



Knowledge of stroke prevention among hypertensive patients at Gia Loc district medical center in Hai Duong province in 2023

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ABSTRACT

Objectives: This study aimed to describe the knowledge of stroke prevention among hypertensive patients who were treated at Gia Loc district medical center, Hai Duong province in 2023. **Subjects and research methods:** A cross-sectional description was conducted on 178 hypertensive patients who were treated at Gia Loc district medical center, Hai Duong province from April to August 2023, using the convenient sampling method. **Results:** 71.3% of the participants had knowledge at a satisfactory level, of which 45.5% of patients answered correctly about persons at high risk of stroke. 66.3% of the patients had correct knowledge in terms of all signs of stroke. There were 45.5% of patients provided correct knowledge in terms of persons at high risk of stroke. Regarding risk factors that can cause stroke, 52.2% of patients presented correct knowledge about risk factors that may cause stroke. 77% of patients had correct knowledge about methods avoid the risk of stroke. In terms of knowledge about stroke prevention, 70.9% of hypertensive patients had knowledge at a satisfactory level, 29.1% of hypertensive patients had knowledge at an unsatisfactory level. **Conclusion:** Patients' knowledge of stroke prevention is relatively high.

Keywords: Knowledge, hypertension, stroke, stroke prevention.

INTRODUCTION

Stroke is a global health problem and a major cause of morbidity, mortality and disability in both developed and developing countries ¹. According to the Centers for Disease Control and Prevention, stroke is the leading cause of preventable disability worldwide ². However, the level of knowledge of stroke risk factors, first signs, and first aid measures among people is still very low. The disease has serious

consequences for the health and quality of life of the stroke survivors and their caregivers ³. Hypertension is the leading cause of stroke ⁴. Hypertension increases the constant pressure of blood flow on the vessel walls, causing the vessel walls to gradually dilate and lesions to appear. These lesions appear increasingly in the blood vessels of the brain. If the blood flow pressure suddenly increases (as seen in malignant hypertension), it can cause the blood vessels

to burst, causing cerebral hemorrhage ⁵. Therefore, managing the blood pressure of hypertensive patients to prevent stroke complications is very important. In Gia Loc district of Hai Duong province, research on patients' knowledge of stroke prevention is very limited, therefore there is a need for research on the knowledge of hypertensive patients about stroke prevention in order to have measures to improve patients' knowledge, leading to a reduction in the rate of stroke at hypertensive patients. The research team conducted with the aim of describing knowledge of stroke prevention among hypertensive patients at Gia Loc district medical center, in Hai Duong province in 2023.

RESEARCH METHODS

Research participants: Patients with hypertension were being treated at the Gia Loc district medical center in Hai Duong province during the study period.

Inclusion criteria: Hypertensive patients were being treated at the Gia Loc district health center in Hai Duong province. The Patients consented to participate in the study.

Exclusion criteria: Patients with acute illnesses; patients with a history of mental disorders or cognitive impairment.

Location and time of study: The study was conducted at Gia Loc district medical center in Hai Duong province from April to August 2023.

Research design: Cross-sectional descriptive study.

According to the formula to estimate a proportion of the population:

$$n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$$

In which:

n is the estimated sample size; Z is the distribution index; α is the type 1 error.

Selected $\alpha = 0.05$, confidence coefficient $Z = 1.96$, $d = 0.1$

$p = 0.562$ (according to Fahad M. Alhowaymel et.al (2023), the proportion of hypertensive patients with knowledge of stroke is 56.2% ⁶).

Substituting the values into the formula above, we can calculate that $n = 95$ patients, adding a 5% margin of error, the total sample size needed is $n = 100$ patients.

Sampling method: convenience sampling, in this study we collected a total of 178 patients who met the selection criteria during the study period.

Data collection: The questionnaire was developed based on the two measurements in previous studies.

The questionnaire about stroke knowledge were developed based on the Stroke Knowledge Test (SKT) by Karen Sulivian in 2001 ⁷.

After completing the questionnaire, the research team sent it to experts for comment, and 100% of the experts agreed with it. A pilot was also conducted on 30 patients meeting the inclusion criteria to test its reliability. The Cronbach's alpha coefficient of the questionnaire was 0.705. Then the questionnaire was used officially for data collection.

The questionnaire includes:

General information related to patients is age, gender, educational level, occupation, blood pressure level, duration of hypertension, family history with stroke people, source of information about the

disease, and expected source of information about the disease.

Knowledge about stroke comprises 13 items about knowledge of hypertension (4 items); of risk factors (2 items); of signs, consequences, treatment methods and solutions (5 questions); and lifestyle change (2 questions). Each correct answer gets 1 point, while each incorrect answer gets 0 point. The maximum score for the knowledge is 13 points. The higher the total score is, the higher the knowledge about stroke is. Afterward, the knowledge of stroke is divided into two levels: $\geq 50\%$ of the total score is satisfactory knowledge and $< 50\%$ of the total score is unsatisfactory knowledge ⁸.

RESULTS

Table 1. Demographic characteristics of the patients (n = 178)

Characteristics		Number (n)	Percentage (%)
Gender	Male	105	58.9
	Female	73	41.0
	Senior school or below	117	65.7
	Intermediate level, college	31	17.4
	Undergraduate/postgraduate	30	16.9
			X ± SD: 66,31 ± 8,9
Age	Under 60 years old	40	22.5
	From 60 to 69 years old	75	42.1
	Over 70 years old	63	35.4
Occupation	Farmer	110	61.8
	Worker	19	10.7
	Staff	15	8,4
	Housewife and others	34	19,1

Among 178 participants of the study, the proportion of females was higher than males (58.99% versus 41.01%). The majority of the participants were in the age range of 60-69, accounting for 42.1%; most of the patients had an educational level of senior school or below (65.7%). The majority of the patients were farmers, accounting for 61.8%.

Data analysis: Data were coded and analyzed using SPSS 22.0 software. Statistical analysis methods described general information and evaluated the knowledge of research participants. Percentage analysis, mean value analysis and standard deviation analysis are included.

Research ethics

The study had the consent of the participants and was approved by the Ethics Committee of Nam Dinh University of Nursing under the decision number 879/GCN-HDĐĐ dated April 18, 2023, and permission for data collection at the Medical Center Gia Loc district, Hai Duong province.

Table 2. Knowledge about hypertension (n = 178)

Content		Number (n)	Percentage (%)
Concept of hypertension	SBP > 140mmg Hg	51	28,7
	SBP > 140mmHg and/or DBP > 90 mmHg	61	34,3
	DBP > 90 mmHg	19	10,7
	Others	47	26,4
Treatment of hypertension	Take medicine	12	6,7
	Change lifestyle	29	16,3
	Take medicine and change lifestyle	117	65,7
	Others (specify)...	20	11,2
The disease with the highest risk of stroke	Hypertension	90	50,6
	Diabetes	19	10,7
	Cardiovascular disease	29	16,3
	Don't know	40	22,5
	The most common type of stroke (cerebral embolism)	31	17,42

The results showed that only 34.3% of the patients presented the correct knowledge about the concept of hypertension; 65.7% of patients reported correctly about treatment of hypertension (take medicine and change lifestyle); 50.6% of patients answered correctly that hypertension increases the risk of stroke the most; Only 17.42% of patients had the correct answer about the most common type of stroke.

Table 3. Knowledge of risk factors causing stroke in hypertensive patients (n=178)

Content		Number (n)	Percentage (%)
Changeable risk factors	Be overweight, obese	62	34,8
	Not do exercise	14	7,9
	Smoke	8	4,5
	All three factors above	81	45,5
	Do not know	13	7,3
Unchangeable risk factors	Genetic	9	5,1
	Gender	0	0,0
	Old age	93	52,2
	All three factors above	52	29,2
	Do not know	24	13,5

According to the table, only 45.5% (< 50%) of the patients had the correct answer about changeable risk factors. However, only 29.2% of the patients provided correctly knowledge about all 3 unchangeable risk factors that may cause stroke.

Table 4. Hypertensive patients' knowledge of signs, consequences of stroke, treatment methods, and solutions when having a stroke (n = 178)

Signs of stroke (FAST)	Number (n)	Percentage (%)
Mouth distortion, visual impairment	19	10.7
Weakness or Hemiplegia	7	3.9
Lisp, unclear pronunciation	12	6.7
All 3 signs above	118	66,3
Do not know	22	12,4
Knowledge of the consequences of a stroke		
Dead	4	2,2
Paralysis	29	16,3
Memory decline	16	9,0
All three consequences above	120	67,4
Treatment methods for patients with stroke		
Take medicine	49	27.5
Rehabilitation	18	10.1
Surgery	2	1.1
All 3 treatment methods above	79	44.4
Don't know	30	16.9
Improvement in patients' daily activities		
The time to call an ambulance	178	100

The results indicated that 66.3% of the patients provided satisfactory knowledge about the signs of stroke. Only 44.4% of the patients had the correct answer about treatment methods for patients with stroke; 67.4% of the patients answered correctly about the consequences of stroke. However, 100% of the patients had the correct answer about solution when having signs of stroke.

Table 5. Knowledge on methods avoiding the risk of stroke (n = 178)

Knowledge of methods avoiding the risk of stroke	Number (n)	Percentage (%)
Eat properly and exercise regularly	8	4,4
Control blood pressure	24	13.5
Monitor cholesterol levels	1	0.6
All three factors above	137	77.0
Don't know	8	4.5
Total	178	100

The results presented that 77% of the patients reported satisfactory knowledge about methods avoiding the risk of stroke.

Table 6. Hypertensive patients' general knowledge of stroke prevention (n = 178)

Content	Satisfactory knowledge		Unsatisfactory knowledge	
	Number (n)	Percentage (%)	Number (n)	Percentage (%)
General knowledge	127	71,3	51	28,7
Max – Min: 12 - 4; X ± SD: 7,8 ± 2,38				

The results showed that out of 178 participants, there was 71.3% with correct general knowledge and 28.7% with incorrect knowledge about hypertension prevention. The average score of hypertensive patients' knowledge of stroke prevention was 7.8 ± 2.38 , in which, the highest score was 12 points and the lowest score was 4 points.

DISCUSSION

The average age of the participants was 66.31 ± 8.9 , with the 92-year-old oldest and the 44-year-old youngest. These results were consistent with the findings by Nguyen Van Trieu with the participants' average age was 64.85 ± 9.69 ⁹. In our study, 77.5% of the patients were over 60 years old, and 22.5% were under 60 years old. This result was similar to those reported by Nguyen Thi Thom (2017), who found that 72.8% of the participants were over 60 years old and 28.7% were under 60 years old¹⁰. This can be explained by the fact that the study subjects were patients with hypertension which is the common disease of the elderly. Therefore, the proportion of patients over 60 years old is higher than those under 60 years old, and the older a person is, the higher their risk of hypertension is¹¹.

To prevent stroke, hypertensive patients at first need to have knowledge of the hypertension they are suffering from. According to the World Health Organization, hypertension is defined as SBP > 140mmHg and/or DBP > 90 mmHg. To treat hypertension, it is necessary to take medicine combined with changing lifestyle; Hypertension is the disease that increases the risk of stroke the most and the most common type of stroke is cerebral

embolism. In the study, the proportion of the patients who understood correctly the concept of hypertension was 34.3% and 65.7% of the participants knew the treatment methods for hypertension; 50.6% of the patients knew that hypertension was the disease causing the risk of stroke the most, only 17.42% of the patients gave the correct answer about the most common type of stroke. This is a relatively low rate that require nurses when providing care and counseling to pay attention to this issue. This result is lower than Hoang Thi Minh Thai's study which reported that 56.4% of the patients had good knowledge of determining the value of hypertension, 70.9% of them understood correctly the treatment methods for hypertension¹². The result of this study is lower than the one by Hoang Thi Minh Thai, possibly due to the different educational levels between the studies. This result is equivalent to the research results by Chu Thi Hoang Anh with 38.25% of the patients answering the most common type of stroke and 47.75% of them thinking that of all the diseases, hypertension caused a risk of stroke the most⁸. However, it is lower than the research results by Fahad M. Alhowaymel et.al with 60.7% of the participants responding that stroke was damage to part of the brain. Specifically, 83.2% of the patients gave the

correct answer that hypertension was a risk factor for stroke ⁶. High blood pressure is one of the leading risk factors for stroke and is a changeable risk factor. Hypertension treatment is an important target in stroke prevention ¹¹.

The changeable risk factors for stroke in hypertensive people are overweight, obesity, drinking alcohol, smoking. Overweight and obesity and are defined as abnormal or excessive fat accumulation that may impair health (WHO - 1989). The association between obesity and stroke is often combined with other factors such as high blood pressure, diabetes, and high blood cholesterol... leading to stroke. Additionally, smoking is considered a significant independent risk factor and is associated with 50% of the changeable risk factors of stroke in both men and women of all ages ³. Understanding this knowledge correctly will help patients avoid these changeable risk factors for better stroke prevention. In the study, only 45.5% of the patients understood this information correctly. This result is lower than the study by Chu Thi Hoang Anh with 64.5% of the participants answering correctly. Despite the difference, this does not change the fact that all the mentioned risk factors are the major ones in lifestyle habits recommended by the Ministry of Health and the World Health Organization for stroke prevention.

The risk factors for stroke can be categorized into unchangeable and changeable risk factors. Unchangeable risk factors include genetics, gender, and old age. According to the results in Table 6, only 29.2% of the patients gave the correct answer about all three changeable risk factors for stroke. This result is lower than the findings by Chu Thi Hoang Anh, who reported that 54.2% of the patients correctly answered

genetic factors, while 16% of the patients were unaware of the risk factors for stroke ⁸. Therefore, it is necessary to promote health education to enhance patients' knowledge of the risk factors for stroke. Although these are non-modifiable factors, patients who are aware of their higher risk are more likely to have a positive attitude and engage in better preventive practices against stroke.

According to the results in Table 4, 66.3% of the participants could recognize all the signs of stroke. In Vietnam, some studies on stroke recognition, such as the one conducted by Chu Thi Hoang Anh, found that only 23.25% of the participants knew all the signs of stroke. Among those who were aware of only one warning sign of stroke, 44% believed that weakness or hemiplegia was a warning sign, while 6.25% and 5% considered mouth distortion, visual impairment and lisp as warning signs, respectively ⁸. In reality, knowing the signs of stroke can help patients react promptly and call for emergency assistance when they experience these symptoms. However, it is important to note that each patient may exhibit different signs rather than all three signs being present at the same time. Therefore, nurses should provide detailed explanations to ensure that patients fully understand this issue and also offer guidance to their family members as they play a crucial role in seeking immediate medical attention when a stroke occurs.

When a stroke occurs, patients can be treated through medication, surgery, and rehabilitation. Depending on the patient's arrival time at the hospital, type of stroke, extent of damage caused by the stroke, the doctor will determine the appropriate method, and all three methods can be applied. However, the most important aspect is the initial treatment by quickly taking the

patient to the hospital, promptly transporting them by ambulance or safe means, early detection, first aid, proper transfer to a specialized hospital, and early intervention in stroke emergencies to increase the chances of survival and minimize complications. According to experts, the golden hour for stroke emergency treatment depends on the type of stroke and the time a patient taken to the hospital. The first 3-6 hours after a stroke is considered the best time for intravenous thrombolytic therapy. After 6 hours and up to 24 hours, techniques such as vascular intervention or surgery are usually applied for stroke emergency treatment. The earlier stroke emergency treatment is administered within the “golden hour,” the better it is in terms of limiting disability, coma, or even death ¹³. In a study, when being asked about the time to call an ambulance for suspected strokes, 100% of the participants answered correctly that they should call an ambulance immediately when there were signs of a stroke. This result is higher than a study conducted by Do Thi Thu Hien ¹⁴, with correct response rates of 96.4%, 67.25%, 53.8%, and 52.8% respectively. Additionally, for stroke patients, rehabilitation can be considered as a long-term treatment approach aimed at improving daily activities and accounts for 40% of overall treatment. This is consistent with the reality that stroke patients often experience multiple disabilities including motor impairment, language disorders, sensory disorders. Rehabilitation interventions are applied to improve patients’ daily functioning. Although this study did not involve interventions, the research team took the opportunity to provide important counseling to address the patient’s lack of knowledge and help them supplement their understanding.

Stroke is a disease that can cause rapid death, has a high mortality rate, ranks first among diseases of the nervous system, and is the third cause of death after cancer and cardiovascular diseases. Complications of stroke seriously affect the patient’s health and psychology, and can lead to temporary or permanent disability ¹. In the study, only 67.4% of the patients gave the correct answer about the consequences of stroke. This result is higher than the one by Chu Thi Hoang Anh with 38.75% of the participants knowing about this consequence, the rest only chose one of the consequences ⁸. With the aim of finding out the patients’ knowledge about the consequences of stroke, then counseling the patient to help them see the seriousness of having a stroke and know how to change their lifestyle to avoid having a stroke, hopefully, the remaining 33.6% of patients who do not know these consequences will be provided with the necessary information, thereby taking timely action to prevent stroke.

Stroke can occur suddenly to anyone. Stroke often leaves many sequelae to patients’ health and lives such as memory decline, hemiplegia or complete paralysis... Therefore, implementing stroke prevention methods is an effective solution to protect one’s health and those around them. In the study, the participants knew different preventive measures for stroke with varying proportions for each aspect. However, 77% agreed that maintaining a balanced diet and regular exercise, controlling blood pressure, monitoring cholesterol levels were necessary. The remaining percentage chose one of these measures individually, and only 4.5% were unaware of the preventive actions for stroke. This research result is higher than the one by Chu Thi Hoang Anh with 59.25% of the participants answering

all these measures⁸. This knowledge is extremely important in helping hypertensive patients avoid stroke. Therefore, 33.0% of the patients who did not have this knowledge were advised by the research group to learn this correct information.

In conclusion, 71.3% of the patients have correct general knowledge of stroke prevention, while 28.7% have incorrect knowledge. This result is lower than the study conducted by Sarafadeen Adeniyi Arisegil (2018) on knowledge and practices related to stroke prevention in hypertensive and diabetic patients treated at Sokoto Specialist Hospital, where 90.8% of patients had good knowledge about stroke prevention¹⁵. However, it is equivalent to the findings of Ha Thi Thanh Trang, with a rate of 29.4% and 70.6% for awareness and non-awareness of stroke risk factors in hypertensive patients¹⁶. The results are also similar to the study conducted by Đỗ Thi Thu Hien, with 70.18% of the patients having good knowledge about stroke¹⁴. Although the proportion of correct knowledge is relatively high, there is still a need for strategies to address the remaining 28.7% of patients with incorrect knowledge. To improve the stroke prevention knowledge of the study population, healthcare workers should engage in health promotion and education for hypertensive patients, providing them with accurate information about warning signs, high-risk individuals for stroke, treatment methods, risk factors for stroke, and the consequences of stroke as well as actions to avoid stroke risk, especially for patients over 60 years old.

This requires healthcare workers to develop plans to provide appropriate knowledge, while also leveraging the information sources provided through mass

media to reach the targeted community effectively and efficiently.

CONCLUSION

The study showed that knowledge of stroke prevention among the participants was not really high, accounting for 71.3%. 45.5% of the patients gave correct answer about patients with high risk of stroke; 66.3% of the patients answered correctly about all signs of stroke; 67.4% of the patients answered correctly about the consequences of stroke. Regarding risk factors that can cause stroke, 52.2% of the patients gave the correct answer about risk factors that can cause stroke; 77% of patients answered correctly about what they need to do to avoid the risk of stroke.

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