

Submitted: 20 October 2026

Accepted: 23 October 2026

Published: 26 October 2026

Associations of family knowledge and attitudes with preparedness for initial stroke response among relatives of patients with hypertension

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Abstract

Background: Stroke is a medical emergency in which early recognition and prompt access to medical care are essential. Family members may be the first to recognize symptoms and initiate help-seeking, particularly for people with hypertension, a major risk factor for stroke.

Purpose: This study examined the relationships between family knowledge, family attitudes, and initial stroke response among families of patients with hypertension.

Method: This quantitative, analytical cross-sectional study included 98 respondents recruited through purposive sampling. Data were collected using questionnaires comprising 15 knowledge items, 10 attitude items, and 12 initial stroke-response items. The instruments had reported Cronbach's alpha coefficients of 0.832, 0.792, and 0.807, respectively. Descriptive statistics and Spearman's rank correlation were used, with a significance level of 0.05.

Results: Most respondents had good knowledge (68; 69.4%), and 59 (60.2%) reported a positive attitude. Good initial stroke response was reported for 47 respondents (48.0%), while 40 (40.8%) were classified as fair and 11 (11.2%) as poor. Knowledge was positively correlated with initial stroke response ($r = 0.321$, $p = 0.001$). Attitude was also positively correlated with initial stroke response ($r = 0.439$, $p = 0.001$, as reported in the results table).

Conclusion: Higher family knowledge and more positive attitudes were associated with better initial stroke response. Health education should emphasize stroke symptom recognition and the need to seek emergency medical care promptly.

Keywords: Attitude; Family; Hypertension; Knowledge; Stroke Response.

INTRODUCTION

Stroke is one of the leading causes of death and disability worldwide and remains a major global health problem (Delima et al., 2023). There are two main types of stroke: hemorrhagic and ischemic stroke. Hemorrhagic stroke occurs due to intracranial bleeding and may be associated with a systolic blood pressure exceeding 200 mmHg. Meanwhile, ischemic stroke is commonly associated with vascular diseases and may present with sudden changes in blood pressure, tachycardia, cold or clammy palms, and irregular breathing (Septiana et al., 2020).

According to the World Health Organization, as cited by Setyaningrum et al. (n.d.), stroke is a condition in which blood flow to the brain is interrupted, generally due to the rupture or blockage

of blood vessels, resulting in an inadequate supply of oxygen and nutrients to brain tissue. This condition can lead to physical impairment, permanent disability, and even death. Globally, the burden of stroke has shown an increasing trend. Over the past two decades, the annual number of stroke cases in several European countries increased from approximately 1.1 million in 2000 to around 1.5 million in 2025 (Watung, 2021).

In Indonesia, the prevalence of stroke based on the 2018 Basic Health Research (Riset Kesehatan Dasar or Riskesdas) was recorded at 10.9%. East Kalimantan Province had the highest reported prevalence, at 14.7% of the population. In terms of sex, stroke was more prevalent among males (16.3%)

than females (12.9%), with non-hemorrhagic stroke accounting for the majority of cases. Regarding age groups, the highest prevalence of non-hemorrhagic stroke was found among individuals aged 75 years and older, at 65.6%, whereas the lowest prevalence was observed among those aged 15–24 years, at 0.2%. In addition, the Special Region of Yogyakarta, North Sulawesi, and West Java were reported to have high stroke prevalence rates, each reaching 1.7%. Regional data also indicate an increase in stroke cases in Balikpapan City, with 456 additional new cases recorded over the past year. These findings demonstrate that stroke remains a significant public health problem at the global, national, and regional levels. Hypertension is a major risk factor for stroke. Uncontrolled blood pressure can damage blood vessels and increase the risk of both ischemic and hemorrhagic stroke (Ministry of Health of the Republic of Indonesia, 2018).

Previous studies have demonstrated an association between hypertension and stroke incidence, indicating that individuals with hypertension are at a higher risk of experiencing stroke than those with normal blood pressure. Consequently, patients with hypertension require particular attention in stroke prevention and management efforts. The success of stroke management is strongly influenced by the speed of the initial response, particularly during the prehospital phase (Desyani et al., 2024). A rapid initial response can minimize brain tissue damage and improve the patient's chances of recovery. Early stroke detection using the FAST method (Face, Arm, Speech, Time) has been shown to be effective in helping the public recognize the early signs and symptoms of stroke, enabling them to seek immediate medical assistance (Widyarani, 2022).

Families play a crucial role in the initial management of stroke because they are often the first people present when a stroke occurs. Family members' knowledge of stroke signs and symptoms significantly influences the appropriateness of their initial response (Nento, 2023). Previous studies have indicated that many family members have moderate to low levels of knowledge regarding initial stroke management, which may contribute to delays in taking patients to healthcare facilities. In addition to

knowledge, family attitudes are also important determinants of decision-making during stroke emergencies. Positive attitudes encourage family members to act promptly and appropriately, whereas unfavorable attitudes may result in delays in seeking treatment (Sari, 2024). Other studies have reported that better knowledge tends to be associated with more positive attitudes toward stroke prevention and management (Handayani, 2019).

Previous research on family empowerment in early stroke detection has demonstrated that health education can improve families' ability to recognize stroke symptoms and perform appropriate initial actions (Ambarika & Anggraini, 2022). Similar findings have shown that audiovisual health education interventions can improve family members' knowledge and attitudes toward early stroke detection. Although several studies have examined the role of family knowledge and attitudes in stroke prevention and early detection, research specifically investigating the relationship between family knowledge levels and attitudes and the initial response to stroke in patients with hypertension at the primary healthcare level remains limited (Utami et al., 2022).

RESEARCH METHOD

This study employed a quantitative research method with a descriptive-analytical design and a cross-sectional approach to determine the relationship between two or more variables. A cross-sectional design was selected because all variables were measured simultaneously at a single point in time, without follow-up observations. The purpose of this study was to examine the relationship between family knowledge and attitudes and the initial management of stroke by family members.

The population consisted of family members accompanying patients receiving treatment at Gamping II Community Health Center, Yogyakarta, during the period from January to December 2024. The population comprised 98 family members who routinely accompanied patients during medical examinations and resided within the health center's service area.

Data were collected using structured questionnaires to assess family knowledge, attitudes,

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and initial stroke preparedness. The instruments consisted of 15 knowledge items, 10 attitude items, and 12 initial preparedness items. Validity testing using the Pearson product-moment correlation indicated that all items across the three instruments were valid, with calculated r values greater than the reference value of 0.31. Reliability testing using Cronbach's alpha yielded values of 0.832 for knowledge, 0.792 for attitudes, and 0.807 for initial stroke management. Therefore, all instruments were considered reliable, as their coefficients exceeded the minimum acceptable threshold of 0.60.

The sample was selected using a non-probability sampling technique, specifically purposive sampling, in which participants were selected according to predetermined criteria rather than randomly. The study sample consisted of family members of patients with hypertension residing within the service area of Gamping II Community Health Center, Sleman,

Yogyakarta. Eligible respondents were family members who accompanied hypertensive patients during examinations at the health center, lived within its service area, and agreed to participate in the study. This technique was chosen to ensure that the selected respondents met the characteristics relevant to the research objectives. The sample size was determined using the Lemeshow formula.

Data analysis involved editing, coding, data entry, and tabulation using statistical software. Univariate analysis was conducted to describe the frequency distributions of respondent characteristics and each study variable. Bivariate analysis was performed using Spearman's rho correlation test because the data were measured on an ordinal scale. This test aimed to determine the strength and direction of the relationship between family knowledge, family attitudes, and initial emergency responses to stroke symptoms, using a significance level of $\alpha = 0.05$.

RESEARCH RESULTS

Table Characteristics of Respondents (n=98)

Variable	Results	Correlation Coeffisien	P-Value
Age (Mean±SD) (years) (Range)	(46.18 ± 12.40) (20-70)		
20-35	15/15.3		
36-50	47/48.0		
>50	36/36.7		
Gender (n/%)			
Male	37/37.8		
Female	61/62.2		
Education (n/%)			
Elementary School	3/3.1		
Junior High School	34/34.7		
Senior High School	39/39.8		
Vocational High School	8/8.2		
Bachelor's Degree	12/12.2		
Diploma (D3)	2/2.0		
Occupation (n/%)			
Laborer	37/37.8		
Homemaker	36/36.7		

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Employee	23/23.5		
University Student	2/2.0		
Family Relationship (n/%)			
Spouse	65/66.3		
Child	33/33.7		
Knowledge (n/%)		0.321	0.001
Good	68/69.4		
Fair	29/29.6		
Poor	1/1.0		
Attitude (n/%)		0.439	0.001
Neutral	39/39.8		
Positive	59/60.2		
Initial Stroke Management (n/%)		0.321	0.001
Poor	11/11.2		
Fair	40/40.8		
Good	47/48.0		

The table presents the characteristics of 98 respondents, including age, gender, education, occupation, and family relationship to the patient, as well as the correlation between family knowledge, attitude, and initial stroke management. Regarding age, nearly half of the respondents were aged 36–50 years (47; 48.0%), followed by those aged over 50 years (36; 36.7%) and 20–35 years (15; 15.3%). The mean age was 46.18 ± 12.40 years, with an estimated range of 20–70 years. Most respondents were female (61; 62.2%). In terms of education, the largest group had completed senior high school (39; 39.8%), followed by junior high school (34; 34.7%). Regarding occupation, laborers represented the largest group (37; 37.8%), followed by homemakers (36; 36.7%). Most respondents were spouses of the patients (65; 66.3%), while 33 (33.7%) were children.

Regarding the study variables, most respondents had good knowledge of initial stroke management (68; 69.4%), while 29 (29.6%) had fair knowledge and 1 (1.0%) had poor knowledge. More than half of the respondents demonstrated a positive attitude (59; 60.2%), while 39 (39.8%) had a neutral attitude. In terms of initial stroke management, 47 respondents (48.0%) demonstrated good management, 40

(40.8%) demonstrated fair management, and 11 (11.2%) demonstrated poor management.

The correlation analysis showed a positive correlation between family knowledge and initial stroke management ($r = 0.321$, $p = 0.001$), indicating a statistically significant relationship with a weak-to-moderate correlation. Family attitude also showed a positive correlation with initial stroke management ($r = 0.439$, $p < 0.001$), indicating a statistically significant moderate correlation. These findings suggest that better family knowledge and more positive attitudes were associated with better initial stroke management.

DISCUSSION

Knowledge is an important factor influencing a family's ability to recognize the signs and symptoms of stroke and determine appropriate initial management. A lack of knowledge may lead to delays in treatment and increase the risk of permanent disability. Every minute of delay in stroke treatment can result in the loss of millions of neurons; therefore, stroke requires prompt and appropriate medical intervention (Muhlis, 2021). Previous research has shown that stroke health education can improve

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families' understanding and preparedness to provide initial assistance (Sari et al., 2019). Differences in family knowledge levels may be influenced by caregiving experience and exposure to health information.

The results of this study showed a positive and statistically significant correlation between knowledge and initial stroke management ($r = 0.321$; $p = 0.001$). This finding indicates that better family knowledge is associated with better initial stroke management. Knowledge of stroke signs and symptoms can help families recognize medical emergencies and promptly take patients to the emergency department. This finding is consistent with previous research indicating that family knowledge is associated with decision-making regarding initial stroke management (Ardiyanto et al., 2025). Therefore, health education is essential to improve families' ability to recognize stroke symptoms and determine appropriate actions.

In addition to knowledge, attitudes were also significantly associated with initial stroke management ($r = 0.439$; $p < 0.001$). This positive correlation indicates that more favorable attitudes tend to be associated with better initial management. Respondents with positive attitudes tended to be more prepared to make decisions and seek medical assistance than those with neutral attitudes. This finding is consistent with previous research emphasizing the importance of knowledge regarding early stroke detection in preventing clinical deterioration, disability, and death (Aty et al., 2023).

Nevertheless, adequate knowledge and positive attitudes do not always guarantee optimal actions, as family decisions may also be influenced by perceptions of disease severity, previous experiences, and preparedness to respond to emergencies. Therefore, continuous health education should be provided to families to strengthen their ability to recognize stroke symptoms, make timely decisions, and seek immediate medical assistance.

CONCLUSION

This study concludes that the majority of families of hypertensive patients at the Gamping II Community Health Center possess a good level of knowledge (69.4%) and a positive attitude (60.2%) regarding initial responses to a stroke. Nevertheless, the

implementation of appropriate initial responses is only at a "good" level in 48.0% of cases, indicating a gap between knowledge and actual practice. Statistical analysis using the Spearman Rank correlation test confirms a statistically significant relationship between the level of knowledge and the initial response to a stroke ($p = 0.001$), as well as between the family's attitude and the initial response to a stroke ($p = 0.000$). This suggests that a higher level of understanding and a more positive attitude among family members lead to faster and more accurate initial actions when a hypertensive patient experiences a stroke. As a follow-up measure, it is necessary to strengthen structured health education programs and emergency response training for families, ensuring that care during the pre-hospital phase can be optimized.

SUGGESTION

Based on the research findings, families of individuals with hypertension are encouraged to improve their understanding of stroke-related emergency signs and to take a more proactive role in accompanying patients to their routine check-ups at the community health center (Puskesmas), thereby facilitating a faster initial response. Meanwhile, it is recommended that Puskesmas Gamping II optimize its group education programs and the dissemination of visual informational materials regarding stroke management for the general public. Future researchers are advised to broaden the scope of their study variables by incorporating socio-economic factors and accessibility to healthcare facilities, as well as to consider employing qualitative methods and larger sample sizes to gain a deeper and more comprehensive understanding of the phenomenon.

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