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(RESEARCH ARTICLE)

AWARENESS OF EARLY SYMPTOMS OF STROKE, RISK FACTORS OF STROKE AND PREVENTIVE PHYSIOTHERAPY MEASURES OF STROKE AMONGST GENERAL POPULATION

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ABSTRACT

BACKGROUND: Stroke remains one of the leading causes of death and long-term disability worldwide. Recognising its early symptoms and understanding the risk factors involved can make the difference between timely treatment and lasting complications. Physiotherapy contributes to prevention by encouraging physical activity and supporting healthier lifestyle habits. This study looked at how aware the general population is of early stroke symptoms, stroke risk factors, and preventive physiotherapy measures.

Aim and Objectives: To assess awareness of early stroke symptoms, stroke risk factors, and preventive physiotherapy measures of stroke using a self-made, validated questionnaire.

Materials and Methods: This was a community-based, cross-sectional observational study carried out over six months. A total of 145 participants were recruited through convenience sampling, and information was collected through interviews using a self-developed, validated 12-item questionnaire. The questionnaire covered stroke risk factors, early symptoms based on FAST, and awareness of preventive physiotherapy measures. Data were analysed in SPSS using descriptive statistics.

Results: Hypertension was the most widely recognised risk factor (84.8%), followed by high cholesterol (59.3%), while awareness of the other risk factors was noticeably lower. Only 10.3% of participants had ever heard of FAST, and knowledge of its individual components was similarly weak. Even so, 91.7% knew that emergency services should be contacted immediately if a stroke was suspected. Awareness of physiotherapy as a preventive measure was also limited.

Conclusions: These findings point to clear gaps in public awareness of stroke's warning signs, its risk factors, and the preventive role physiotherapy can play. Building community awareness around FAST, healthier lifestyle habits, and physiotherapy's contribution to prevention could support earlier recognition and better stroke prevention overall.

Keywords: Awareness, FAST, Physiotherapy, Risk Factors, Stroke

1 INTRODUCTION

Stroke is a serious neurological condition and one of the leading causes of death and disability. It can affect a person's movement, speech, balance, coordination, and overall ability to manage everyday activities. Because stroke symptoms tend to appear suddenly, recognising them early and seeking medical help without delay matters a great deal. FAST offers a simple way to remember the common warning signs: Face drooping, Arm weakness, Speech difficulty, and Time to call emergency services. Yet even though stroke is widely understood to be a medical emergency, many people still struggle to identify its early symptoms or recognise what raises their risk of developing it.

Several stroke risk factors, including hypertension, diabetes, high cholesterol, obesity, smoking, tobacco use, physical inactivity, and excessive alcohol consumption, can be controlled or reduced through healthier lifestyle choices. Physiotherapy also has an important part to play in prevention, whether through encouraging regular physical activity, supporting weight management, designing suitable exercise programmes, or educating people about lifestyle changes. However, this preventive role may not be well understood by the general population. It is therefore worth examining how much people actually know about stroke symptoms, risk factors, and preventive physiotherapy measures. Identifying these gaps can help shape more effective community education programmes and, ideally, encourage earlier recognition, timelier treatment, and healthier preventive habits.

2 MATERIALS AND METHODS

- **Study Type:** An observational cross-sectional study was carried out.
- **Study Population:** The study included members of the general population aged 20 to 60 years.
- **Study Area and Duration:** The study was conducted in a community setting in Mumbai over a period of six months.
- **Sample Size Calculation:** A sample size of 145 was calculated at a 90% confidence level, allowing for a 10% dropout rate.
- **Sampling and Recruitment:** Convenience sampling was used. Individuals in the community who met the eligibility criteria were approached, and those willing to take part were interviewed after being given a participant information sheet and providing consent.
- **Inclusion criteria:** 1. Individuals in the community aged 20 to 60 years. 2. Participants willing to take part in the study.
- **Exclusion criteria:** Individuals from the medical profession.

2.1 Study Tool

Data were collected using a 12-item, interview-based, self-made validated questionnaire, divided into four sections.

- **SECTION A:** Demographic details — including name, age, gender, educational qualification, contact number, occupation, and area of residence.
- **SECTION B:** Awareness of stroke risk factors — two questions assessing awareness of risk factors. Q1 is a single-response item, while Q2 is a multiple-response question allowing more than one option to be selected.
- **SECTION C:** Awareness of early stroke symptoms — one question assessing awareness based on the FAST acronym developed by the American Heart Association, with each symptom treated as a single-response item, plus a statement assessing awareness of how to respond to someone showing signs of stroke.
- **SECTION D:** Awareness of preventive physiotherapy measures — nine questions assessing awareness of measures such as physical activity to reduce stroke and hypertension risk, physiotherapist-led education on lifestyle modification, and consulting a physiotherapist for stroke prevention, rated on a 2-point Likert scale (Yes/No).

2.2 Data Collection

Following approval from the Institutional Research Board and face validation of the questionnaire, eligible participants were recruited and data were collected through interviews.

2.3 Ethical Approval and Consent

Ethical approval was obtained from the Institutional Research Board of K. J. Somaiya College of Physiotherapy, and written informed consent was obtained from all participants before they took part in the study.

2.4 Data Analysis

Data from the self-developed questionnaire were entered into SPSS. Descriptive statistics — frequency (n) and percentage (%) for categorical data, and mean and standard deviation for continuous data — were used to summarise the responses. Bar charts, pie charts, and tables were used to present the analysed data.

3 RESULTS

This cross-sectional study included 145 participants and looked at their awareness of stroke risk factors, early warning symptoms, and preventive physiotherapy measures using a self-developed, validated questionnaire. The sample had a mean age of 39.82 ± 13.24 years, with 76 (52.4%) females and 69 (47.6%) males (Table 1, Figure 1). Most participants were graduates (52.4%) or postgraduates (36.6%), reflecting a relatively well-educated study population.

Table 1: Demographic characteristics of participants (n = 145)

Characteristic	Frequency (n)	Percentage (%)
Mean age (years) ± SD	39.82 ± 13.24	-
Female	76	52.4
Male	69	47.6
Education - Graduate	76	52.4
Education - Postgraduate	53	36.6
Education - Secondary	15	10.3
Education - Primary	1	0.7

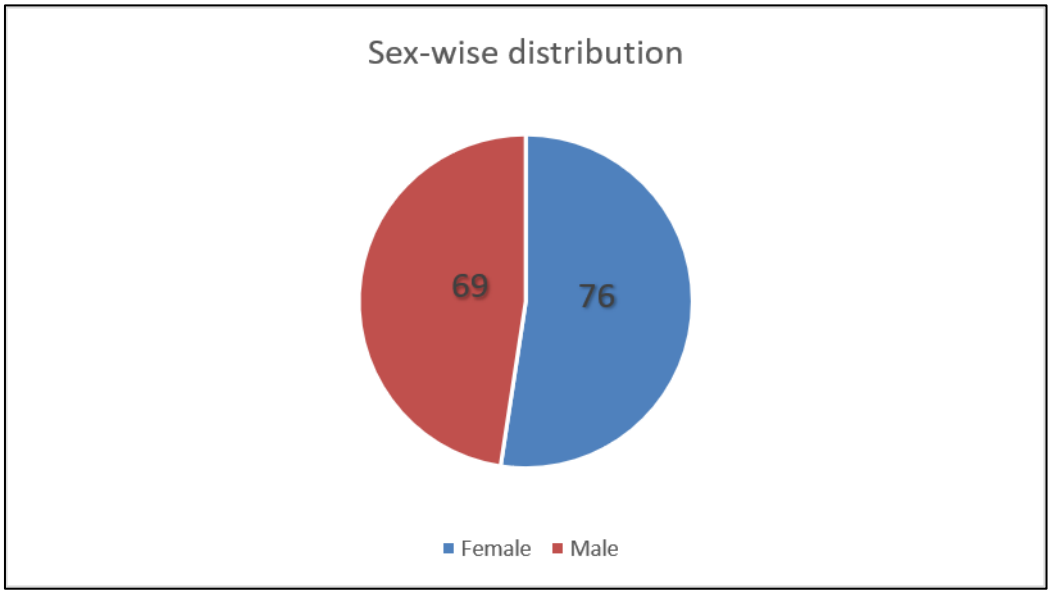

Figure 1: Pie chart showing sex-wise distribution

On general awareness of stroke, 44.8% of participants said they were aware of the term "brain stroke," 51.0% said they were aware only to some extent, and 4.1% had no awareness at all — a distribution that differed significantly from chance (χ^2 = 56.455, p < 0.001). When asked to name risk factors for stroke, high blood pressure came out on top (84.8%), followed by high cholesterol (59.3%). Awareness of other modifiable risk factors trailed well behind, including smoking (31.7%), obesity (22.8%), diabetes mellitus (22.1%), family history (15.9%), physical inactivity (14.5%), and tobacco use (12.4%) (Table 2).

Table 2: Awareness of stroke risk factors (multiple response)

Risk Factor Identified	Frequency (n)	Percentage (%)
High blood pressure	123	84.8
High cholesterol	86	59.3
Smoking	46	31.7
Obesity	33	22.8
Diabetes mellitus	32	22.1
Family history of stroke	23	15.9
Physical inactivity	21	14.5
Use of smokeless tobacco	18	12.4

Awareness of the FAST acronym for recognising stroke symptoms was poor — only 10.3% of participants had ever heard of it, while 89.7% had not. Knowledge of its individual components was just as limited: only 11.7% correctly identified "F" as face drooping, 20.0% identified "A" as arm weakness, 12.4% identified "S" as speech difficulty, and 32.4% identified "T" as time to call emergency services, with most participants answering "don't know" for each item (all differences statistically significant at $p < 0.001$, Table 3). On a more encouraging note, when asked what to do if someone showed signs of stroke, 91.7% correctly said they would call emergency services immediately.

Table 3: Awareness of the FAST acronym and its components

FAST Component	Correct (%)	Don't know (%)	Chi-square (p value)
F - Face drooping	11.7	66.9	144.407 (p<0.001)
A - Arm weakness	20.0	69.7	165.041 (p<0.001)
S - Speech difficulty	12.4	69.0	152.959 (p<0.001)
T - Time to call emergency	32.4	64.8	159.966 (p<0.001)
Heard of FAST acronym overall	10.3	89.7 (never heard)	Binomial p<0.001

Awareness of preventive physiotherapy measures showed a mixed picture. While 66.2% of participants believed stroke is preventable and 75.2% recognised that physical activity lowers stroke risk and hypertension, only 18.6% had heard of physiotherapy as a preventive measure, and just 4.1% had ever consulted a physiotherapist for stroke prevention. Only 37.9% were aware that physiotherapists can provide lifestyle education. Knowledge of transient ischaemic attack ("mini stroke") was particularly weak, with only 6.9% aware of the concept and 35.2% aware that hypertension is a major risk factor for it (Table 4). All items in this section showed statistically significant response distributions ($p < 0.001$, except DA8 at $p = 0.005$).

Table 4: Awareness of preventive physiotherapy measures (Section D)

Preventive Physiotherapy Awareness Item	Yes (%)	No (%)
Stroke is preventable (DA4)	66.2	33.8
Heard of physiotherapy as prevention (DA5)	18.6	81.4
Physical activity reduces stroke risk (DA6)	75.2	24.8
Ever consulted a physiotherapist (DA7)	4.1	95.9
Physiotherapists can educate on lifestyle (DA8)	37.9	62.1
Weight loss reduces stroke risk (DA9)	65.5	34.5
Physical activity reduces hypertension (DA10)	75.2	24.8
Knows what a 'mini stroke' is (DA11)	6.9	93.1
BP is a major risk factor for mini stroke (DA12)	35.2	64.8

Taken together, participants showed reasonably good awareness of the most common risk factors (hypertension, cholesterol) and knew how to respond in an emergency, but clear gaps remained in recognising the FAST warning signs, understanding transient ischaemic attack, and appreciating the preventive role physiotherapy can play in stroke management.

4 DISCUSSION

This study looked at awareness of stroke risk factors, early warning symptoms, and preventive physiotherapy measures among 145 community-dwelling adults. The sample was fairly balanced by sex and generally well-educated, yet notable gaps in stroke-specific knowledge still came through — suggesting that education level alone doesn't guarantee good health literacy around stroke, and that more targeted public education is needed.

General awareness of the term "stroke" was common, but many participants said their understanding was only partial. Simply recognising the word doesn't necessarily mean someone understands its causes, symptoms, or consequences, and this kind of surface-level familiarity can create a false sense of preparedness. Community programmes would do well to move beyond just naming the condition and instead build practical, usable knowledge.

Awareness of risk factors was uneven: hypertension and cholesterol dominated responses, while behavioural factors like smoking, obesity, and physical inactivity were recognised far less often. Since most of these factors are modifiable, this gap represents a missed opportunity for people to take early, self-directed preventive action. Limited awareness of family history is also concerning, as individuals with a hereditary predisposition may not think to monitor their blood pressure, glucose, or lipid levels more closely.

The most striking finding was how poorly participants understood the FAST acronym and its components. Face drooping, arm weakness, and speech difficulty are sudden, visible signs that should immediately raise suspicion of stroke, yet most participants simply answered "don't know." This echoes findings from similar community studies and is clinically concerning, since failing to recognise these signs can delay care and shrink the window for time-sensitive treatments like thrombolysis.

Interestingly, most participants knew to call emergency services when a stroke was suspected, even though they couldn't reliably name the symptoms that would trigger that call. This gap suggests that public health messaging has done a good job conveying urgency but not symptom recognition. Future campaigns would benefit from pairing emergency-response messaging with simple, memorable tools like FAST.

Findings on preventive physiotherapy were mixed. Most participants recognised that physical activity and weight control lower stroke risk, but few knew physiotherapists have a specific preventive role, and almost none had ever consulted one. It seems the public values exercise without necessarily connecting it to physiotherapy as a profession, which limits how many people actually seek out physiotherapist-led prevention services. Broadening public perception of physiotherapy beyond rehabilitation to include primary prevention could strengthen a more multidisciplinary approach to stroke prevention.

Awareness of transient ischaemic attack ("mini stroke") was the weakest area assessed. Since TIA is a critical warning sign of an impending major stroke, this gap is concerning — people who dismiss these transient symptoms may be missing a real opportunity for preventive intervention.

Overall, these findings reveal a clear divide between general stroke awareness and the more actionable knowledge needed for early recognition and prevention. This points to a need for structured, community-based education that addresses FAST recognition, modifiable risk factors, TIA, and the preventive role of physiotherapy.

Limitations of the study

- The cross-sectional design captured awareness at a single point in time, so it cannot establish cause-and-effect relationships or track how awareness changes over time.
- Convenience sampling was used, which may not fully represent the broader general population.
- The relatively small sample of 145 participants, drawn from a single community setting, limits how far these findings can be generalised to other regions, rural populations, or groups with different educational and socioeconomic backgrounds.
- Responses relied on a self-developed questionnaire and participants' self-reported knowledge, which may have been affected by recall, guessing, or a tendency to give socially desirable answers.
- Individuals from the medical profession were excluded from the study.

- The study did not compare awareness across demographic subgroups, nor did it test whether an educational intervention could improve knowledge.

5 CONCLUSION

- Overall awareness of stroke among the general population was moderate, with clear variation across different areas of knowledge.
- Hypertension was the most widely recognised risk factor, while awareness of others — diabetes, obesity, smoking, and physical inactivity — was comparatively low.
- Awareness of the FAST acronym and its individual components was poor, pointing to a limited ability to recognise the early warning signs of stroke.
- Most participants knew that emergency medical help should be sought during a suspected stroke, but many couldn't identify the symptoms that would call for this response.
- Knowledge of physiotherapy's preventive role — including lifestyle counselling and exercise-based prevention — was limited, and very few participants had ever consulted a physiotherapist for stroke prevention.
- These findings highlight important gaps in public stroke awareness and support the need for structured, community-based education to improve early symptom recognition, risk-factor management, and preventive healthcare-seeking behaviour.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of conflict of interest

The authors state that there are no conflicts of interest related to this study.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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