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Awareness of Stroke Risk Factors, Warning Signs, and Prevention Behavior among Community-Dwelling Individuals

Nandha Kumar[1], Ranjeeth Kumar C[2], Poornambika[3]

1. Master of Physiotherapy, Student, Department of Physiotherapy, Yenepoya School of Allied and Healthcare Professions, Yenepoya (Deemed to be University), Bengaluru, Karnataka, India
2. Assistant Professor, Department of Physiotherapy, Yenepoya School of Allied and Healthcare rofessions, Yenepoya (Deemed to be University), Bengaluru, Karnataka, India
3. Assistant Professor, Department of Physiotherapy, Yenepoya School of Allied and Healthcare rofessions, Yenepoya (Deemed to be University), Bengaluru, Karnataka, India

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KEYWORDS

Stroke Risk Factors, Warning Signs, Prevention Behavior, Awareness, Communit y-Dwelling Individuals
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ABSTRACT:

Introduction: A stroke is a sudden, vascular disturbance of brain function that can cause impairment or even death. In India, around 185,000 new cases occur annually, mainly from ischemia or hemorrhage. It affects speech, mobility, and daily life. While risk factors like hypertension, diabetes, and smoking are preventable, public awareness, especially in rural areas, remains low. Many people, particularly the elderly and less educated, cannot recognize warning signs like facial drooping or arm weakness. This study aims to assess stroke awareness in the community and support better public health education.

Objectives: To assess the current level of awareness about warning signs, risk factors, and prevention behaviour of stroke among community-dwelling individuals.

Methods: A cross-sectional study was conducted among 96 community-dwelling individuals in Bangalore, Karnataka. Participants were selected using convenient sampling. Data were collected through a structured questionnaire assessing awareness of stroke risk factors, warning signs, and prevention behavior. Individuals residing in the community were included in the study.

Results: A survey of 96 community individuals in Bangalore found that 70% had good awareness of stroke risk factors, warning signs, and prevention, while 30% showed low awareness. This highlights the need for targeted educational programs to further improve stroke literacy and promote early detection and prevention.

Conclusions: The study found that while 70% of community members had good stroke awareness, 30% lacked sufficient knowledge. This gap underscores the need for continuous community education to improve early recognition, prevention, and reduce the overall stroke burden.

1. Introduction

A stroke is characterized as a sudden onset of clinical indications of localized or global disruption of brain functioning that lasts longer than 24 hours or causes death, with no apparent explanation other

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than a vascular origin[1,2]. The estimated each year of stroke rate in India is 138.1 per 100,000 people on average, with a frequency range of 44.29 to 559 per 100,000.[3] It is a huge health issue in India and across the world because of its significant consequences on disability, morbidity, and mortality.

In terms of pathophysiology, stroke is caused by either haemorrhage (bleeding in or around the brain) or ischemia (from thrombosis or embolism). A stroke occurs when a part of the brain's blood supply is interrupted or reduced; the brain cells start to die as a result of an inadequate supply of essential oxygen and nutrients.[10] And it also, mobility, speech, cognition, self-care, emotional regulation, and social functioning can all be affected by the damaged part of the brain loses its function.

The resulting neurological problems might include emotional instability, memory loss, trouble speaking, paralysis, and poor self-care, depending on the location and severity of the brain injury. Impaired quality of life, dependence on caretakers, and significant financial burdens on families and the healthcare system are some of the long-term consequences. Both modifiable and non-modifiable risk factors are closely linked to stroke. Approximately 57% of all stroke-related deaths are caused by hypertension, making it the most important modifiable risk.[4,5] Diabetes, dyslipidaemia (atherosclerosis), smoking, sedentary lifestyles, poor eating habits, obesity, psychological stress, and excessive alcohol use are other modifiable risk factors. Additionally, long-term stress and worry enhance the risk of stroke.[6,8]

Age, sex, genetic bias, and family history are examples of non-modifiable elements. Even though these risk factors play an important role, not many people are aware of them. More than half of the elderly hypertensive people assessed in rural Bangalore people were unable to identify a single stroke risk factor.[7] Additionally, women and those with less education had lower awareness levels; however, multivariate analysis did not find these differences to be statistically significant.[8]

In the beginning, early medical action is crucial for the identification of stroke symptoms. Sudden weakness or numbness, especially on one side of the body, facial drooping, trouble speaking or understanding speech, vision problems, dizziness, a severe headache, and loss of movement are among the typical warning signs. To increase awareness, the term "FAST"—which stands for Face drooping, Arm weakness, Speech difficulties, and Time to seek emergency services—has been spread worldwide. However, many people fail to recognize these signs or understand their urgency.[9] Additionally, the symptoms of a stroke might differ depending on gender, with women more likely to experience unusual symptoms, including disorientation or unconsciousness. This may result in delays in treatment.[2,10]

By managing risk factors and making the right lifestyle changes, stroke may be significantly avoided. Maintaining optimal blood pressure and glucose levels, getting regular exercise, eating a balanced diet, quitting smoking, and limiting alcohol consumption are important preventative behaviours. Awareness of early treatment options, such as thrombolytic therapy and mechanical thrombectomy, is also crucial for improving stroke outcomes.[11,15]

Even with the availability of effective preventative strategies, community-level implementation is still insufficient and poor. stroke survivors' mobility and quality of life may be considerably increased by combining education and physical activity.[12,13] These kinds of treatments, particularly when conducted in a community context, provide a useful paradigm for prevention and rehabilitation. Community-dwelling individuals, particularly in rural and socioeconomically they have low-level awareness, which increases their risk of poor stroke outcomes due to limited access to health education and services.[14] Even though there was a slight increase in knowledge of stroke warning signs

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between 2018 and 2023, it still exists and is influenced by factors including age, gender, income, and education. In these situations, community members frequently react slowly to stroke symptoms, which causes them to arrive at the hospital later than expected and miss treatment sessions.

Furthermore, nearly 40% of elderly individuals surveyed in rural areas had never even heard of stroke; they lack knowledge of stroke risks and symptoms.[7] This lack of knowledge underscores the urgent need for targeted public health initiatives. Interventions must be culturally appropriate, accessible, and community-centered, using mass media, schools, healthcare workers, and local organizations to reach diverse populations.[10]

Stroke is a major cause of death and permanent disability in India, yet public awareness about its risk factors, warning signs, and preventive measures remains significantly low Several studies show that stroke is quite common, but they also emotional stress and the importance of better preventative and education strategies are needed, especially in the community. A significant percentage of people are unable to identify crucial stroke signs such as limb weakness, slurred speech, or facial drooping. Similarly, awareness of modifiable risk factors like hypertension, smoking, obesity, and high cholesterol is insufficient, lacking knowledge.[16] In rural areas with limited resources, where access to medical services and health education is limited, this lack of knowledge is more noticeable and leads to poorer outcomes and delayed treatment. Because stroke treatment is time-sensitive, these delays may lead to worse disability or even death.[8,17]

This study is to assess the degree of knowledge among community-dwelling individuals regarding stroke risk factors, early symptoms, and preventative behaviours in light of these limitations. It focuses on identifying the knowledge gaps at the community level and on timely interventions. By understanding the current level of awareness, this study aims to guide the development of targeted public health education programs that encourage lifestyle changes at the community level and early intervention. The findings may help develop more effective community-based stroke prevention programs, which may significantly reduce the stroke morbidity and fatality rate, particularly for underserved populations that are usually left out of regular health care.[15,16,18,19]

2. Objectives

To assess the current level of awareness about warning signs, risk factors, and prevention behaviour of stroke among community-dwelling individuals.

3. Methods

This study adopted a cross-sectional design and was conducted in Bangalore. The source of data comprised community-dwelling individuals residing in Bangalore. The inclusion criteria consisted of individuals aged above 60 years, those living independently in their homes, and individuals who could read and understand English. The exclusion criteria included individuals with mental illness, visual disability, or hearing disability. A convenient sampling method was used to recruit a sample size of 96 participants. The material used for data collection was a structured questionnaire.

Prior to data collection, Scientific Review Board (SRB) approval and ethical clearance were obtained. Informed consent was secured from each participant before participation. The questionnaire was administered in person under the supervision of the principal investigator, ensuring that participants fully understood the questions. Upon completion of data collection, the responses were systematically compiled and analyzed.

The statistical analysis was performed using JAMOVI software (version 2.6.26). Descriptive statistics were used to summarize demographic characteristics and questionnaire responses. Categorical variables, such as gender, knowledge

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level, and awareness indicators, were expressed as frequencies and percentages. The analyzed data were interpreted, and the final report was prepared based on the findings.

2. Results

Surveys of 96 individuals' awareness and knowledge of stroke risk factors, warning indicators, and preventative behaviors were conducted. 70% of respondents showed good awareness and knowledge, according to the data, suggesting that the general public has a relatively good understanding of stroke-related information. However, 30% of individuals had little awareness, indicating a significant stroke literacy gap among the general population. According to these findings, focused educational programs are necessary to further raise public awareness of stroke and encourage early identification and prevention, particularly among the 30% of the population that lacks sufficient knowledge about the condition. The demographic characteristics are shown in the Table. 1. Participants' knowledge on Awareness of Stroke Risk Factors, Warning Signs, and Prevention Behavior among Community Dwelling Individuals was assessed through a questionnaire designed to evaluate their knowledge about stroke. The questions covered fundamental aspects such as General awareness, Risk factors awareness, Mechanism of stroke awareness, Stroke clinical presentation awareness, and Prevention awareness. Table 2 summarizes the frequency and percentage of correct and incorrect responses for each question.

Demographic Characteristics	Counts	% of Total	Cumulative %
GENDER			
Male	80	83.30%	83.30%
Female	16	16.70%	100.00%
OCCUPATION			
Business	20	20.80%	20.80%
Security	3	3.10%	24.00%
Former	9	9.40%	33.30%
Retired Teacher	11	11.50%	44.80%
Retired Company Worker	2	2.10%	46.90%
Retired Bank Manager	2	2.10%	49.00%
Retired	24	25.00%	74.00%
Retire Government Employee	2	2.10%	76.00%
Retired Teacher	8	8.30%	84.40%
Social Worker	2	2.10%	86.50%
House Wife	2	2.10%	88.50%
Ex Military Officer	2	2.10%	90.60%
Retired Income Tax Officer	2	2.10%	92.70%
Self Employed	3	3.10%	95.80%
Retired Manager	2	2.10%	97.90%
Retired Principal	2	2.10%	100.00%
FAMILY HISTORY			

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No	57	59.40%	59.40%
Yes	39	40.60%	100.00%

TABLE 1: DEMOGRAPHIC CHARACTERISTICS AND PERCENTAGES OF THE TOTAL

AGE DETAILS	
Age	**Count**
60-70	78
71-80	16
81-90	2

TABLE 2: DEMOGRAPHIC AGE DETAILS

Question	Counts	% of Total	Cumulative %
Q1. know about the stroke			
Correct answer	85	88.50%	88.50%
wrong answer	11	11.50%	100.00%
Q2.stroke is disorder primary affecting			
Correct answer	21	21.90%	21.90%
wrong answer	75	78.10%	100.00%
Q3. Do you think the risk of stroke is			
Correct answer	62	64.60%	64.60%
wrong answer	34	35.40%	100.00%
Q4. Which of the following age groups has a higher risk of stroke?			
Correct answer	78	81.30%	81.30%
wrong answer	18	18.80%	100.00%
Q5. Can young people suffer a stroke?			
Correct answer	38	39.60%	39.60%
wrong answer	58	60.40%	100.00%
Q6. High blood pressure			
Correct answer	18	18.80%	18.80%
wrong answer	78	81.30%	100.00%
Q7. Cigarette smoking			
Correct answer	78	81.30%	81.30%
wrong answer	18	18.80%	100.00%
Q8. Diabetes mellitus			
Correct answer	41	42.70%	42.70%
wrong answer	55	57.30%	100.00%
Q9. High cholesterol level			
Correct answer	74	77.10%	77.10%
wrong answer	22	22.90%	100.00%
Q10.Rupture of blood vessels			
Correct answer	55	57.30%	57.30%
wrong answer	41	42.70%	100.00%
Q11.Blockage of blood vessels			
Correct answer	77	80.20%	80.20%
wrong answer	19	19.80%	100.00%
Q12.Tension			
Correct answer	3	3.10%	3.10%

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wrong answer	93	96.90%	100.00%
Q13.Worrying			
Correct answer	11	11.50%	11.50%
wrong answer	85	88.50%	100.00%
Q14.Speech disorder			
Correct answer	51	53.10%	53.10%
wrong answer	45	46.90%	100.00%
Q15.Weakness or disability to move one half of the body			
Correct answer	75	78.10%	78.10%
wrong answer	21	21.90%	100.00%
Q16.Decreased sensation or inability to feel things			
Correct answer	34	35.40%	35.40%
wrong answer	62	64.60%	100.00%
Q17.Decreased vision			
Correct answer	51	53.10%	53.10%
wrong answer	45	46.90%	100.00%
Q18.Person can reduce the risk of stroke?			
Correct answer	70	72.90%	72.90%
wrong answer	26	27.10%	100.00%

TABLE 3: FREQUENCY AND PERCENTAGE OF CORRECT AND INCORRECT RESPONSES FOR EACH QUESTION.

The overall knowledge of the Awareness of Stroke Risk Factors, Warning signs, and Prevention Behaviour among community-dwelling individuals was categorized into two levels: good and poor knowledge. As shown in Figure 1, the participants (30.2%) demonstrated poor knowledge of stroke. Approximately (69.8%) of respondents showed good knowledge, indicating a strong understanding of the concepts and applications of Awareness of Stroke Risk Factors, Warning Signs, and Prevention Behaviour among Community Dwelling Individuals.

Awareness& Knowledge	% of Total
Poor	30.20%
Good	69.80%

FIGURE 1: THE PARTICIPANTS DEMONSTRATED KNOWLEDGE OF STROKE

FIGURE 2: AWARENESS & KNOWLEDGE PIE CHART

Discussion.

This study aimed to evaluate and assess the level of awareness and knowledge regarding stroke risk factors, warning signs, and prevention behaviours among community-dwelling individuals. Out of 96 participants, 69.8% demonstrated good awareness, while 30.2% had poor knowledge. These findings suggest that, although a large number of people in the community possess a reasonable understanding of stroke-related information, a significant portion of the population still lacks adequate knowledge. This highlights the importance of focused education

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programs to reduce this gap and promote early stroke identification as well as prevention.

The study's questionnaire evaluated various aspects, such as general stroke awareness, recognition of risk factors, stroke mechanism knowledge, knowledge of clinical presentation, and preventative behaviour. The majority of participants answered the important questions correctly, but 30.2% had inadequate knowledge, indicating that public understanding is still insufficient and impacted by a number of fundamental aspects, including age, income, education, and previous stroke exposure [20].

These results are consistent with earlier studies. In Al-Ahsa, Saudi Arabia, for example, a survey of diabetes patients showed that just 40.6% had heard of stroke, and only 43.1% had good awareness of it. Moreover, only one-fourth were aware that men are at a higher risk until the age of 80 [21]. According to this comparison, awareness among the general community might be slightly better, but individuals with high-risk factors, like diabetic individuals, still lack sufficient knowledge

According to earlier research, diabetic individuals were most familiar with symptoms including speech abnormalities (70.8%), weakness in one side of the body (69.8%), visual problems (64.4%), and sensory loss (62.9%)[21]. Similar patterns were seen in our data, and these symptoms were among the most widely acknowledged. But there is still a lack of knowledge. which may lead to delays in seeking medical help[22].

Research from different countries also highlights the differences in stroke awareness across communities. For example, formal education was found to be a good indicator of stroke awareness, and 70.3% of diabetes patients had a high understanding of stroke[23]. In a similar way, studies conducted in Nigeria, the United States, and Australia verified generally high awareness levels, the most widely known warning signs. Numbness and paralysis were commonly reported in Ghana and Nigeria, but visual issues and slurred speech were more typically reported in Australia and Ireland.[24,25]

A significant number of people in Saudi Arabia were able to correctly recognize bleeding (43.7%) and thrombosis (63.6%) as the two types of strokes. Commonly identifiable risk factors include smoking (41.9%), dyslipidaemia (45.8%), and hypertension (55.8%), [21]. These findings are consistent with our study, where participants also showed a fair understanding of stroke risk factors, though awareness of symptoms like sudden headache, dizziness, and speech difficulty.

Our results also confirm previous findings that older age (especially between 50 and 65 years), greater income and education levels, and a family history of stroke are related to increased awareness[21,23]. These correlations highlight the need to focus health education initiatives on younger people and those who have less access to health information.

In summary, although most survey participants demonstrated a high level of awareness about stroke-related information, 30.2% of people still have a significant knowledge gap. This highlights how strongly community-based educational programs and awareness initiatives help to understand the risk factor management, early symptom assessment, and prevention strategies. Filling up these gaps can greatly improve stroke literacy and help lower the community's total stroke burden[3,26,27].

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