



A Study of Stroke Risk Factor Awareness Among Stroke Survivors in Pakistan (2023.)

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Abstract

Background

To reduce stroke incidence in stroke-prone populations, knowledge of risk factors is essential. This study examined stroke survivors' risk factor awareness and determinants. A cross-sectional study examined stroke survivors' risk factor awareness. Pakistani physiotherapy patients at Pakistan Institute of Medical Science and Poly Clinic Hospital, Islamabad, were sampled. Knowledge or awareness was defined as the ability of stroke survivors to recognize and name at least one stroke risk factor. Logistic regression and descriptive statistics investigated socio-demographic, clinical, and stroke risk factor knowledge.

Methods

Awareness of risk factors among stroke survivors was investigated in a cross-sectional study. Stroke patients at the physical therapy department of Pakistan Institute of Medical Science and Poly Clinic Hospital, Islamabad, were sampled.

Stroke survivors were considered knowledgeable or aware if they were able to identify and name at least one risk factor for another stroke. Stroke risk factors were studied using logistic regression and descriptive statistics. Stroke survivors were considered knowledgeable or aware if they were able to identify and name at least one risk factor for another stroke. Stroke risk factors were studied using logistic regression and descriptive statistics.

Results

Investigations were conducted on 45 stroke patients (Male: 32–71.2%, Female: 13. –28.8%, Mean SD age: 50–10.6 years). after completing the permission form. 32 (71.2%) stroke survivors knew something about strokes. Participants with tertiary education were 45 times more likely to know about the risk factors for stroke compared to those with no formal education (odds ratio = 48.5; CI = 7.6-309.8; P 0.0001). Knowledge was found to have a significant relationship to the patient's level of education.

Conclusion

Over half of stroke sufferers knew the risks. Higher-educated patients knew more. Effective methods should be identified and used to raise national awareness and familiarity of stroke risk factors to reduce stroke occurrence.

Introduction

Stroke survivors experience negative effects on every part of their lives. Stroke has a negative impact on the patient's physical, emotional, psychological, and financial well-being, making cardiovascular accidents (CVA) one of the main factors contributing to low quality of life (QoL) worldwide¹⁻⁶. Therefore, stroke prevention is essential for everyone, but notably for people who experience recurrent strokes. If

awareness among stroke survivors increases^{7,8}, recurrent stroke, which is clinically characterized by higher levels of morbidity and death than the first-ever stroke, can be avoided. Guidelines are therefore a crucial part of stroke care for preventing subsequent stroke.^{8,9} Numerous research has examined and assessed stroke survivors' knowledge of risk variables as a determinant. Nevertheless, the majority of these research⁷⁻⁹ discovered that stroke patients are largely ignorant of stroke risk factors.^{10,11,13}

The pre-existing studies in Pakistan recruited stroke victims and were conducted on general populations^{10,12}, on educational institutions¹⁰, with the majority of the participants having diabetes mellitus and hypertension. Lack of high-quality research in the area makes it difficult to confirm the relationship between stroke risk factor awareness and a decline in the incidence of the disease among adults¹⁰. According to epidemiological data on recurrent strokes, knowledge of the risk factors for having a stroke could make a difference in whether the disease is prevented or recurs in the nation. Understanding the stroke risk factors will undoubtedly influence government policy and lead to better regional health planning. In order to gauge their level of knowledge regarding stroke risk factors, we surveyed stroke patients in two centers in KP-Pakistan for this study¹³.

Methods

The involved hospital administration granted ethical approval, and stroke patients were invited to the hospital's physiotherapy department, where the study's procedures were carried out following their regularly scheduled physiotherapy rehab sessions. **Inclusion Criteria:** 1) Stroke Survivors: Participants must be individuals who have experienced a stroke in the past, confirmed by medical records or physician diagnosis. 2) Age Requirement: Participants should be adults aged 18 years or older at the time of the survey. 3) Pakistani Nationals: Only individuals with Pakistani nationality or permanent residency status in Pakistan are eligible to participate in the study. 4) Time Since Stroke: Participants should have experienced a stroke at least one year before the survey to ensure a reasonable duration of survivorship. 5) Language Proficiency: Participants must have sufficient language proficiency in Urdu or English to understand and respond to the survey questions. 6) Voluntary Participation: Participants must voluntarily agree to participate in the study and provide informed consent. **Exclusion Criteria:** 1) Non-Stroke Survivors: Individuals who have not experienced a stroke are not eligible to participate in the study. 2) Age Limit: Participants below 18 years of age are excluded from the survey. 3) Non-Pakistani Residents: Non-Pakistani nationals or individuals without permanent residency status in Pakistan are not eligible to participate. 4) Cognitive Impairment: Individuals with severe cognitive impairments that hinder their ability to provide reliable survey responses will be excluded. 5) Language Barrier: Participants who do not have sufficient language proficiency in Urdu or English to understand the survey questions will be excluded. 6) Incomplete Medical Records: Participants without proper medical documentation or confirmation of a stroke event will not be included. 7) Current Hospitalization: Stroke survivors currently hospitalized or with severe health conditions preventing participation will be excluded. 8) Participation Refusal: Individuals who refuse to provide informed consent or decline participation in the study will not be included.

These inclusion and exclusion criteria helped that the research study focuses on stroke survivors in Pakistan, enhancing the external validity of the study results and supporting the investigation of stroke risk factor awareness among the target population. It is important to apply rigorous criteria to ensure the accuracy and relevance of the findings. From September 2021 to November 2021, the second researcher and assistant conducted face-to-face interviews to collect all the data from the aforementioned questionnaires. Descriptive statistics and logistic regression (the "enter" approach) were employed for the statistical analysis. Mean, frequencies, standard deviation, and percentages were used as descriptive statistics for the participants' sociodemographic information. The next step was to use logistic regression to determine which demographic and clinical stroke risk factors were statistically and practically associated with stroke survivors' awareness of those factors. Knowledge (knowledge [yes] = 1; knowledge [no] = 0) was the dependent variable, while patient age, gender, family history of stroke, and time since stroke were the independent variables. For this data analysis, we used an alpha = 0.05 significance level.

45 stroke patients in total (Male: 32-71.2 percent, Female: 13-28.8 percent, Mean SD age: 5010.6 years) were looked into. after completing the permission form. 32 (71.2%) stroke survivors had prior knowledge of strokes. 75 percent of the patients who were eligible for the study actually participated in it; the remaining 25 percent were either unwilling or only partially willing to participate by giving incomplete information or by having cognitive and verbal impairments. 1) Being an adult (over 18) and a stroke survivor was a requirement for enrollment. 2) The consent and willingness of the patient. 3) The patients' language proficiency in their native tongues.

For the extraction and collecting of pertinent data, a modified version of the questionnaire employed in the earlier studies 10, 14, and 15 was used (The National Institutes of Health Stroke Scale (NIHSS)). The questionnaire was divided into three parts: **Part 1** comprises an introduction and a consent form; **Part 2** has open-ended and closed-ended questions about the sociodemographic and clinical characteristics of stroke patients. The information included the patient's age, gender, and educational attainment, which were further broken down. Co-morbid conditions, such as HTN, diabetes mellitus, or both; stroke family history; and post-stroke length. Part 3: It included an open-ended question that asked study participants to list any known risk factors for stroke. Participants' responses were scored based on the following criteria: First, "knowledgeable" A patient was considered knowledgeable if they named at least one known risk factor for stroke correctly. c) "I have no idea" The risk factors for stroke were either misrepresented or not understood by the study's participants. Stroke literature¹⁰ was combed in advance of the study to compile a list of potential risk factors for stroke. The list includes the following potential dangers: pregnancy; oral contraceptive use; gestational diabetes; a previous history of eclampsia; advanced age (Gender-specific stroke risk factors) c) Hormone therapy after menopause, high cholesterol, high blood pressure, narrowing of the arteries, diabetes, sickle cell anemia, atrial fibrillation, and other heart conditions b) Inadequate diet-related nutrient intake (including high salt intake) Exercise inactivity (e) f) Overweight and fatness

Hypothalamic-pituitary-adrenal axis (g) Oral contraceptive use h) excessive drug or alcohol consumption J) K Disorders in Sleeping L) Difficulty breathing T) Head-ache N) Elevated Serum Homocysteine Increased coagulability due to elevated lipoprotein levels O Inflammation and infection: a question Stroke risk may be increased in postmenopausal women who undergo hormone therapy; R) to light up Underweight babies (T) U) racial/ethnic background; V) a personal or family history of stroke, hypertension, diabetes, coronary disease, smoking, etc. Some of the listed risk factors for stroke are well-known to medical professionals, while others are less well-studied.^{4,5}

Results

A total of 45 stroke patients (Male: 32–71.2%, Female: 13. –28.8%, Mean SD age: 50–10.6 years) were examined. the consent form has been signed. 32 stroke survivors (71.2%) knew something about strokes. Higher educated patients were 45 times more likely to recognize the warning signs of a stroke than their less educated counterparts (odds ratio = 48.5; CI = 7.6-309.8; P 0.0001). It was found that there was a statistically significant correlation between patient education and reduced stroke incidence. The patient's demographic and medical information is provided in Table 1.

Forty-four percent of stroke survivors (twenty) are educated. The majority of participants (55.5%) recognized hypertension as a risk factor, but some participants (51%) mentioned unrelated factors like overthinking and stress (35 percent). Thirteen people (28.8 percent) gave no answers (correct or incorrect) when asked to name risk factors.

Stroke risk factor knowledge was also significantly influenced by the individual's educational level (p 0.05). Higher education levels were associated with greater awareness of stroke risk factors among participants (odds ratio = 47.9; CI = 7.5-317.8; p 0.0001). Four Tables, Two Tables, and a Third Table Table-1:

Table-1: Characteristics of the Participants (N-45)

Variables	Values
Age (Years)	Means ± SD; 59±9.7, Range; 28-70
Post-stroke duration (Months)	Means ± SD; 15.6±13.6, Range; 0.5-60
Gender	M (32,71.11%), F(13,28.8)
Stroke in the family (+.-)	Negative (10, 22.3%), Positive (35, 77.8 percent)
Level of Education	None (25, 55.5%), Primary (3, 6.6%), Secondary (10, 22.6%), and Tertiary (10, 22.6%) (7, 15.5 percent)

Table-2; True stroke risk factors mentioned by Participants

Risk factors	Percentage
High Blood Pressure / Hypertension	25, 55.5%
Overweight/ Obesity	4, 8.9%
Consumption of Nutritional lipids	4, 8.7%
Inactivity	2. 4.4%
Diabetes Mellitus	5, 11.5
Pregnancy	2. 4.4%
stroke history in the family	1, 2.2%

Increased age(old age)	1, 3.2%
Smoking	1, 3.2%

Table-3: shows the false stroke risk factors mentioned by study participants.

Incorrect Risk factors	Percentage
Depressive thoughts	31, 48.5%
Anxiety	17, 33.2%
Drinks (soft Drinks)	6, 8.8%
High intake of sugar	3. 5.4%
Mental stress	3. 6.4%
Outburst & Anger	1. 1.7%

Table-4; Logistic regression analysis for the determinant of stroke risk factor knowledge; P 0.001)

Variables	Odd ratio	Confidence Interval	Values
Age (Years)	0.99	0.93-1.06	0.88
Post-stroke duration (Months)	101	0.96-1.07	0.48
Gender	M -1.03	0.23-4.44	0.96
	F- 1.00	(Reference)	(Reference)
Family History of stroke (+,-)	Positive; 112	0.23-5.45	0.88
	Negative; 1.00	(Reference)	(Reference)
Educational level	Primary; 1.45	0.06-3.35	0.81
	Secondary; 3.63	0.87-15.5	0.07
	Tertiary; 48.49	7.59-309.80	0.07

Discussion

Knowledge about stroke has been shown to significantly reduce the risk of a sequel stroke occurring. More than half of the patients were able to recollect or bring up one or more factors that increased their risk of stroke. These concerning findings came to light while the stroke victims in question were participating in their customary physiotherapy sessions in the hospital's physiotherapy department. However, the findings of this study were in line with those found in earlier studies carried out in Nigeria¹⁰ and Norway¹⁶. According to those investigations, 43 percent of stroke survivors were aware of the stroke risk factors. The most common and easily identifiable factor among study participants was hypertension, which was consistent with previous research. On the other hand, modifiable factors such as obesity (8.8 percent) and

smoking, which were among the commonly known stroke risk factors in the studies carried out in the developed countries, were found to be little known in this study. Hypertension was found to be the most common and easily identifiable factor among the study participants. The study's participants recorded the least amount of information for non-modifiable risk variables, such as the patient's age, as well as changeable risk factors, such as smoking. The least amount of information was also documented regarding modifiable risk factors, such as smoking. Some misconceptions were found among study's participants such as the participants considered "thinking" (51.1%) or "stress" (35%) (Depressive and negative feeling in the country- context) as the risk factor for the stroke as it results in HTN which leads to stroke. It is important to note that 28.8% study-participants did not mention any stroke risk factors either correct or wrong. We can easily deduct from these findings that there is lack of essential education among the stroke survivors regarding the stroke risk factors which may have dire consequences for the measures to prevent secondary stroke⁵⁻⁷.

Only education level was found to be a significant independent indicator ($p < 0.05$) of stroke risk factor awareness. Patients who had participated in the study and had a higher level of education had a greater awareness of the stroke risk factors (regarding both modifiable and non-modifiable factors), in comparison to patients who had either no formal education or a lower level of education¹⁵⁻¹⁹. It is essential to keep in mind that Pakistan's literacy rate is lower than that of other industrialized countries, and that the proportion of the general population with higher education is quite low³⁻⁹.

This study suggests that extensive and efficient measures should be taken by the government and non-governmental organisation (NGOs) in order to increase the level of awareness among stroke patients who have a lower level of formal education or who have never received any formal education at all. This is in order to decrease the stroke re-occurrence curve. In order to improve stroke survivors' knowledge¹⁻³, it is recommended that information regarding the risk factors be made available to them in the physiotherapy departments of hospitals across the country in a format that is easy to understand, visually appealing, and in the native language of the country^{7,11,13}.

This study discovered that no clinical data, such as HTN, DM, or both, has a statistically significant link to awareness of stroke risk factors, which is consistent with another study done in Nigeria²⁰. These findings may imply that specific conditions such as HTN, DM, or both were created but were not fully utilised to improve the patient's knowledge and awareness of potential stroke risk factors. For example, being diagnosed with DM, HTN, or both should compel the healthcare provider, family members, and patients to provide and seek relevant information on the role of their confirmed diagnoses as stroke risk factors, including: a) what precautionary measures should they take? In this scenario, a dos and don'ts list tailored to the patient's clinical conditions would have been detrimental to the prevention of stroke incidence among the potential-stroke population. It is noted here that 83.8 percent of the study's participants had HTN, while 7.20 percent were hypertensive and diabetic, but only 40.90 percent and 2.90 percent of the participants identified DM and HTN as risk factors, respectively, which is a worrying figure¹¹. This finding, however, is inconsistent with some of the studies²⁻⁴, which report that 64.30 percent of stroke patients with the diagnosis of HTN and 56.80 percent with DM were aware that their conditions HTN & DM were known risk-factors for stroke, while 80 percent of those with HTN, DM, or both diseases identify HTN as a stroke risk factor^{6,8,9}.

It was found that factors such as the amount of time that had passed since the onset of the stroke or the amount of time that had passed after the stroke, as well as the patient's familial history, did not have any association with or influence on whether or not the patients were knowledgeable about the stroke risk factors. This finding is consistent with study¹⁰ that was carried out before this study. According to the findings of the study, clinical factors such as; a) Hospitalization or admission in stroke units; b) Length of hospital stay or duration in the stroke unit; c) post-discharge rehabilitation or follow-up; and d) Post-stroke hospital visits, had no such impact on the patient's stroke-orient knowledge²⁰. This finding contradicts the general expectation that these factors would have such an effect.

As Pakistan is a lower-middle income nation (LMIC) with inadequate health care resources, the best tactics for preventing strokes include educating the general population about the variables that increase their risk of having a stroke. This study recommends that the topic should need to be extensively investigated in the country in order to find out any constraints²¹, the feasibility of the medium to convey and impart stroke-related knowledge, and information about the contents nature that is most suitable and customizable for the masses in the country.

Limitations

It includes the following;

- 1) Small sample size and homogeneous sample, participants were taken from two physiotherapy facilities. Heterogeneous and larger sample size is needed for the accurate logistic analysis.
- 2) Some Open-ended Questions were used, which could have affected the study outcome²⁰⁻²¹.

Conclusion

Public education about stroke prevention can be accomplished by several forms of media, including electronic and print media, as well as sporadic government-sponsored awareness workshops and seminars, etc. According to the findings of this study, the lack of knowledge or awareness regarding stroke risk factors has a detrimental effect on the ability to prevent the disease. In order to lessen the impact of stroke on society as a whole, those working in health care as well as educators and welfare organisation (both public and private) need to step up to the challenge and address the problem.

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References

1. Singh S, Sharma P, Bhandari B, Kaur R. Knowledge, awareness and practice of ethics among doctors in tertiary care hospital. *Indian J Pharmacol.* 2016;48(7). doi:10.4103/0253-7613.193320
2. Das K, Nag C, Ghosh MK, Bhattacharyya AK. Awareness of stroke, risk factors, secondary prevention and recurrence of stroke among the stroke survivors. *J Neurol Sci.* 2017;381. doi:10.1016/j.jns.2017.08.3364
3. Rashedul Islam M, Rahman T, Sakhawat Hossen Khan M. Knowledge of stroke risk factors among the patients with previous stroke or transient ischemic attack in a tertiary care hospital of Bangladesh. *J Neurol Sci.* 2021;429. doi:10.1016/j.jns.2021.119662
4. Islam MR, Rahman T, Islam RN, Khan MSH, Islam M, Habib R. Knowledge of stroke risk factors among the patients with previous stroke or transient ischemic attack in a tertiary care hospital of Bangladesh. *BIRDEM Med J.* 2020;11(1). doi:10.3329/birdem.v11i1.51026
5. Sathiya K, Vijayasamudeeswari P, Poongodi R. Awareness of Risk factor and Warning symptoms of Stroke among patients with hypertension at Tertiary care hospital of South India. *Res J Pharm Technol.* 2021;14(11). doi:10.52711/0974-360X.2021.01003
6. Haque R, Kabir K, Hossain M, Habib MB, Khan AS, Hasan MJ. Knowledge of Stroke and its Risk Factors among Stroke Survivors: A Hospital Based Study. *Mymensingh Med J.* 2021;30(2).
7. Sulena S, Kumawat B, Sharma A. Awareness of stroke among stroke patients in a tertiary-care level hospital in northwest India. *Int J Med Sci Public Heal.* 2016;5(1). doi:10.5455/ijmsph.2016.281020141
8. Tripathi D, Chaudhary S, Singh S. Awareness of stroke and assessment of knowledge of risk factors among stroke survivors in a tertiary care level hospital. *Ann Phys Rehabil Med.* 2018;61. doi:10.1016/j.rehab.2018.05.509
9. Pucciarelli G, Vellone E, Bolgeo T, et al. Role of Spirituality on the Association between Depression and Quality of Life in Stroke Survivor-Care Partner Dyads. *Circ Cardiovasc Qual Outcomes.* Published online 2020. doi:10.1161/CIRCUOUTCOMES.119.006129
10. Vincent-Onabajo G, treatment TMS research and, 2016 undefined. Knowledge of stroke risk factors among stroke survivors in Nigeria. *hindawi.comSign in.* Accessed September 4, 2020. <https://www.hindawi.com/journals/srt/2016/1902151/abs/>
11. Saengsuwan J, Suangpho P, research STN, 2017 undefined. Knowledge of stroke risk factors and warning signs in patients with recurrent stroke or recurrent transient ischaemic attack in Thailand. *hindawi.comSign in.* Accessed September 4, 2020. <https://www.hindawi.com/journals/nri/2017/8215726/abs/>
12. Abate AT, Bayu N, Mariam TG. Hypertensive Patients' Knowledge of Risk Factors and Warning Signs of Stroke at Felege Hiwot Referral Hospital, Northwest Ethiopia: A Cross-Sectional Study. *hindawi.comSign in.* Published online 2019. doi:10.1155/2019/8570428
13. Khealani BA, Wasay M. The burden of stroke in Pakistan. *Int J Stroke.* 2008;3(4):293-296. doi:10.1111/j.1747-4949.2008.00214.x
14. treatment EDS research and, 2018 undefined. Stroke in the 21st century: A snapshot of the burden, epidemiology, and quality of life. *ncbi.nlm.nih.govSign in.* Accessed September 4, 2020. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6288566/>
15. Oparah SK, Ochigbo SO, Akaba K. *Stroke: Awareness of Self-Risk and Superstitions among Persons with Sickle Cell Anemia in Calabar, Nigeria Predictors of Cognitive Impairment View Project.*; 2019. Accessed September 4, 2020. <http://www.easpublisher.com/easjms/>
16. Lahoud N, Khalil HM. Knowledge of Stroke Warning Signs, Risk Factors, and Response to Stroke among Lebanese Older Adults

in Beirut. *Artic J Stroke Cerebrovasc Dis*. Published online 2020. doi:10.1016/j.jstrokecerebrovasdis.2020.104716

17. Kanchi R, Perlman SE, Chernov C, et al. Gender and Race Disparities in Cardiovascular Disease Risk Factors among New York City Adults: New York City Health and Nutrition Examination Survey (NYC HANES) 2013–2014. *J Urban Heal*. 2018;95(6):801-812. doi:10.1007/s11524-018-0287-x
18. Divala OH, Amberbir A, Ismail Z, et al. The burden of hypertension, diabetes mellitus, and cardiovascular risk factors among adult Malawians in HIV care: consequences for integrated services. *BMC Public Health*. 2016;16(1):1-11. doi:10.1186/s12889-016-3916-x
19. Shravani K, Parmar MY, Macharla R, Mateti UV, Martha S. Risk factor assessment of stroke and its awareness among stroke survivors: A prospective study. *Adv Biomed Res*. 2015;4:187. doi:10.4103/2277-9175.164011
20. Wei Y, Ren X, Su X, et al. Predictors and Changes of Self-Perceived Burden Among Stroke Survivors: A 3-Month Follow-Up Study. *Front Neurol*. 2020;11:742. doi:10.3389/fneur.2020.00742
21. Katona M, Schmidt R, ... WSH and quality of, 2015 undefined. Predictors of health-related quality of life in stroke patients after neurological inpatient rehabilitation: a prospective study. *hqlo.biomedcentral.comSign in*. Accessed September 4, 2020. <https://hqlo.biomedcentral.com/articles/10.1186/s12955-015-0258-9>

