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Research Article

Pathology

Knowledge And Perception Of Stroke Among Nursing Students

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Abstract: Stroke is a severe health condition that causes morbidity and death all over the world, and nurses have a significant role in the care of patients admitted with stroke. The study aimed to explore knowledge and perception of stroke among nursing students to provide high quality ~~of~~ care. A descriptive, quantitative study was conducted among 192 participants between May 2018 and January 2019. The study included female students, aged 18 and older. The Self- structured questionnaire was used for data collection, composed of socio-demographic and stroke related-knowledge.. The Pilot study was carried out among 10% of volunteers. Descriptive and inferential statistics were conducted using a computer software program (SPSS) version 20. The T-test and chi-squared tests were used with a P-value of 0.05 to ensure the significances of the results. The study was approved by the Institutional Review Board at the college of nursing, and written consent was taken from all participants. More than 90% of participants were single and knew what a stroke was, and more than 50% knew the different types of stroke. Also, participants had moderate knowledge about risk factors, signs, symptoms, and stroke prevention with 45.3%, 47.4%, and 38.0% respectively, and (50.0%) had poor knowledge of post-stroke complications and medications for treatment. Education level had a positive effect on participants' knowledge, most of the participants in ~~at~~ the fourth class had a moderate level of knowledge about risk factors for stroke, which was statistically significant (p-value was ~~is~~ 0.037), while third and fourth class students had a moderate level of knowledge about' signs and symptoms of stroke, which was statistically not significant (p-value > 0.005). Overall, students had a moderate knowledge score of stroke perception. Education level has a positive effect on fourth-year students' knowledge compared with students from third and second year classes.

Keywords: Knowledge, perception, female, nursing students, stroke, risk factors, prevention.

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1. INTRODUCTION

Stroke is a neurologic deficit that has a sudden onset, results in permanent damage to the brain caused by cerebrovascular disease[1], and is significant cause of morbidity and mortality throughout the world.[2] The World Health Organization defined stroke as rapidly developing signs of focal disturbance of cerebral function leading to death or lasting longer than 24 hours with no apparent cause other than vascular.[3] According to a World Health Organization report, approximately 15 million people suffer from stroke each year. One of these, five million die and another five million suffer permanent disabilities.[4] Stroke is a leading cause of disability in the United States, with 40% of patients suffering from moderate functional impairment and another 15% to 30% suffering from severe disability.[5] Stroke has significant social and economic consequences across the world.[6] Stroke is becoming more prevalent and is a major health issue in the Middle East.[7] The incidence rates range from 29.8 cases per 100,000 in Saudi Arabia to 57 cases per 100,000 in Bahrain, with a 28-day case fatality rate of 10% in Kuwait to 31.5 percent in Iran.[4] According to the study conducted in Saudi Arabia, the prevalence is 29 per 100,000 each year.[8] It's a fast expanding concern in Saudi Arabia, and it is a leading cause of sickness and death. As a result, it has becomes one of the Kingdom's most pressing social and economic medical challenges.[9] Strokes can be divided into two major categories: ischemic vascular occlusion, approximately 87% of which cause significant hypoperfusion, and hemorrhagic, approximately 13%, in which extravasation of blood into the brain or subarachnoid space occurs.[10] The visible clinical manifestations are determined by the location of the event and the area perfused by the vessel.[1,4] Risk factors that predispose patients to stroke include hypertension, family history of stroke and hyperlipidemia, cardiac disease, diabetes, cigarette smoking, increased alcohol intake, obesity, and use of hormonal contraceptives.[11] According to the World Health Organization, even inadequate blood pressure (> 115 mm Hg systolic blood pressure) causes 62 percent of cerebrovascular disease and 49 percent of ischemic heart disease.[12] Nurses have a critical role in reducing the death and disability of stroke clients. However, nursing students should be informed about stroke in this setting, and their clinical and practical roles should be improved. Furthermore, it is critical to assess the knowledge and awareness of nursing students working in clinics who are more likely to encounter stroke patients in emergency or intensive care settings following graduation.[13] Evidence is accumulating suggesting nurses' education and training can help patients who have had a stroke improve their health outcomes.[14] Nurses' awareness of risk factors, stroke warning signs, first-response behaviors, and behaviors regarding how to manage stroke patients are the most critical elements impacting the outcomes' of strokes. Nurses who care for stroke patients must have considerable education and training in order to provide excellent patient-centered care. As previously stated, many students do not receive the requisite education to deliver this treatment. Students, on the other hand, have stressed the necessity of having a solid foundation in stroke awareness before entering clinical practice.[2] There are not enough available studies to highlight this issue. This study aims to explore students' nurses' knowledge and perception of ~~about~~ stroke to deliver and provide safe and high-quality ~~of~~ patient care.

2. MATERIALS AND METHODS

2.1. Study Design

A descriptive, cross sectional quantitative study was conducted in the faculty of nursing.

2.2. Sample Size And Sampling Technique

The Sample size is calculated according to the formula.[15]

$$n = N/\ 1+N\ (D^2)$$
$$n= \quad 371/\ 1+371(0.05)^2 \quad =192 \text{ participant}$$

Participants were in accordance with the Institutional Ethical Committee (approval number IRC-030/05/MAY/ in 2018). Probability sampling was followed.[16] In the first step, we determined the total number of study participants from three academic educational levels accounted for 371 students, in the second step, sample size was calculated using the above equation, which amounted to 192 participants, and in the step three proportional samples were stratified to identify the sample size. The desired sample size was distributed by stratums to determine sample size in each one which was obtained by using a proportionate stratified random sample based on the standard equation (sample size/population size) × stratum size.[15] The calculated sample from each stratum was as follows: second class 88, third 56, and fourth class 48 participant, making the total sample size from the entire stratum 192 participants, which reflected the desirable sample size of the study. A random sample technique was conducted to select participants from each stratum to collect data for ~~of~~ the study.

2.3. INCLUSION AND EXCLUSION CRITERIA

2.3.1. Inclusion criteria

- All female student nurses.
- 18 years of age and older.
- Registered in the second, third, and fourth classes.
- Those who are willing to participate in the study.
-

2.3.2. Exclusion criteria

- Male student nurses.
- Age less than18 years.
- Intern students' nurses.
- Those who are not willing to participate in the study.

2.4. Tools Of Data Collection And Technique

Data was collected by a questionnaire, composed of socio-demographic information in section one and stroke related knowledge in section two, and using self-administration method to collect data.

2.5. Pilot Study

The pilot study was reviewed and approved by the Institutional Ethical Committee at Nursing College, and permission was provided from the head of the department of nursing practices to run the pilot study and data were collected from students. The pilot study covered 10% of study participants, approximately 19 students enrolled, to

test clarity of questions and students from whom questionnaire was tested excluded from the study result. Few questions were modified to ensure the accuracy of the questionnaire based on the test outcome.

2.6. Ethical consideration

The study protocol was approved by the Ethics Committee at the University College of Nursing (approval number IRC-030/05/MAY/in2018). Students were given written consent to participate in the study, and the data was officially secured following Australian Principles and Guidelines for Ethical Research and Evaluation in Development, 2016.[17] The study was conducted according to the Helsinki declaration. [18]

3. STATISTICAL ANALYSIS

Data was analyzed using a computer software program (SPSS) version 20. Descriptive statistics such Univariate [19] for socio-demographics such as age, level of education, and marital status were included, and bivariate analysis[20] was used to compare two variables such as education level with some of stoke knowledge. Data was presented in the form of frequency and percentage tables and graphs. The knowledge of participants was analyzed based on an adapted "Likert-type scale" [21] categorized into poor, moderate, and good, and compared with the education levels of participants. Also, the T test was used to calculate the mean knowledge of participants, and the chi-squared test and p-value of 0.05 or less were used to ensure significance of the result.

4. RESULTS

Table -1: Demographic characteristics.

Variable		Frequency	Percentage%
Age groups	18-22Year	179	93.2
	23-27Year	13	6.8
	Total	192	100.0
Educational level	Second class	88	45.8
	Third class	56	29.2
	Fourth class	48	25.0
	Total	192	100.0
Social status	Single	184	95.8
	Married	8	4.2
	Total	192	100.0

Table 1 reveals that out of total 192 participants 179(93.2%) showed their age ranged between 18-22 years, while 13(6.8%) between 23-27 years. A greater number of participants 88(45.8%) were from the second class, 56(29.2%) from the third, and 48(25%) from the fourth class, and most of the participants 184(95.8%) were single or unmarried.

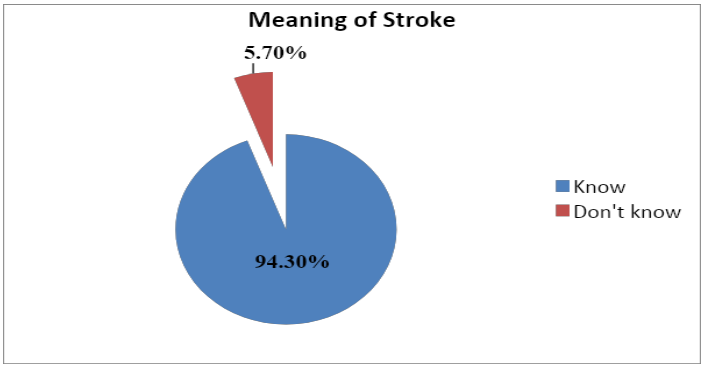

Fig 1: Knowledge of participants of stroke meaning: (n=192).

Figure 1 explains that, 94.30% of participants knew the meaning of stroke, and only (5.7%) were not known.

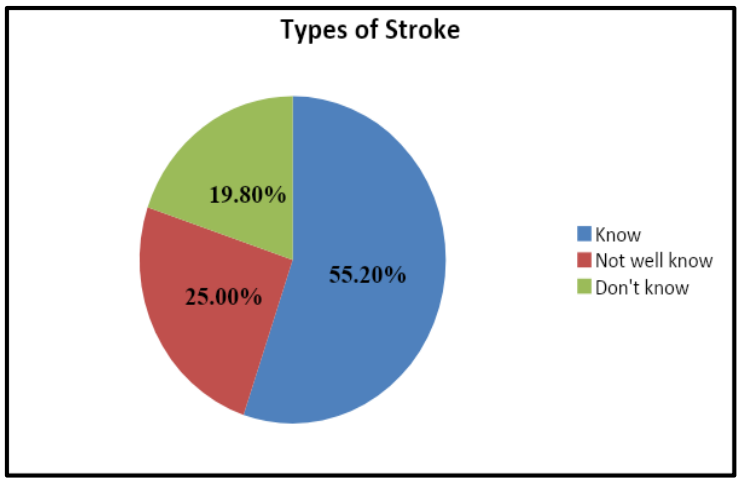

Fig 2: Knowledge of participants about types of stroke: (n=192).

Figure 2 showed approximately 55.0% of participants knew the types of stroke, while 25.0%did not know well, and 20.0% were not aware.

Table- 2 Perception of studied sample toward stroke related knowledge: (n=192).

Stroke Related Knowledge	Levels of knowledge		
	Poor	Moderate	Good
Risk factors	17.2%	45.3%	37.5%
Signs and symptoms	26.0%	47.4%	26.6%
Complications	50.0%	40.6%	9.4%
Prevention of stroke	27.1%	38.0%	34.9%
Drugs use for treatment	45.3%	40.6%	14.1%
Drugs adverse effects	60.4%	31.2%	8.3%

Table (2) showed that about (45.3%) had moderate knowledge of stroke risk factors, (37.5%) were good and (17.2%) had poor knowledge. Approximately half (47.4%) of participants had a high level of moderate knowledge concerning signs and symptoms, followed by (26.6%) good, and (26.0%) ~~had~~ poor knowledge. Regarding stroke- related complications, approximately (50.0%) of the participants had poor knowledge, (40.6%) were moderate, and (9.4%) had a good knowledge score. Although (38.0%) had a moderate level of knowledge on the prevention of stroke, (34.9%) had good knowledge, and (27.1%) had poor knowledge. The table also shows that (45.3%) have a poor level of knowledge about commonly used drugs for the treatment of stroke, (40.6%) have a moderate level of knowledge, and (14.1%) have a good level of perception. In addition to poor knowledge of drug adverse effects, as follows, poor (60.4%), moderate (31.2%), and (8.3%) had good knowledge scores.

Table-3 Stroke related knowledge versus educational level of participants: (n=192)

Stroke related knowledge		Educational levels			Total	P- value
		Second class	Third class	Fourth class		
Risk factors	Poor	25.0%	12.5%	8.3%	17.2%	0.037
	Moderate	45.5%	39.3%	52.1%	45.3%	
	Good	29.5%	48.2%	39.6%	37.5%	
Signs and symptoms	Poor	31.8%	25.0%	16.7%	26.0%	0.284
	Moderate	46.6%	48.2%	47.9%	47.4%	
	Good	21.6%	26.8%	35.4%	26.6%	
Complications	Poor	39.8%	48.2%	70.8%	50.0%	0.001
	Moderate	54.5%	35.7%	20.8%	40.6%	
	Good	5.7%	16.1%	8.3%	9.4%	
Prevention of stroke	Poor	27.3%	35.7%	16.7%	27.1%	0.013
	Moderate	46.6%	30.4%	31.2%	38.0%	
	Good	26.1%	33.9%	52.1%	34.9%	
Drugs use for treatment	Poor	38.6%	64.3%	35.4%	45.3%	0.001
	Moderate	52.3%	23.2%	39.6%	40.6%	
	Good	9.1%	12.5%	25.0%	14.1%	
Drugs adverse effects	Poor	60.2%	62.5%	58.3%	60.4%	0.452
	Moderate	34.1%	30.4%	27.1%	31.2%	
	Good	5.7%	7.1%	14.6%	8.3%	

Table 3 reflects stroke-related knowledge compared with participants' academic years of education. The study found approximately (45.3%) had a moderate level of knowledge about stroke risk factors, which was high (52.1%) among students from the fourth class, followed by (45.5%) among second class, and students from the third class have lower score (39.3%), p-value was 0.037. Also, the table reveals that (47.4%) of moderate knowledge of signs and symptoms are approximately similar among the third and fourth year participants (48.0%), and slightly increased among students from the second class but insignificant; p-value > 0.005. 50.0% of participants had poor level of knowledge about stroke complications, the proportion of knowledge in the fourth year was high (70.8%), and students in the third and second classes had a lower scores (48.2%, and 39.8%) respectively, a p-value of 0.001. On the other hand, participants showed (38.0%) moderate knowledge about stroke prevention. However, students in the second class reflected significant moderate knowledge (46.6%),the p-value=0.013. In addition to that, participants shown poor level of knowledge (45.3%) about commonly used drugs for the treatment of stroke, however students from fourth class presented a significant low score of poor knowledge, while participants in fourth and second classes reflected high level of knowledge, which about 64.3% and 38.6%, respectively (p-value=0.001). Also, participants (60.4%) had a low level of knowledge about drug side effects, which was insignificantly higher among students in the second and third classes, with 60.2% and 62.5%, respectively, and a p-value greater than 0.005.

Table (4): Total mean knowledge of participants about stroke.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval level		P-value
					Lower	Upper	
Total mean knowledge	192	10.1927	4.06998	.29373	9.6133	10.7721	0.000

Based on T test

Table 4 Shows total mean knowledge of participants ± Std. Deviation with 95% Confidence Interval, was significantly different among students from different class or academic educational years, and the p-value is 0.000

5. DISCUSSION

Nurses play a critical role in reducing stroke mortality and disability among people.[22] The study was conducted among female nurses from three academic classes to explore their perception and knowledge of stroke risk factors, signs, symptoms, prevention, drug management, and adverse drug effects. Student nurses must have a thorough grasp of stroke in order to increase their understanding, performance, and complete of their roles in clinics and communities.[23] Surveys from all across the world have found that the general public's awareness of stroke is woefully inadequate in both developed and developing countries. There were 192 participants enrolled in this study, taken from three academic levels; the second class was 45.8%, the third, 29.2%, and 25% from the fourth class, more than ninety percent of their ages ranged between 18- 22 years, and they were single**.** Ischemic and hemorrhagic strokes are two different types of strokes with different management and treatment options.[24] In this study, most of the participants knew the meaning of stroke, while half of them did not know the types of stroke. To compare these findings with the study conducted among medical students in King Faisal University in 2020 [25], nursing students seem to be reflecting the best knowledge regarding the correct meaning of stroke. Another survey found that 26.59% of college students from ten government colleges in the Kamrup region, Assam, accurately understood the meaning of stroke.[26] Also, these findings disagree with the study conducted in Tabuk, Saudi Arabia in 2020, which found that before the intervention of an educational program, participants had a poor knowledge score (63.6 percent) about the correct meaning of stroke.[27]. It's very essential for nurses to know what stroke is and what types there are because nurses are frontline when patients come to the health facility and should carry out a preliminary assessment for him. The study revealed that less than half of the participants had moderate knowledge about risk factors, signs, symptoms, and prevention of stroke. While half of them had a poor level of knowledge of complications, common drugs used for stroke management, and the side effects of the drugs. These findings disagree with a similar study conducted in 2021, which reported a good level of students' awareness about stroke warning signs, risk factors, and prevention, The results were 53.2%, 53.8%, and 84.4%, respectively[13]. Also, the respondents reflected a better understanding of stroke types, risk factors, warning signs, and prevention than students in a previous study from 2021, which found students had a poor understanding of stroke types, risk factors, and prevention, with the exception of moderate knowledge of stroke signs and symptoms.[25] In addition, a study conducted in 2016 in Nepalese high schools to measure students' knowledge, attitude, and practice of stroke yielded positive results, with students who knew about risk factors, and warning symptoms being more likely to transport stroke patients to a hospital.[28] Another study conducted in Jordan reflected that the measures of knowledge among the nurses in critical care units in Jordanian hospitals towards stroke patients were highly poor.[2] Due to a lack of awareness of stroke risk factors and warning signals, treatment is delayed, increasing the risk of disability and death. Recurrent stroke is six times more likely than a first-time stroke, and patients with hypertension and atrial fibrillation are at a significantly increased risk of stroke.[29]. Comparing stroke-related knowledge with a participant's education level the study revealed that education level had a positive effect on participants' knowledge. Most participants in ~~at~~ the fourth class had ~~a~~ moderate knowledge about stroke risk factors significantly (p-value is 0.037), while both the third and the fourth classes had an insignificant moderate level of knowledge of stroke' signs and symptoms. P-value greater than 0.005.[30] This is similar to that reported by a study conducted among fourth-year undergraduate nursing students in Bangladesh in 2017. Nursing students exhibited a moderate degree of awareness of stroke risk factors but a very poor level of awareness of stroke warning symptoms. This data shows that in order to improve practicum readiness, nursing students should expand their awareness of stroke management. Also, half of the participants had poor levels of knowledge about complications. The score of poor knowledge among participants in the fourth class was high in spite of their high level of education, and it appears that students from third

and second classes were more knowledgeable, with a p-value of 0.001. On the other hand, students showed a moderate knowledge score about stroke prevention. However, students from the second academic year reflected a significant high level of moderate knowledge; p-value is 0.013. In addition to that, participants reflected a poor level of knowledge about common drugs used for the treatment of stroke, students from the fourth educational level presented a significantly lower score of this poor knowledge, while participants in the fourth and the second class had high levels of poor knowledge, p-value= 0.001. Also, participants reflected a poor level of knowledge for drug side effects which was insignificantly high among students from the second and third educational year, p-value >0.005. Poor knowledge of stroke complications, common drugs used for treatment and drugs side effects reported among the participants in this study might be attributed to the fact that students nurses in second class still didn't receive educational courses about stroke. A lack of understanding or knowledge of risk factors, warning symptoms, and urgent therapeutic approach has been identified as a key cause of increased mortality and morbidity due to stroke[31]. This data shows that in order to improve practicum readiness, nursing students should expand their awareness of stroke management. Overall, participants' total mean knowledge was lower than that reported by a previous study that assessed stroke management awareness and behavior among nursing students in Bangladesh between December, 2014 and February, 2015, showing that nursing students had a moderate awareness level of stroke risk factors (Mean = 74.24, Std. Deviation = 12.30) and very low awareness of stroke warning signs (Mean = 55, Std. Deviation = 10.72). Furthermore, the students exhibited low to extremely low levels of specific stroke patient management behaviors (M=62.11, SD = 9.75). [2] Another study of undergraduate nursing students in Thailand, Indonesia, and Myanmar reported a high level of knowledge about stroke risk factors among respondents (M= 36.65, S.D. = 9.94) but a poor score for warning indicators (M= 4.11, S.D.= 2.08).[32] Stroke can be a preventable and curable disease.[27] Nurses should encourage at-risk individuals to take preventive medications (such as lipid-lowering, anticoagulant, and antihypertensive medications) and to make lifestyle modifications.[33] Also, stroke risk screenings are a great way to lower stroke risk by identifying people or groups of people who are at high risk for stroke and educating patients and the general public about stroke recognition and prevention. Stroke screenings are frequently organized and conducted by nurses.[10] According to the white paper, Equity and Excellence: A Guide for Nurses, nurses are in a great position to provide primary health promotion. The NHS's function as a source of health information and a supporter of lifestyle modifications is highlighted in Liberating the NHS. Nurses can help people reduce their risk of stroke in almost any role, and given the catastrophic repercussions of stroke, even preventing stroke is important.[33] So it's critical for the nurse to understand and recognize the risk factors and signs of stroke, as well as to act as immediately as possible, manage, and avoid the occurrences of stroke. Nurses play an important role in this area, so it's important to keep their stroke knowledge and awareness up to date.[34] Knowledge about stroke is also important for people to improve first and secondary prevention and encourage them to adopt preventive behaviors such as lifestyle changes, which will result in a lower incidence of cerebrovascular problems in the future. Previous studies have demonstrated that a large proportion of patients who are at high risk of having had a stroke are unaware of this risk.

6. CONCLUSION

Most of the participants were younger, single, and knew the meaning of stroke well, but half of them knew its types. Also, participants had a moderate knowledge score of stroke risk factors, signs, symptoms, and prevention, and had poor knowledge of post-stroke complications, common drugs used, and their side effects. However, the study found education level affected participants' level of knowledge on some stroke- related items; such high moderate knowledge of stroke risk factors was significantly found among students from the fourth academic year. Overall, participants from the fourth academic year had more knowledge and perceptions than their peers from the second and third educational years. The study recommended encouraging student self-learning during the education period and repetition of the same study among both genders, and comparative interventional future studies among students and graduate nurses will be conducted.

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8. AUTHORS CONTRIBUTION STATEMENT

This work was carried out in collaboration with co-author, author Badria A. Elfaki designed the study, authors Badria A. Elfaki and Hassanat E. Mustafa conducted the literature search, inter data analysis, and interpreted the results; authors performed, reviewed, and approved the manuscript.

9. CONFLICT OF INTEREST

The author declares no conflict of interests regarding the presented manuscript

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