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RESEARCH

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Family Perspectives on Stroke Risk Factors in the Community: A Qualitative Descriptive Study

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Abstract

Ischemic stroke is a major cerebrovascular disease contributing significantly to disability and posing a global public health challenge. Although numerous studies have identified stroke risk factors, little is known about how families perceive and interpret these risk factors in community settings. Therefore, this study aimed to explore family perspectives on stroke risk factors in the community. This study employed a qualitative descriptive design. Twelve participants, comprising ten family members of stroke patients and two stroke survivors who were included for data triangulation, were recruited through convenience sampling. Data were collected through semi-structured interviews and analyzed using thematic analysis. Three major themes and ten subthemes emerged from the analysis of families' perspectives on stroke risk factors in the community: 1) a history of pre-existing medical conditions, including hypertension, diabetes mellitus with hypertension, and hyperlipidemia with hypertension, 2) inadequate preventive healthcare practices, including delayed treatment seeking, irregular blood pressure and cholesterol monitoring, and poor adherence to prescribed medication, and 3) unhealthy lifestyle behaviors, including frequent consumption of high-fat foods, inadequate rest and sleep, smoking, and physical inactivity. This study provides novel insights into how families perceive, interpret, and respond to stroke risk factors, and how these perceptions may influence preventive behaviors and health-seeking decisions. Families perceived that stroke risk was closely associated with poorly managed chronic conditions and was further exacerbated by unhealthy lifestyle behaviors. These insights highlight the strategic role of community nurses in delivering family-centered health promotion through health education, early risk identification, and family empowerment to strengthen stroke prevention efforts in community settings.

Keywords: Family Perspectives, Stroke Risk Factors, Ischemic Stroke, Family Nursing.

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1. INTRODUCTION

Stroke remains one of the leading cause of death and disability worldwide among non-communicable diseases. Most stroke risk factors, such as hypertension, diabetes mellitus, dyslipidemia, smoking, obesity, physical inactivity, and unhealthy diets are modifiable through effective prevention efforts (Boehme et al., 2018; Ghazy et al., 2022). However, the rising incidence of stroke suggests that the management of these risk factors within the community remains suboptimal. Stroke prevention and control programs have predominantly focused on the individual, while the role of the family the smallest social unit in supporting stroke patients' health behaviors, has been insufficiently explored (Kernan et al., 2021). Families play a crucial role in recognizing risk factors, making health-related decisions, supporting lifestyle changes, and facilitating access to appropriate healthcare services. Family perceptions regarding stroke risk factors can either facilitate or hinder the planning of effective health promotion and prevention interventions within the community (Farpour et al., 2023; Yusrini et al., 2019).

The World Health Organization (WHO) reports that approximately 15 million people worldwide suffer a stroke each year. Approximately 5 million people die, and another 5 million suffer permanent disabilities that burden families and communities (WHO, 2024). In Indonesia, the prevalence of stroke continues to increase. The results of the five-year basic health research of the Ministry of Health of the Republic of Indonesia found that the prevalence of stroke increased from 7% in 2013 to 10.9% in 2018 (Kemenkes RI, 2018). In Bali Province, the prevalence of stroke reached 11.5% in urban areas and 9.1% in rural areas, with routine health check-ups reported by 43.96%, occasional check-ups by 40.28%, and no follow-up checks by 15.76% (Kemenkes RI, 2018).

Stroke often stems from an accumulation of various risk factors that develop gradually over the course of daily life. Habits such as consuming diets high in salt and fat, engaging in little physical activity, smoking, failing to manage blood pressure or blood sugar levels, and underutilizing early detection services contribute to a high risk of stroke (Lin, 2021; Oliveira et al., 2023). Family perspectives on these risk factors vary and influence how family members perceive risks, engage in prevention, and provide support for changes in health-related behaviors. Studies indicate that families often lack sufficient knowledge regarding stroke risk factors, prevention, and disease management even after a family member has suffered a stroke (Panwilai et al., 2022). This situation highlights a gap between health education programs and families' understanding in the community, underscoring the importance of exploring how family members perceive and interpret stroke risk factors within their specific social and cultural contexts.

Studies show that sustainable lifestyle changes are influenced not only by individual motivation but also by perceptions, support, and family dynamics, which act as either driving or inhibiting factors in the management of stroke risk factors (Farpour et al., 2023; Ishak et al., 2020). However, understanding of how families perceive stroke risk factors, interpret preventive behaviors, and make health-related decisions remains relatively limited, particularly within a community context thereby undermining knowledge that is crucial for further study. This study aimed to explore family perspectives on stroke risk factors in the community.

2. RESEARCH METHOD

This is qualitative study employed a descriptive design to examine and explore family perspectives based on experiences related to stroke risk factors in the community. The study included 12 informants, comprising 10 family caregivers of individuals with ischemic stroke living in the community and two stroke survivors who participated as triangulation informants. The sample size was determined based on data saturation. Recruitment of family caregivers continued until no new information or themes emerged from the interviews (Creswell & Creswell, 2018). This study was conducted in the South Denpasar area in 2024. Participants were recruited through convenience sampling. Eligible participants were primary family

caregivers (spouses or children) who lived with stroke survivors, were aged 25–75 years, were able to communicate effectively, and were willing to participate. Individuals who were unable or unwilling to participate were excluded. To enhance the credibility of the findings, data triangulation was conducted with two stroke survivors who met the eligibility criteria, were willing to participate as informants, and had sufficient communication skills to participate in the interviews.

The instruments used were a semi-structured interview guide and an mp3 recorder for recording information provided by the informants. Data collection was conducted through in-depth, semi-structured interviews with family informants, and data triangulation was conducted with stroke survivors who met the inclusion criteria. The interview guide covered three main domains: 1) family perceptions of the patient's health condition before the stroke, 2) family perceptions of the patient's health management before the stroke, and 3) family perceptions of the patient's lifestyle behaviors before the stroke. Data were analyzed using thematic analysis following Braun and Clarke's six-stage framework: data transcription, initial coding, theme development, theme review, theme definition and refinement, and narrative reporting supported by participant quotations. The findings were then interpreted in relation to the research questions and relevant literature (Braun & Clarke, 2006). Trustworthiness was established in accordance with Lincoln and Guba's criteria through data source triangulation, team discussions, systematic documentation of field notes and transcripts, and representative participant quotations (Rezaei et al., 2024). This study received ethical approval from the Research Ethics Committee of the Bali Institute of Technology and Health No. 04.0309/KEPITEKES-BALI/VIII/2024.

3. RESULTS AND DISCUSSION

A total of 12 informants participated, comprising 10 family representatives of stroke patients (P1-P10) and two stroke survivors included as a data sources for triangulation (PS1-PS2). Family informants were predominantly female and aged between 25 and 71 years, most had completed a bachelor's degree. The majority were patients' daughters and wives, while the remaining participants were a husband and a son. The two stroke survivor informants were male, aged 58 and 70 years, both of whom had a senior high school education and different occupational backgrounds. This variation in participant characteristics provided diverse perspectives on stroke risk factors within the community (Table 1). The analysis identified three themes and several subthemes: a history of pre-existing medical conditions (including hypertension, diabetes mellitus with hypertension, and hyperlipidemia with hypertension); inadequate preventive healthcare practices (including delayed treatment seeking, irregular monitoring of blood pressure and cholesterol, and poor medication adherence); and unhealthy lifestyle behaviors (including frequent consumption of high-fat foods, inadequate rest and sleep, smoking, and physical inactivity) (Figure 1).

Table 1. Sociodemographic Characteristics of Informants (n=12)

Type of Informant	No	Code	Age	Gender	Level of education	Occupation	Status
Family	1	P1	71	Female	Bachelor's degree	Retired teacher	Patient's wife
	2	P2	33	Female	Bachelor's degree	Civil servant	Patient's daughter
	3	P3	34	Male	Bachelor's degree	Private sector employee	Patient's son

	4	P4	25	Female	Senior high school	Private-sector employee	Patient's daughter
	5	P5	70	Female	Diploma	Retired teacher	Patient's wife
	6	P6	53	Female	Senior high school	Housewife	Patient's Wife
	7	P7	36	Female	Bachelor's degree	Civil servant	Patient's daughter
	8	P8	29	Female	Bachelor's degree	Private-sector employee	Patient's daughter
	9	P9	63	Male	Senior high school	Farmer	Patient's Husband
	10	P10	29	Female	Bachelor's degree	Civil servant	Patient's daughter
Patient	11	PS1	70	Male	Senior high school	Retired soldier	Patient
	12	PS2	58	Male	Senior high school	Private-sector employee	Patient

Theme 1: History of Pre-existing Medical Conditions

This theme revealed that, before the onset of stroke, family members recognized that the patient had pre-existing medical conditions. This finding suggests that families perceived stroke as a consequence of, or progression from, these underlying health conditions.

Subtheme 1: Hypertension

Hypertension was identified as one of the pre-existing medical conditions experienced by patients before they suffered a stroke.

"My husband has had high blood pressure for about ten years" (P1).

"Before the stroke, my father did not know what illness he had, we only discovered that he had high blood pressure" (P2).

"Previously, he only had only suffered from hypertension for about four years" (P3).

"He did not have a family history of hypertension, but he only found out about it three years ago" (P4).

"My husband don't have any illness; he just has had hypertension for more than five years" (P6).

"My father has had hypertension for five to six years" (P7).

Subtheme 2: Diabetes mellitus with hypertension

Diabetes mellitus and hypertension were two health conditions experienced by patients before they suffered a stroke.

"We didn't know before, after he had a stroke, we only found out that he had high blood pressure and high blood sugar (P2).

"My wife has had diabetes mellitus for more than two to four years, and her blood sugar has gone up and down, and she also has hypertension" (P9).

Subtheme 3: Hyperlipidemia with hypertension

Hyperlipidemia and hypertension were also identified as health conditions present in patients before they experienced a stroke.

"Before the stroke, there was no illness, no hypertension or diabetes, only high cholesterol (P5).

"There were hypertension and also high cholesterol (P7).

"Initially there was no illness, but high cholesterol was detected during the last two years (P10).

"Before having a stroke, I suffered from high cholesterol and high blood pressure" (PS2).

Theme 2: Inadequate Preventive Health Care Practices

This theme revealed that, before the stroke occurred, family members realized that the patient's condition had been detected too late because he had not experienced any troubling symptoms. Consequently, so the patient did not undergo routine health checks or take medication as recommended by health workers.

Subtheme 1: Delayed treatment seeking

Delay of seeking treatment for previous health problem was reported as one of the factors associated with stroke among patients.

"...treatment was delayed before the stroke occurred" (P2).

"...treatment and care were delayed before the stroke symptoms appeared" (P5),.

"Before I had a stroke, I felt normal. If I experienced symptoms such as headaches, a stiff neck, or a feeling of being unwell, I just rested and did not think it was necessary to see a doctor" (PS1).

Subtheme 2: Irregular blood pressure and cholesterol monitoring

Irregular monitoring of blood pressure and cholesterol regularly was reported as a factor associated with stroke among patients.

"....I rarely checked my blood pressure and seldom went to the health center. After becoming ill, I began visiting the health center regularly to obtain a referral letter to the hospital (P1".

, ...I rarely had health check-ups; after having a stroke, I began checking my blood pressure regularly at the health center (P3).

"....I rarely checked to check blood pressure (P4).

"....I never checked cholesterol again (P5).

"....I very rarely checked my blood pressure or cholesterol and seldom went to the health center because I was busy working (PS2).

Subtheme 3: Poor adherence to prescribed medication

Failure to take medication regularly for previous health problems was also reported as a factor predisposing patients to stroke.

"My husband was prescribed medication by the doctor, but he didn't take it regularly because he was taking herbal medicine" (P6).

"My father didn't take medication regularly. After having a stroke, he began taking it regularly according to the doctor's prescription" (P8).

"My wife took her medication but not regularly and didn't follow the advice of healthcare workers. Now, she follows the advice regularly (P9).

". I didn't take medicine or traditional medicine, I simply continued as usual (PS1).

Theme 3: Unhealthy Lifestyle Behaviors

This theme found that before the stroke occurred, the family realized that the patient still had an unhealthy lifestyle even though he had suffered from several health problems such as high blood pressure, high cholesterol, and high blood sugar.

Subtheme 1: Frequent consumption of high-fat foods

Consumption of fatty foods was reported as one of the patient's lifestyles before the stroke attack occurred.

"Maybe it was because he did not follow a restricted diet; he really liked eating pork and did not like eating vegetables" (P1),

"....did not follow restricted diet and ate oily food and lard (P3),

"....liked high-fat foods, including pork and omelets (P5),

".... ate an unrestricted diet, including pork lawar (P8).

"....ate normally, liked eating pork (PS1)

Subtheme 2: Inadequate rest and sleep

Stroke patients were reported to have a history of inadequate rest and sleep before the stroke occurred.

"...often went to sleep late at night and did not get enough sleep because of trading" (P4).

"...often stayed up late" (P7).

"...did not get enough sleep or rest, liked to drink coffee and stayed up late at night" (P8).

"...did not get enough rest which may have contributed to his stroke" (P9).

"...did not get enough sleep or rest" (PS1).

Subtheme 3: Smoking

Smoking was reported as one of the patient's lifestyles before having a stroke.

"My father was an active smoker. He also liked to drink alcohol" (P3).

"...an active smoker" (P7).

"...have smoked for a long time, but I have now started to cut down" (PS2).

Subtheme 4: Physical inactivity

The patient was also reported to have a history physical in activity before experiencing a stroke.

"...rarely exercised" (P2).

"...never exercised (P7).

"...rarely exercised and preferred to relax (P8),

"...never engaged in any specific exercise" (P10).

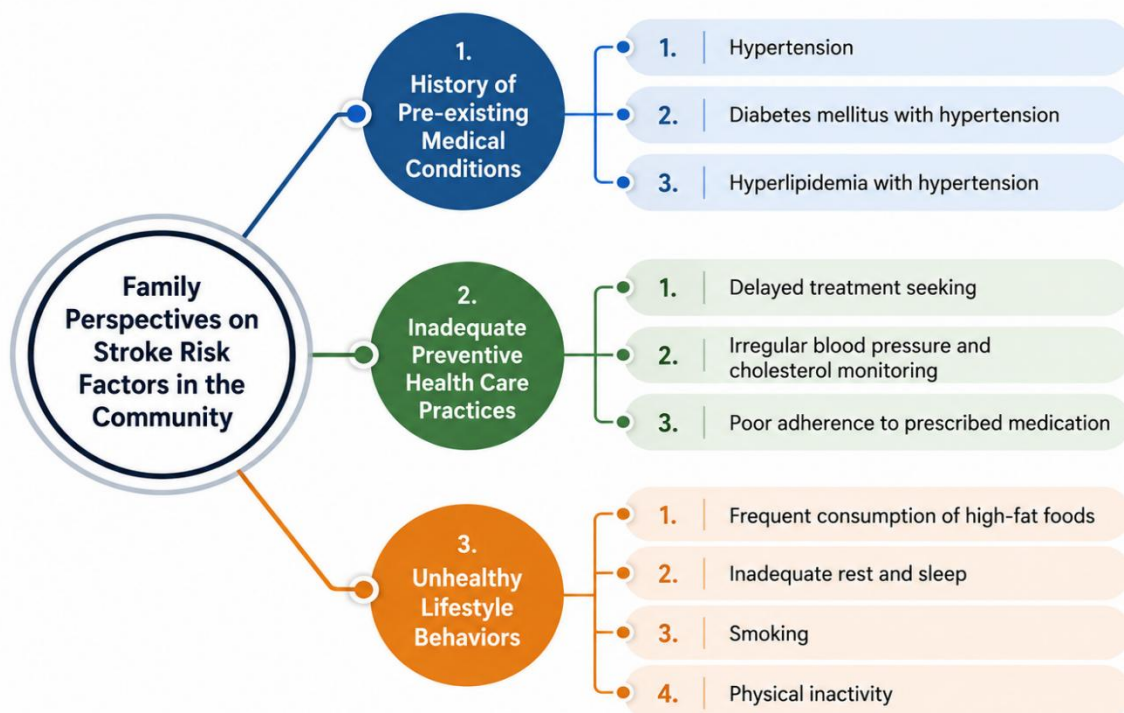


Figure 1 Themes and subthemes of family perspectives on stroke risk factors in the community

Families consistently perceived hypertension, diabetes mellitus, and hyperlipidemia as the major health conditions that predisposed their relatives to stroke. These perceptions were further corroborated by interviews with stroke survivors, who similarly acknowledged that these chronic conditions had contributed to the occurrence of stroke. Most participants reported that they recognized these conditions as stroke risk factors only after the stroke event, indicating that their awareness was largely reactive rather than preventive. This finding suggests a gap between knowledge and early preventive action, as recognizing risk factors after stroke offers limited opportunities to reduce stroke incidence and may reflect inadequate health literacy and

insufficient exposure to preventive education (Boehme et al., 2018; Setyopranoto et al., 2019). Previous evidence shows that uncontrolled hypertension, diabetes mellitus, and dyslipidemia contribute to vascular damage and substantially increase stroke risk, particularly when hypertension and diabetes coexist (Kuriakose & Xiao, 2020; Sarfo et al., 2018). These findings indicate that knowledge and awareness alone are insufficient to prevent stroke without effective risk factor management, including medication adherence, regular health check-ups, and healthy lifestyle modifications (Govori et al., 2024). Community nurses play a vital role in strengthening family-centered health education, and community-based screening programs can facilitate the early identification and control of chronic disease risk factors before a stroke occurs (Magwood et al., 2021)

Family members perceived that delayed treatment seeking, irregular health monitoring, and poor medication adherence contributed substantially to the occurrence of stroke. Many participants described how routine monitoring of blood pressure and cholesterol was often neglected because patients felt healthy or did not recognize the seriousness of their chronic conditions. These findings suggest that the absence of symptoms may create a false sense of security, leading patients to delay preventive care and reducing opportunities for early intervention. Previous studies have similarly shown that poor hypertension management and low medication adherence are associated with an increased risk of stroke (Liu et al., 2023; Silva et al., 2020). Maintaining optimal blood pressure control and improving adherence to antihypertensive therapy are fundamental strategies for stroke prevention. Regular cholesterol screening is also essential to guide appropriate lipid-lowering treatment and ensure timely management of hyperlipidemia according to patients' clinical conditions (Chang et al., 2023; Lee et al., 2017; Wajngarten & Silva, 2019). These findings highlight the need for community health nurses to strengthen continuous patient follow-up, promote adherence to long-term treatment, and educate families that chronic diseases require ongoing management even when patients feel physically well (Ge et al., 2023)

Families perceived unhealthy lifestyle behaviors, including frequent consumption of high-fat foods, smoking, insufficient sleep, and physical inactivity, as important contributors to stroke. Participants frequently associated these behaviors with long-term health deterioration, suggesting that they viewed stroke as the cumulative consequence of unhealthy daily habits rather than a sudden event. This perception is consistent with previous evidence demonstrating that unhealthy lifestyle behaviors are major modifiable risk factors for stroke (Boehme et al., 2018; Sarfo et al., 2018). Individuals with stroke tend to have a higher dietary intake of saturated fatty acids (SFA) and monounsaturated fatty acids (MUFA). Moreover, increased consumption of trans fatty acids (TFA) has been associated with inflammation, endothelial dysfunction, and a greater risk of ischemic stroke due to vascular occlusion. Inadequate sleep has also been identified as an important contributor to stroke risk, as poor sleep duration may exacerbate hypertension, impair glucose regulation, and worsen dyslipidemia, all of which are established risk factors for stroke (Phua et al., 2017). Previous studies have identified smoking and physical inactivity as independent modifiable risk factors for stroke (Sarfo et al., 2018). Smoking contributes to vascular damage and adverse lipid profile changes, including reduced HDL cholesterol and increased LDL cholesterol levels, thereby increasing the risk of vascular occlusion and stroke (World Stroke Organization, 2019). Conversely, regular physical activity improves endothelial function, enhances metabolic health, and has been consistently associated with a lower risk of stroke, particularly when performed daily or every other day. Together with healthy dietary practices, smoking cessation and regular physical activity represent key behavioral strategies for reducing stroke risk at the population level (Boehme et al., 2018; Ghozy et al., 2022). Although participants generally recognized the importance of healthy lifestyles, the continued occurrence of stroke suggests that awareness alone does not necessarily translate into sustained behavioral change. Barriers such as long-

standing habits, limited motivation, and inadequate health promotion may hinder the adoption of healthier lifestyles (Govori et al., 2024). Stroke prevention strategies should extend beyond providing information by incorporating family-centered behavioral interventions, smoking cessation support, dietary counseling, and community-based physical activity programs to facilitate long-term lifestyle modification (Dopler, 2023).

The findings highlight that family members not only recognized stroke risk factors but also acknowledged their important role in preventing stroke through health monitoring, treatment support, and the promotion of healthy lifestyles. These findings emphasize that family-centered interventions should become an integral component of community nursing practice, as families are uniquely positioned to support long-term management of hypertension, diabetes mellitus, and other modifiable stroke risk factors before stroke occurs. Previous studies have shown that family support improves medication adherence, blood pressure control, and self-care among individuals with hypertension and diabetes mellitus (Bukhsh et al., 2020; Chrismilasari et al., 2022; Xing et al., 2023). Beyond primary prevention, continued family involvement is also essential in preventing recurrent stroke by encouraging adherence to treatment, supporting rehabilitation, and promoting independence in daily activities among stroke survivors (Israfil, 2024). The consistency between family members' perceptions and data obtained through triangulation interviews with stroke survivors strengthens the credibility of these findings and highlights a shared understanding of the importance of stroke prevention. Community nurses should actively engage families as partners in stroke prevention through continuous education, risk factor monitoring, and behavioral support to strengthen both primary and secondary stroke prevention.

Study Limitations

This study has several limitations. Data source triangulation did not include healthcare professionals, which may have limited the depth and validation of the findings. Nevertheless, the inclusion of family caregivers and stroke survivors provided meaningful insights into family perspectives on stroke risk factors in the community and contributed evidence supporting family-centered stroke prevention strategies.

Clinical Implications

This study highlights the importance of integrating family perspectives into community health nursing practice. Nurses should implement family-centered assessments to identify how families perceive and respond to stroke risk factors. Interventions should focus on targeted health education that addresses misconceptions, promotes treatment adherence, and encourages regular health monitoring. Additionally, early screening for stroke risk factors among family members of stroke survivors is essential to support preventive efforts and reduce the future incidence of stroke in community settings.

4. CONCLUSION

This study provides important insights into family perspectives on stroke risk factors in the community. Families perceived that stroke was primarily associated with pre-existing chronic conditions, including hypertension, diabetes mellitus, and hyperlipidemia, as well as inadequate preventive healthcare practices, such as delayed treatment seeking, irregular health monitoring, and poor medication adherence. Families also identified unhealthy lifestyle behaviors, including high-fat dietary intake, smoking, physical inactivity, and insufficient rest, as important contributors to stroke. These findings highlight the importance of strengthening family-centered assessment and health promotion strategies that emphasize chronic disease management, adherence to treatment, regular health monitoring, and healthy lifestyle modification. Integrating family perspectives into community nursing interventions may enhance primary stroke prevention and improve community health outcomes.

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