International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Awareness Regarding Risk Factors, Signs and Symptoms and Treatment of Stroke

Ms. Shruti Gupta[1], Dr. Ujwal Yeole[2]

[1]Intern, Department of Physiotherapy, TMV's Indutai Tilak College of Physiotherapy
[2]Professor, Department of Physiotherapy, TMV's Indutai Tilak College of Physiotherapy

Abstract

Background:

The awareness of risk factors, signs and symptoms and treatment of stroke is important to reduce morbidity and mortality in India and may lead to better functional outcome and quality of life for the patient. This study was conducted to assess the level of awareness of stroke in the general population of Pune.

Materials and methods:

Ethical committee clearance was taken. A sample of 201 participants from Pune and nearby regions, India participated in this cross sectional study. Data was collected via Google forms and further analyzed.

Results:

The average age of the study participants was 30.29 with SD OF 12.53 yrs, out of which 60.2% were males and 39.3% were females. Most commonly recognised risk factors in this study were hypertension and stress (71.6%). Only 4.2% participants were able to identify all the risk factors correctly. Most identified sign was chest pain (64.2%) followed by loss of balance (55.7%). 56.7% recognized the brain as the part affected. In terms of emergency response, there was a high level of awareness regarding the importance of calling an ambulance (76.1%). 86.57% knew at least two correct measures for prevention of stroke. Only 47.8% were aware about the achievable recovery post stroke

Conclusion: There is significant lack of awareness about risk factors and signs and symptoms of stroke. Public awareness can be done by conducting seminars and via online social media platforms to target young age groups.

Keywords: Stroke, Awareness, Risk factors, signs and symptoms, rehabilitation, treatment.

1. INTRODUCTION

Stroke (cerebrovascular accident) is the sudden loss of neurological function caused by an interruption of the blood flow to the brain. A stroke, also known as a cerebrovascular accident (CVA), is a medical condition that occurs when the blood supply to the brain is disrupted, leading to the loss of brain function. It is a serious and potentially life-threatening event that requires immediate medical attention**.**

Ischemic stroke is the most common type, affecting about 80% of individuals with stroke, and results when a clot blocks or impairs blood flow, depriving the brain of essential oxygen and nutrients. Haemorrhagic stroke affects about 20%, occurs when blood vessels rupture, causing leakage of blood in or around the brain. Clinically, a variety of focal deficits are possible, including changes in the level of

consciousness and impairments of sensory, motor, cognitive, perceptual, and language functions.[1]The important modifiable risk factors for stroke, as identified by the American Stroke Association are hypertension, diabetes, cardiac disorders (atrial fibrillation, valvular heart disease, and coronary heart disease), hyperlipidaemia, obesity, physical inactivity, diet, heavy alcohol consumption and excessive cigarette smoking.[2]

The risk of stroke in young people is greatly increased by unhealthy lifestyle factors such alcoholism, smoking, diabetes, hypertension, dyslipidemia, and obesity. Furthermore, greater overall death rates following a stroke are also a result of these factors. In developing nations, it is necessary to immediately and efficiently implement primary and secondary preventive strategies, with a particular emphasis on lifestyle adjustments and addressing risk factors among the youth population, in order to lower the incidence of stroke and improve outcomes.[3]The burden of stroke is increasing in India; stroke is now the fourth leading cause of death and the fifth leading cause of disability. The prevalence of stroke in India in 2022 is estimated to be between 84 and 262 per 100,000 people in rural areas, and between 334 and 424 per 100,000 people in urban areas. This means that there are an estimated 1.4 to 4.3 million people living with stroke in India. The incidence of stroke, which is the number of new cases of stroke each year, is estimated to be between 119 and 145 per 100,000 people. Previous research suggests that the incidence of stroke in India ranges between 105 and 152/100,000 people per year. [4]The five stroke warning signs established by the National institute of neurological disorders and Stroke are numbness or weakness in the face, arms, or legs (unilateral); confusion, difficulty speaking or understanding speech; vision disturbances in one or both eyes, dizziness, trouble walking, loss of balance or coordination, severe headache with no known cause. [2] Early treatment and intervention in any kind of disease is always beneficial. Treatments of acute TIA include thrombolytic which can reverse the acute paralysis in many patients if given in the window period of four and a half hours.[5] Recent research showing that early thrombolysis should be initiated in stroke patients has added the benchmark to its therapy options. Despite advances in stroke therapeutic care, the disease's burden is increasing as stroke victims fail to seek immediate medical assistance, resulting in poor therapeutic outcomes. Thrombolytic therapy is a time-sensitive treatment for acute ischemic stroke, restoring blood flow and preserving brain function. It improves functional outcomes, reduces mortality rates, and is cost-effective. Guidelines from the American Stroke Association and the European Stroke Organization recommend its use in stroke patients.[6] Continuous research and advancements aim to refine treatment protocols and expand treatment opportunities for stroke patients. This treatment is crucial for improving patient outcomes and reducing mortality.

Numerous studies have found that stroke patients are delayed in hospitalization due to a lack of understanding about the early detection of stroke signs and symptoms. According to several studies, individuals who undergo early thrombolysis have a better therapeutic prognosis; however, this is dependent on the time a patient arrives at the hospital to seek medical care.

The "BE FAST" rule is an acronym used to quickly identify and respond to stroke symptoms. Each letter stands for a critical step in recognizing a potential stroke and seeking immediate medical attention. Here's what "BE FAST" stands for: **B**alance: Sudden loss of balance or coordination, **E**yes: Sudden vision changes or trouble seeing in one or both eyes, **F**ace: Facial drooping or numbness, especially on one side, **A**rms: Weakness or numbness in one arm or leg, especially on one side of the body, **S**peech: Difficulty speaking or understanding speech, slurred speech, or confusion, **T**ime: Time is crucial. If you

or someone else is experiencing these symptoms, call emergency services immediately. The faster a stroke is diagnosed and treated, the better the outcome and chance of recovery.[7]

The importance of the "BE FAST" rule lies in its ability to quickly recognize symptoms and prompt action. Time is of the essence in treating strokes because certain stroke treatments, like Thrombolytic medications or interventions, are most effective when administered within a specific window after the onset of symptoms. Delays in seeking medical help can lead to more severe damage or complications from a stroke. Therefore, remembering and acting upon the "BE FAST" rule can significantly improve the chances of a positive outcome for someone experiencing a stroke. The most common warning symptom in a stroke, as described by respondents, was paralysis of one side of the body. The other symptoms identified by the participants were headache, loss of consciousness, loss of balance, difficulty in speech, loss of vision, and tingling sensation on one side.

Stroke prevention is essential and can be achieved through lifestyle modifications, including maintaining a healthy diet, exercising regularly, not smoking, managing chronic conditions like high blood pressure, diabetes, and high cholesterol, and limiting alcohol consumption. Stress management. Certain risk factors, such as age, family history, and previous strokes or transient ischemic attacks (TIAs), cannot be modified, but awareness and early detection can still help reduce the impact of a stroke.

Stroke rehabilitation refers to the process of helping stroke survivors improve their quality of life, regain skills, functions, and independence lost due to stroke. Stroke rehabilitation is an essential part of recovery for many individuals who have experienced a stroke. It involves various therapies, including physical, occupational, and speech therapy, to regain lost functions and improve quality of life. It is found that other than genetic causes or family history, stroke is preventable.[8]Knowledge of stroke, its risk factors, signs and symptoms and treatment will help reduce the incidence of stroke.

Objectives

To assess the level of awareness of risk factors, signs and symptoms and treatment of stroke.

2. MATERIALS AND METHODS

2.1 Study design : Observational study

2.2 Research setting : Convenient sampling. This study was conducted in Pune, India.

Duration: 6 months

2.3 Participants:

Eligibility Criteria

- Both genders
- People having basic knowledge of English language
- Relatives of high risk population
- Age above 18 to 80 yrs

2.4 Outcome measures: Self rated questionnaire

3. RESULTS

Table 1: Demographic data

Age Group	Count
18-24	107
25-31	34

32-45	30
46-80	30

Table 2: Participants awareness about risk factors, signs and symptoms and treatment of stroke

CAN ABNORMAL BLOOD PRESSURE CAUSE STROKE?	**n**
Yes, High blood pressure	143
Yes, Low blood pressure	23
No	35
DO YOU THINK FAMILY HISTORY IS A RISK FACTOR FOR STROKE?	**n**
Yes	115
No	86
DO YOU THINK AGE AND STROKE ARE RELATED?	**n**
Increases with age	97
Decreases with age	4
Not Related	100
DO YOU THINK GENDER IS A RISK FACTOR FOR STROKE?	**n**
Yes, Male	42
Yes, Female	15
No	144
WHICH OF THE FOLLOWING DO YOU THINK ARE RISK FACTORS FOR STROKE?	**n**
Hypertension	144
Diabetes	91
Smoking	107
Alcohol	101
Migraine	39
Lack of Exercises	99
Obesity	110
Unhealthy Diet	110
High Cholesterol	129
Stress	144
Dehydration	38
ARE YOU AWARE THAT STROKE CAN REOCCUR?	**n**
Yes	160
No	41
WHICH OF THE FOLLOWING ARE SIGNS AND SYMPTOMS OF STROKE	**n**

ACCORDING TO YOU?	
Blurred Vision	92
Chest Pain	129
Dizziness	87
Loss of Balance	112
Difficulty in speech	72
Numbness	90
Sudden difficulty in walking	95
Sudden severe headache	80
Shortness of Breath	94
IN YOUR OPINION, WHICH PART OF THE BODY IS AFFECTED IN STROKE ATTACK?	**n**
Arms and legs	72
Brain	114
Heart	109
Face	45
Lungs	30
WHAT WILL BE YOUR FIRST APPROACH IF YOU SEE A PERSON HAVING STROKE?	**n**
Call an ambulance	153
Take them to nearby hospital	139
Contact his/her family	70
Make them smell some pungent	35
Offer them a hot beverage	13
WHICH OF THE FOLLOWING MEASURES CAN BE HELPFUL TO PREVENT STROKE?	**n**
Proper Diet and Nutrition	170
Regular Exercise	161
Cessation of smoking, alcohol,	108
Stress Management	139
Taking painkillers for headache	10
Controlling Blood pressure	121
ARE YOU AWARE THAT PHYSIOTHERAPY IS A LONG TERM TREATMENT FOR STROKE?	**n**
Yes	106
No	95
ARE YOU AWARE ABOUT ACHIEVABLE RECOVERY POST STROKE?	**n**

Yes	96
No	105

*multiple responses allowed

4. DISCUSSION

Stroke is a significant global health concern, accounting for a substantial burden of morbidity and mortality. As a leading cause of long-term disability and the second leading cause of death worldwide, stroke prevention, early recognition, and effective management are paramount. Around 15% of ischemic strokes occur in young adults and adolescents, with limited public health efforts. Early diagnosis is challenging due to lack of awareness and heterogeneous causes. Traditional vascular risk factors in young individuals may increase IS risk, stroke recurrence, and post stroke mortality. The American Academy of Neurology convened an expert panel to develop a consensus document on IS recognition, evaluation, and management. This research aims to understand how much people know about stroke and what misconceptions they might have.

Despite the association between age and stroke incidence, 97 (48.3%) respondents out of 201 recognized age as a significant risk factor and 100(49.8%) found that age and stroke are not related. This discrepancy highlights the importance of raising awareness about age-related stroke risk and the need for preventive measures, particularly as populations continue to age globally.

In this study, 143(71.1%) participants out of 201 recognized that high blood pressure can cause stroke. 35(17.4%) participants believed that there is no relation between stroke and blood pressure. This study has shown a positive understanding of the relationship between stroke and high blood pressure.

Family history was identified as a risk factor by a majority of respondents, suggesting a relatively high level of awareness in this regard (57.2%)

Myths existed regarding the role of gender as a risk factor. Majority of respondents, 144 thought that gender is not a risk factor for stroke. While 42 people said that occurrence of stroke is high in males. Stroke is common in males at younger age, while women are at higher risk after menopause. [9]

Stroke is a multifactorial disease that requires public awareness of all modifiable risk factors due to its significant healthcare burden. Knowledge of risk factors was surprisingly good in this study compared to previous studies from South as well as North India. [10][11] [12] [13] [14] Among 201 participants, 161(80.1%) chose at least three correct risk factors .In the current study, hypertension and stress were the most frequently selected risk factors, by the 144 respondents (71.6%).. Similar results were seen in a study conducted by Sai, Sarisha, Sireesha Jala et al. Awareness, Recognition, and Response to Stroke among the General Public4An Observational Study in 2021=. [15] Out of 201, 129(64.2%) selected high cholesterol as second most important risk factor. This might be due to higher prevalence of cholesterol in India. 38 of them had the misconception of dehydration as a risk factor of stroke. Very few participants (4.02%) were able to identify all the risk factors accurately.Positively, 160 out of 201 (79.6%) of the respondents, or a significant portion, recognised the risk of a stroke recurrence.

Among 201, 184 (91.45%) participants spontaneously named at least one accurate warning sign. This study revealed a mix of accurate responses loss of balance(55.7%), sudden difficulty in walking(47.3%), blurred vision(45.8%), numbness or weakness of face and/or limbs (44.8%), dizziness(43.3%) sudden severe headache(39.8%), speech difficulty(35.8%), alongside more percentage of inaccurate ones :chest pain(64.2%), shortness of breath(46.8%).Due to poor knowledge of stroke as well as heart attack people tend to misdiagnose the signs and symptoms which in turn leads to delayed medical attention.The

particular symptoms and signs that distinguish a heart attack from a stroke may not be widely know.[16] Chest pain is frequently considered by the general public to be a defining symptom of both heart attacks and strokes. However, this isn't entirely true, and stroke can present with other neurological symptoms. This highlights the need of public education programs emphasizing the BE FAST acronym, which stands for Balance issues, changes in vision, facial drooping, arm weakness, trouble speaking, and time to contact emergency services, in order to effectively recognize strokes.

Interestingly, 114 respondents (56.7%) clearly recognized that the brain is the part of the body affected during a stroke, showing a basic understanding of the neurological basis of stroke. Followed by heart (54.2%). Due to lack of knowledge regarding stroke and shared risk factors of stroke and heart attack people often mistakenly believe that the heart is affected in a stroke.[16] This basic knowledge is important in understanding the severity of the stroke and the speed of medical treatment.

Time is essential in stroke management. In terms of emergency response, there was a high level of awareness regarding the importance of calling an ambulance (76.1%) or take them to a nearby hospital (69.2%) seeking immediate medical help in the event of a stroke.In a previous study it was found that 93% of stroke responders sought hospital services, but 61% initially tried to feed the patient before arrival. Most were drowsy and waited for symptoms to improve. Most had adequate transportation facilities, but only 22% used ambulance services. Patients shifted by ambulances arrived earlier than other modes. The median time to reach the hospital was 10 hours, and only 37% appreciated the importance of time.(12) Reaching hospital on time followed by administration of thrombolytics(tPA) within 4.5 hours of onset of symptoms can improve outcome as well as reduce disability. Therefore it is necessary for people to understand the importance of identification of signs and early admission in the hospital.

Many research efforts failed to adequately explore effective rehabilitation and treatment of stroke. Among 201 participants, 174 of them (86.57%) knew at least two correct measures. Knowledge regarding preventive measures was promising amongst the respondents, with a high number identifying healthy diet and nutrition(170), regular exercise (161), stress management (139) and blood pressure control (121) as important. Along with tPA therapy, hospitalization and physiotherapy, healthy lifestyle habits like a balanced diet, regular exercise, stress management and smoking cessation are crucial for stroke recovery and reducing the risk of future strokes.

A significant gap existed in our understanding regarding stroke rehabilitation based on previous studies. Although physiotherapy has been recognized as a long term treatment of stroke by 106 participants (52.7%) but at the same time 105 participants, a significant portion (47.3%) were not aware about physiotherapy as a long tern treatment. Public health initiatives often overlook stroke recovery, neglecting the crucial role of physiotherapy in recovery.

Physiotherapy's importance is often overlooked during the initial stages of stroke, focusing on emergency medical intervention. Misconceptions about stroke recovery, terminology, accessibility, and socioeconomic factors contribute to a lack of knowledge about treatment options. Clearer communication, alternative terms, and limited access to resources can improve understanding, especially for those with communication or cognitive difficulties. Furthermore, it is important to emphasize the need of a complete, multidisciplinary approach to the rehabilitation and prevention of stroke. [17][18]

Only 47.8% were aware about the achievable recovery post stroke. Many stroke survivors lack awareness of physiotherapy's role in recovery, leading to misconceptions and limited access to information. Healthcare providers may not fully understand the importance of physiotherapy in stroke

recovery, resulting in inadequate information being provided to patients. Addressing these issues is crucial for effective stroke rehabilitation.

Studies have shown that the public awareness definitely makes a difference in increasing the awareness level. [19]

Limitations:

Our study did not include individuals who spoke languages other than English and were able to fill a survey via Google form .Though this study is representative of the population, we need to have larger studies in the community. The study population lacked diversity, posing a limitation in terms of representation. This study was limited to a small geographical region.

5. OTHER INFORMATION

Funding: No funding has been used for this study.

6. ACKNOWLEDGMENT: We are thankful to the people who participated in this study.

7. REFERENCES

1. SB, o'sullivan. Physical Rehabilitation. Physical Rehabilitation. 2019.
2. Pandian JD, Jaison A, Deepak SS, Kalra G, Shamsher S, Lincoln DJ, Abraham G. Public awareness of warning symptoms, risk factors, and treatment of stroke in northwest India. Stroke. 2005 Mar;36(3):644-8. doi:10.1161/01.STR.0000154876.08468.a0. Epub 2005 Jan 20. Erratum in: Stroke. 2005 May;36(3):1113. PMID: 15662041.
3. Deeraj Kumar, Rajendra Pal Singh, AK Hooda, BS Deswal, KM Hassan, Lifestyle risk factors of stroke in young Indians, 2018, Vol:5, Issue:1
4. Kamalakannan, Sureshkumar1,; Gudlavalleti, Aashrai S. V.2; Gudlavalleti, Venkata S. Murthy1; Goenka, Shifalika3; Kuper, Hannah1. Incidence & prevalence of stroke in India: A systematic review. Indian Journal of Medical Research 146(2):p 175-185, August 2017. | DOI: 10.4103/ijmr.IJMR_516_15
5. Davis S, Lees K, Donnan G. Treating the acute stroke patient as an emergency: current practices and future opportunities. Int J Clin Pract. 2006 Apr;60(4):399-407. doi: 10.1111/j.1368-5031.2006.00873.x. PMID: 16620351; PMCID: PMC1448697.
6. Public Awareness of Warning Symptoms, Risk Factors, and Treatment of Stroke in Northwest India. Jeyaraj D. Pandian, Ashish Jaison, Sukhbinder S. Deepak, Guneet Kalra, Shivali Shamsher, Douglas J. Lincoln and George Abraham. 2005.
7. Chugh C. Acute Ischemic Stroke: Management Approach. Indian J Crit Care Med. 2019 Jun;23(Suppl 2):S140-S146. doi: 10.5005/jp-journals-10071-23192. PMID: 31485123; PMCID: PMC6707502.
8. Hankey G J. Preventable stroke and stroke prevention. J Thromb Haemost. 2005;3(08):163831645.
9. Kelly-Hayes M. Influence of age and health behaviors on stroke risk: lessons from longitudinal studies. J Am Geriatr Soc. 2010 Oct;58 Suppl 2(Suppl 2):S325-8. doi: 10.1111/j.1532-5415.2010.02915.x. PMID: 21029062; PMCID: PMC3006180.
10. Parahoo K, Thompson K, Cooper M, Stringer M, Ennis E, McCollam P. Stroke: awareness of the signs, symptoms and risk factors3a population-based survey. Cerebrovasc Dis 2003;16(02):1343140

11. Hickey A, Holly D, McGee H, Conroy R, Shelley E. Knowledge of stroke risk factors and warning signs in Ireland: development and application of the Stroke Awareness Questionnaire (SAQ). Int J Stroke 2012;7(04):2983306
12. Menon B, Swaroop JJ, Deepika HKR, Conjeevaram J, Munisusmitha K. Poor awareness of stroke3a hospital-based study from South India: an urgent need for awareness programs. J Stroke Cerebrovasc Dis 2014;23(08):209132098
13. Das S, Das SK. Knowledge, attitude and practice of stroke in India versus other developed and developing countries. Ann Indian Acad Neurol 2013;16(04):4883493
14. Kaddumukasa M, Kayima J, Kaddumukasa MN, et al. Knowledge, attitudes and perceptions of stroke: a cross-sectional survey in rural and urban Uganda. BMC Res Notes 2015;8:819
15. Sai Sirisha , Sireesha Jala , Sudhindra Vooturi , Praveen Kumar Yada , Subhash Kaul Awareness, Recognition, and Response to Stroke among the General Public4An Observational Study CC BY-NC-ND 4.0 • J Neurosci Rural Pract 2021; 12(04): 704- 710 DOI: 10.1055/s-0041-1735822
16. Mannoh I, Turkson-Ocran RA, Mensah J, Mensah D, Yi SS, Michos ED, Commodore-Mensah Y. Disparities in Awareness of Myocardial Infarction and Stroke Symptoms and Response Among United States- and Foreign-Born Adults in the National Health Interview Survey. J Am Heart Assoc. 2021 Dec 7;10(23):e020396. doi: 10.1161/JAHA.121.020396. Epub 2021 Nov 30. PMID: 34845927; PMCID: PMC9075376.
17. Menaa F. Stroke in sickle cell anemia patients: A need for multidisciplinary approaches. Atherosclerosis. 2013;229:4963503. doi: 10.1016/j.atherosclerosis.2013.05.006.
18. Riegel B., Moser D.K., Buck H.G., Dickson V.V., Dunbar S.B., Lee C.S., Lennie T.A., Lindenfeld J., Mitchell J.E., Treat-Jacobson D.J., et al. Self-Care for the Prevention and Management of Cardiovascular Disease and Stroke: A Scientific Statement for Healthcare Professionals From the American Heart Association. J. Am. Heart Assoc. 2017;6:e006997. doi: 10.1161/JAHA.117.006997.
19. Trobbiani K, Freeman K, Arango M, Lalor E, Jenkinson D, Thrift AG. Comparison of stroke warning sign campaigns in Australia, England, and Canada. Int J Stroke. 2013 Oct;8 Suppl A100:28-31. doi: 10.1111/j.1747-4949.2012.00917.x. Epub 2012 Sep27. PMID: 23013373.