing interpretations of guidelines or preferences based on individual experiences. 45% of nurses correctly answered the recommended timeframe for initiating intravenous TPA treatment post-stroke symptom onset, differing from Mohammad Reza Leganés's findings. Concerning medication, 42.5% of our respondents identified Heparin as recommended within 24–48 hours post-ischemic stroke onset, consistent with another study showing 38 (29.46%) agreement.^[21]

The high overall knowledge scores (83.8% good knowledge) indicate a generally well-informed nursing staff. However, poor knowledge scores (11.3%) and a significant p-value (0.001) suggest areas where targeted education could improve outcomes. Additionally, our study identified that the lowest level of nurses' knowledge pertained to the blood pressure and temperature ranges requiring treatment (13.7%). This finding parallels Harper's study, which also reported deficiencies in nurses' knowledge about blood pressure control and temperature conditions necessitating therapy in stroke patients.^[18]

Furthermore, our findings showed that 70% of nurses follow professional publications and attend related courses. This indicates a proactive approach to professional development consistent with best practices in nursing education. The awareness of stroke protocols among 55% of nurses is encouraging but suggests that almost half could benefit from additional training on these protocols. A positive attitude towards improving professional knowledge (56.3%) is crucial for continuous improvement in patient care. Encouraging such attitudes through supportive policies and accessible training opportunities can further enhance the quality of care nurses provide.^[22] While the study indicates a strong foundation of knowledge and practice among nurses, it also highlights critical areas for improvement, particularly in standardized training and adherence to updated clinical guidelines. Addressing these gaps through targeted education and continuous professional development can enhance the effectiveness of ischemic stroke care.

CONCLUSION

This study evaluated Prince Bin Nasir Hospital nurses' evidence-based knowledge of acute stroke. The findings indicate that nurses generally have a strong understanding of evidence-based practices for managing acute ischemic stroke, with an average knowledge. However, there are gaps in their knowledge regarding specific aspects such as stroke scales, TPA dosage, and stroke time management.

Their attitude towards improving stroke management practices is fair. These results underscore the need for targeted training to address knowledge gaps and enhance the quality of stroke care nurses provide.

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Conflicts of interest

The author declares no conflict of interest relevant to this article.

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