



EFFECTIVENESS OF EDUCATIONAL PROGRAMME ON STROKE AWARENESS IN YOUNG ADULTS

¹Author- Rachna, ²Dr. Megha Gakhar, ³Akanksha Mittal, ⁴Vinay Jagga

¹PG Student, ²Associate Professor, ³PG Student, ⁴Professor

^{1,2,3}College of Physiotherapy

Pt. B.D. Sharma UHS, Rohtak. India

⁴ BMU, College of Physiotherapy,

BMU , Rohtak

Abstract

Background: Stroke is a leading cause of disability and death worldwide, with increasing incidence rates in developing countries like India. Despite the well-known risk factors for stroke, such as hypertension, diabetes, and smoking, a significant knowledge gap exists, especially among young adults. This study aimed to assess the effectiveness of an educational intervention designed to increase stroke awareness among young adults in Rohtak, Haryana, India. The primary objective was to evaluate changes in knowledge regarding stroke symptoms, risk factors, and prevention strategies following an educational session.

Methods: A pre-test and post-test study design was employed, involving 200 participants from various educational institutions in Rohtak. Participants completed a demographic survey and a pre-test section of SKAT questionnaire to assess their baseline knowledge of stroke. Following this, they participated in a 40–60-minute educational session, which included a PowerPoint presentation discussing stroke recognition, prevention, and lifestyle changes. After the intervention, participants completed a post-test section of SKAT questionnaire and a satisfaction survey to evaluate the effectiveness of the session.

Results: The study results demonstrated a significant improvement in stroke knowledge. Pre-test and post-test scores highlighted increases in understanding stroke symptoms, risk factors, and the importance of rapid medical intervention. Specifically, the knowledge score rose from 3.63 to 12.32, and response scores increased from 0 to 11.31, showing substantial gains in knowledge retention and engagement. Additionally, over 85% of participants expressed satisfaction with the educational material, and 90% agreed that stroke education should be more widely available to the public.

Conclusions: The educational intervention effectively increased stroke awareness among young adults in Rohtak, India. The findings suggest that targeted, culturally sensitive educational sessions can significantly enhance knowledge and engagement, leading to better recognition of stroke symptoms and improved preventive behaviors. The success of this program provides valuable insights into designing future stroke education strategies in India and similar contexts.

Keywords: education, intervention, stroke, awareness

I. Introduction

Stroke is one of the leading causes of disability and death worldwide, affecting millions of individuals annually and imposing a substantial burden on healthcare systems. It occurs due to an interruption of cerebral blood flow, resulting in neuronal injury and permanent brain damage, which often leads to long-term physical, cognitive, and psychological impairments that significantly affect quality of life.^{1,2} The global burden of stroke continues to rise, particularly in low- and middle-income countries, due to rapid urbanization, lifestyle changes, and demographic transitions.^{2,3}

Stroke is largely preventable, as many of its major risk factors—such as hypertension, diabetes mellitus, smoking, obesity, dyslipidemia, and physical inactivity—are modifiable.⁴ Despite advances in acute stroke management and preventive strategies, stroke remains a major public health concern because of poor awareness, delayed symptom recognition, and inadequate preventive practices among the general population.⁵

In India, the incidence of stroke has increased steadily over recent decades. Epidemiological studies indicate that unhealthy dietary habits, sedentary lifestyles, rising prevalence of non-communicable diseases, and limited access to timely healthcare services have contributed significantly to the growing stroke burden.⁶ With an aging population and increasing life expectancy, stroke-related morbidity and mortality are expected to rise further in the coming years.^{2,6}

Although stroke is traditionally considered a disease of older adults, evidence suggests a growing incidence among young adults. Factors such as chronic stress, smoking, alcohol consumption, obesity, and lack of physical activity have increased vulnerability to cerebrovascular events in this age group.^{7,8} Stroke occurring at a younger age often results in prolonged disability, reduced productivity, and significant socioeconomic consequences.⁹

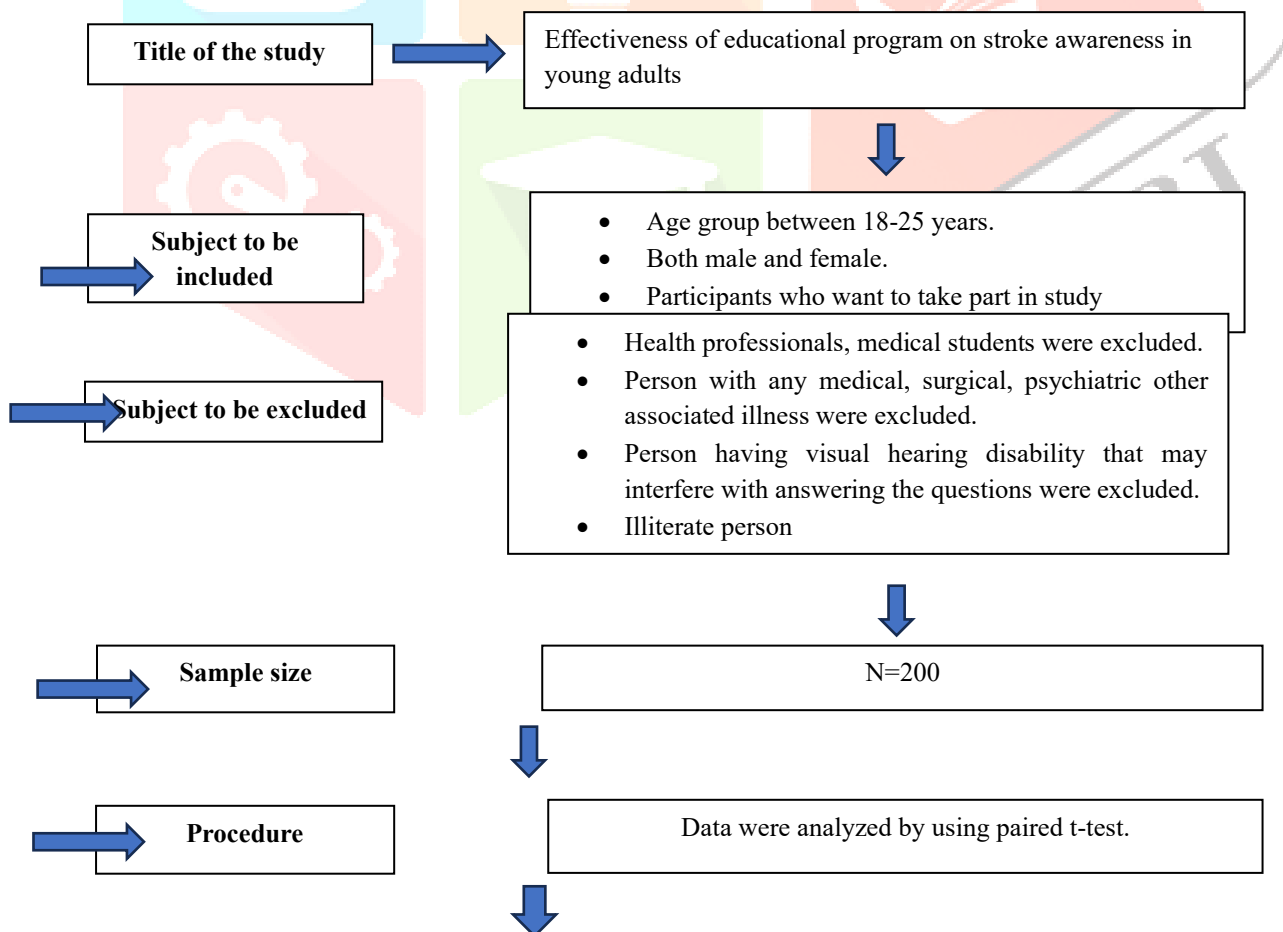
Despite the increasing burden, studies consistently demonstrate inadequate awareness of stroke risk factors, warning signs, and appropriate emergency response among young adults. Poor recognition of early symptoms frequently leads to delayed hospital presentation, thereby reducing the effectiveness of time-dependent interventions such as thrombolytic therapy.^{10,11} Additionally, limited knowledge regarding preventive strategies—including blood pressure control, healthy diet, and regular physical activity—further increases stroke risk.¹²

Educational interventions have been shown to be effective in improving stroke awareness, enhancing symptom recognition, and promoting appropriate emergency responses among young adults.¹³ Improving awareness at an early stage can empower individuals to seek prompt medical care, reduce treatment delays, and improve overall stroke outcomes. Therefore, the present study aims to assess stroke awareness among young adults and evaluate the effectiveness of a structured educational program in improving knowledge related to stroke symptoms, risk factors, prevention, and emergency management.¹⁴

II. Method

This research project, conducted in Rohtak, Haryana, India, aimed to enhance stroke awareness and prevention among young adults. Utilizing a prospective pre-test post-test pre-experimental design, the study assessed participants' knowledge of stroke and its risk factors before and after an educational intervention. Participants from three institutions—State University and Performance and Visual Arts Rohtak (SUPVA), Pandit Neki Ram Sharma Govt. College, and Maharshi Dayanand University—completed a demographic survey and a pre-test questionnaire on stroke knowledge. They then attended an educational session featuring a PowerPoint presentation that covered stroke signs and symptoms, risk factors, prevention strategies, and the FAST acronym for stroke recognition. The session's effectiveness was evaluated by having participants complete the same questionnaire post-intervention.

III. Flow chart of study:



Data analysis

- Written consent was taken from all the participant.
- On the first session demographic data was taken of all the participants and asked the participants to fill the SKAT questionnaire.
- After that, participants were educated about the stroke and its risk factors.
- After one week, the participants were asked to fill out the Stroke Knowledge Assessment Tool questionnaire again.

IV. Components of stroke educational program

स्ट्रोक ज्ञान

स्ट्रोक

स्ट्रोक या मस्तिष्क स्ट्रोक तब होता है जब एक रक्त धक्का किसी artery या vein में टूट जाता है, जिससे मस्तिष्क के एक क्षेत्र में रक्त प्रवाह रुक जाता है, और इसके परिणामस्वरूप कोशिकाएँ मरने लगती हैं और मस्तिष्क को नुकसान होता है।

TYPE OF STROKE

इस्केमिक स्ट्रोक

यह तब होता है जब रक्त धमनियाँ रक्त के धक्के या प्लाक से अवरुद्ध हो जाती हैं।

रक्तसावीय स्ट्रोक

यह तब होता है जब मस्तिष्क में एक रक्त वाहिका टूट जाती है, जिससे मस्तिष्क में रक्त रिसता है।

जोखिम कारक

- उच्च रक्तचाप
- घुसपान
- मोटापा
- उच्च कोलेस्ट्रॉल
- शराब का उच्च सेवन
- तनाव
- मधुमेह

लक्षण

- सिरदर्द
- चक्कर आना
- चेहरे का लकवा
- संतुलन खोना
- छाती में दर्द
- बोलने में कठिनाई
- दृष्टि का हनन

F
FACE
चेहरे का झुकाव

A
ARM
"एक तरफ का शरीर कमजोर होना"

S
SPEECH
बोलने में असमंजसता

T
TIME
समय पर 112 पर कॉल

स्ट्रोक का उपचार

रिहैबिलिटेशन

व्यावसायिक चिकित्सा

भाषा चिकित्सा

जीवन की गुणवत्ता में सुधार करें

योग

संतुलित आहार

मधुमेह प्रबंधन

After attending a 40-60 minutes stroke education session that focused on prevention, symptom recognition, and lifestyle modifications, participants completed the same questionnaire to assess their post-intervention knowledge. They also filled out a satisfaction survey to evaluate the session's effectiveness and engagement. Data collection spanned four weeks and was ethically approved by the Institutional Ethical Committee of Pandit Bhagwat Dayal Sharma University of Health Sciences, Rohtak. The results, analyzed using statistical software, assessed changes in knowledge and the intervention's effectiveness.



V. Results

The study involved 200 participants, with an average age of 19.86 years (Table 5.1.1).

N=200	Mean ± SD	Maximum (years)	Minimum (years)
Age (years)	19.86 ± 1.91	25	18

Gender distribution was as follows: 126 females (63%) and 74 males (37%) (Table 5.1.2).

Gender	Frequency (N)	Percentage (%)
Male	74	37%
Female	126	63%

For stroke knowledge, the pre-test mean score for K1 was 1.26, while the post-test mean score for PK1 increased to 1.63. Similarly, the pre-test knowledge score for K2 was 0.89, which rose to 1.28 post-intervention. Other variables also showed notable improvements, with K3 increasing from -0.82 in the pre-test to -0.13 in the post-test (Figure 5.2.3), and K4 from 0.67 to 1.21. Many of the knowledge-related variables (K1-K16) demonstrated a statistically significant increase in mean scores, with p-values below 0.05, indicating the effectiveness of the educational program.

Pre-Knowledge			Post-knowledge	
	M	SD	M	SD
K1- Smoking is a risk factor for stroke.	1.26	0.06	1.63	0.03
K-2 Stroke is commoner than breast cancer	0.89	0.96	1.28	0.75
K3- Chest pain is a symptom of stroke.	-0.82	0.94	-0.13	1.31
K4- Loss of vision and vertigo are a symptom of stroke.	0.67	0.96	1.21	0.83
K5- A previous transient ischemic attack increases risk of stroke.	0.89	0.94	1.20	0.94
K6- Stroke affects the heart.	1.20	0.08	1.29	0.09
K7- Difficulty to talk or understand speech are stroke symptoms.	0.55	1.00	0.96	0.92
K8- Stroke is a rare cause of long-term disability.	-0.38	1.04	-0.07	1.27
K9- Stroke is more common in females.	-0.13	1.04	0.58	1.22
K10- Diabetes increases the risk of stroke.	0.48	0.97	0.88	1.19
K11- Headache may occasionally be secondary to stroke.	0.43	0.99	0.69	1.07
K12- Sudden loss of sensation is not related to stroke.	0.06	1.12	0.54	1.09
K13- Stroke is always characterised by symptoms.	-0.51	1.06	-0.13	1.33
K14- Muscle or limb power is not affected in stroke.	0.32	1.15	0.48	1.24
K15- FAST = Face, Arms, Speech, and Time.	0.51	.86	1.17	0.82
K16- Patients who have suffered a stroke should be advised to adopt a sedentary lifestyle.	-0.69	1.06	0.25	1.21
K17- Educational leaflets and presentations effective in increasing stroke awareness and education.	1.05	1.03	1.28	0.83

The analysis also revealed significant improvements in response scores across multiple variables. The pre-test response score for R1 was -0.58, and the post-test score increased to 0.205, while R2 rose from -1.16 to 0. Further analysis of response scores (R3-R17) indicated an overall positive change in the responses of participants after the educational session, suggesting that the intervention had a substantial impact on participants' understanding of stroke.

Pre-response			Post -response	
	Mean	SD	M	SD
R1- One should only call his doctor if symptoms fail to improve.	-0.58	1.16	0.20	1.20
R2- One should attend a clinic or a nearby hospital immediately.	-1.16	1.01	0.00	1.35
R3- One should act fast and avoid unnecessary delays.	1.30	0.90	1.42	0.77
R4- One should discuss with his/the patient's relatives before taking any action.	-0.36	1.28	0.57	1.14
R5- The emergency phone number is 112.	1.24	1.03	1.36	0.96
R6- Stroke symptoms and long-term outcome may improve if the appropriate treatment is given.	1.24	1.03	1.13	0.81
R7- Prognosis of stroke patients is poor	0.00	1.10	0.21	1.15
R8- One should 'wait and see' before taking any action.	-0.05	1.32	0.95	0.96
R9- The patient should have his lower limbs elevated.	-0.19	1.02	0.21	1.29
R10- The patient should have his lower limbs elevated.	0.38	1.21	0.51	1.26
R11- Stroke will progress no matter one's reactions	-0.23	1.01	0.28	1.16
R12- One should call for an ambulance immediately.	1.30	1.01	1.25	0.95
R13- The affected person may not realize that he is suffering a stroke.	0.37	1.13	0.57	1.22
R14- If the patient is able to drive to the emergency department, he should do so immediately.	-0.64	1.20	-0.08	1.21
R15- 'Clot buster' treatment(t-PA) cannot be administered after 6 hours	0.25	0.84	0.71	1.10
R16- Brain cells are damaged irreversibly in stroke, and the extent of damage is time dependent.	0.76	1.02	0.94	1.01
R17- A stroke sufferer should always call for help himself so as not to be a burden on others	0.25	1.36	1.06	0.94

The results show a significant improvement in both knowledge and response scores. The total SKAT survey scores also demonstrated a significant increase, with the pre-test knowledge score of 3.63 rising to 12.32 post-intervention, and response scores increasing from 0 to 11.31 (Table 5.2.38). Overall, the pre-test total score of 3.63 surged to 23.63 post-intervention, underscoring the success of the educational program in enhancing both knowledge retention and active participation among participants.

Table 5.2.39 Total SKAT Survey Scores (n=200)

	MEAN
Pre-Knowledge	3.63
Post-Knowledge	12.32
Pre-Response	0
Post-Response	11.31
Pre-test total	3.63
Post-test total	23.63

VI. Discussion

The present study aimed to analyze the effect of an educational program on stroke awareness in young adults. Hypothesizing that the program would improve their knowledge, the study evaluated pre-test and post-test scores to assess this improvement. The educational content covered stroke basics, symptoms, risk factors, emergency responses, and comparisons with breast cancer. Significant knowledge gains were observed, with participants expressing overall satisfaction and indicating they would likely share the information. The study, involving 200 participants with a mean age of 19.86 years and a predominance of females (63%), showed marked improvements in understanding stroke risk factors, symptoms, and management. The total SKAT scores increased significantly post-intervention, highlighting the program's success in enhancing both knowledge and engagement, thus confirming

the hypothesis. These findings underscore the importance of educational initiatives in improving stroke awareness and health outcomes among young adults.

VII. Limitations

The study faced several limitations. Firstly, it had a small sample size, which may affect the vulnerability of the results. Secondly, there were no criteria for gender selection, resulting in a significant disparity in the male-to-female ratio. Lastly, the sample had a narrow age range, limiting the findings' applicability across different age groups.

VIII. Conclusion

The study found a significant knowledge gap regarding stroke signs, particularly in men, and the emergency number 112. The educational intervention, involving a slide/audio program, significantly improved participants' understanding of stroke risk factors, symptoms, and actions to take. Personalized education proved effective in enhancing stroke awareness, motivating preventative actions, and seeking timely medical help. The intervention led to substantial improvements in pre-test and post-test scores, demonstrating its effectiveness in increasing knowledge and engagement among participants.

IX. Ethics Statement

The current study was approved by the Institutional Biomedical Research Ethical Committee of Pandit Bhagwat Dayal Sharma University of Health Sciences, Rohtak (Letter No. BREC/23/017), and conducted according to ethical norms and guidelines. Permission for the SKAT tool was obtained from the author. Signed written informed consent was taken from participants, provided in a language they understood well.

X. Acknowledgments

We acknowledge the contributions of State University and Performance and Visual Arts Rohtak, Pandit Neki Ram Sharma Govt. College, Rohtak, and Maharshi Dayanand University, Rohtak for providing facilities for the study.

XI. References

1. Donkor ES, Owolabi MO, Bampoh P, Aspelund T, Gudnason V. Community awareness of stroke in Accra, Ghana. BMC public health. 2014 Dec; 14:1-7.
2. Alzayer R, Barakat M, Jirjees F, Alhamdan A, Aloraifej S, et al. Knowledge and awareness of stroke and associated factors in the Saudi general population: a cross-sectional study. Frontiers in Neurology. 2023;14
3. AL-Etesh NS, Almsabah AM, Aljanubi AA, Alatawi QAJ, Aldalwi MA, Burshaid MHM et al. Awareness of general public toward early manifestation of stroke in Saudi Arabia. IJMDC 2021;5(4):1077-1084.
4. Amarenco P, Lavallée PC, Monteiro Tavares L, Labreuche J, Albers GW, Abboud H, et al. Five-Year Risk of Stroke after TIA or Minor Ischemic Stroke. N Engl J Med. 2018 7;378(23):2182-2190.
5. Kernan WN, Ovbiagele B, Black HR, Bravata DM, Chimowitz MI, Ezekowitz MD, et al. Guidelines for the prevention of stroke in patients with stroke and transient ischemic attack: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke. 2014;45(7):2160-236.
6. Liouatas VA, Ivan CS, Himali JJ, Aparicio HJ, Leveille T, Romero JR, Beiser AS, Seshadri S. Incidence of transient ischemic attack and association with long-term risk of stroke. Jama. 2021 Jan 26;325(4):373-81.
7. Kuriakose D, Xiao Z. Pathophysiology and treatment of stroke: present status and future perspectives. Int J Mol Sci. 2020;21(20):7609.
8. Chemerinski E, Robinson RG. The neuropsychiatry of stroke. Psychosomatics. 2000;41(1):5-14.
9. Wolfe CDA. The impact of stroke. Br Med Bull. 2000;56(2): 275-86.
10. Pandian JD, Sudhan P. Stroke Epidemiology and Stroke Care Services in India. Journal of Stroke. 2013;15(3):128.
11. Jx S, David M, Werring J. Stroke: causes and clinical features.
12. Katan M, Luft A. Global Burden of Stroke. Seminars in Neurology. 2018 Apr 1;38(2):208-11.6.
13. Sirisha S, Jala S, Vooturi S, Yada PK, Kaul S. Awareness, Recognition, and Response to Stroke among the General Public-An Observational Study. J Neurosci Rural Pract. 2021 23;12(4):704-710.
14. Charles D A Wolfe. The impact of stroke. British Medical Bulletin, Volume 56, Issue 2, 2000, Pages 275-286.
15. Israel GD. Determining sample size. Program Evaluation and Organizational Development, IFAS, University of Florida. PEOD-6
16. Higley E, et al. Defining Young Adulthood 2019. *DNP Qualifying Manuscripts*. 17.
17. Bhawna B, Kundu ZS. Exercise and yoga as modalities for post COVID-19 rehabilitation. International Journal of Science and Research. 2021;10(2):75-85
18. Cahyati Y, Rosdiana I, Kartilah T. The Influence of Structured ROM Exercise and ProgressiveMuscle Relaxation (PMR) Exercise on the Functional Ability of Stroke Patients. The Malaysian Journal of Nursing (MJN). 2018;10(2):113-9.
19. Das RR, Saikia BU. Awareness and Attitude of College Students on Stroke and Its Change after the Educational Programme. International Journal of New Technology and Research IJNTR. ISSN: 2454-4116, Volume-7, Issue-1, 2021 Pages 48-50
20. Dharmasaroja P, Uransilp N. Stroke Awareness and Knowledge in the At-Risk Population: A Community-Based Study. Cureus. 2024 Apr;16(4).