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EVALUATION OF STROKE AWARENESS AND RISK FACTOR PREVALENCE AMONG STUDENTS AT A PUBLIC SECTOR UNIVERSITY IN QUETTA

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ABSTRACT

Background and Objective:

Stroke is the leading cause of death and disability. Improving stroke knowledge among medical students will help to improve stroke care and its prevention. This study aims to evaluate the prevalence of risk factors and stroke awareness among university students.

Methods:

This cross-sectional study was conducted among students at Sardar Bahadur Khan Women's University in Quetta. An eleven-question multiple-choice survey was administered to assess participants' knowledge of stroke-related concepts. The initial study was conducted using descriptive statistics. Additionally, a supplementary screening for common risk factors linked to stroke was included in the study, which involved blood pressure, blood sugar, and cholesterol measures. Data were coded, entered into SPSS, and screened for missing values and outliers. Descriptive analyses were conducted, including frequency tables and graphical representations using pie charts.

Results:

In our survey of 255 female students, the vast majority (94.9%) correctly classified stroke as a brain disease, whereas a lesser percentage (1.6%) confused it with heart (0.8%), kidney (0.8%), or lung diseases (0.8%) problems. Notably, 74.1% of participants were aware of the precise cause of stroke, but 58.8% identified arm and leg weakness as a symptom. Other symptoms that were recognized by participants included difficulties speaking (25.5%), headache (9.8%), vertigo (2.4%), and chest pain (3.4%). Moreover, 94.9% of participants recognized that stroke is preventable. The most often diagnosed risk factor was hypertension (58.4%), which was followed by high cholesterol (11.8%), diabetes (9.0%), migraine (8.2%), advanced age (7.8%), and smoking (4.7%).

Conclusion

Our study shows a very good knowledge about stroke among the students at Sardar Bahadur Khan University but our results are biased due to addressing only an educated group of people.

Key words. Stroke, risk factors, awareness, university, Students

INTRODUCTION

Stroke is the leading cause of death and disability worldwide. The stroke burden is enormous in Pakistan with a very poor infrastructure.¹ Early identification and timely management significantly decrease stroke-related mortality and morbidity. Despite advanced treatment of stroke such as intravenous Alteplase and mechanical thrombectomy, the public is largely unaware of stroke symptoms and management.² Alteplase is the FDA-approved medicine

for treating acute ischemic stroke within 4.5 hours of onset of stroke symptoms.³ This indicates that timely arrival in the Emergency Department after the onset of stroke symptoms is mandatory which is influenced by the public knowledge about stroke symptoms and their immediate response towards this disease.³

In Balochistan, the number of patients reaching the hospital after stroke symptoms within the Alteplase window is extremely low but unfortunately, there is no

published data from Balochistan to date. Patients in Balochistan have a strong belief in *dum* and seek advice from faith healers first for managing stroke which indicates poor knowledge and different perspectives about stroke.⁴ The purpose of this study is to determine the level of knowledge about stroke symptoms and treatment among the students of Sardar Bahadur Khan Women's University Quetta.

METHODS

This university-based cross-sectional study was conducted at Sardar Bahadur Khan Women's University, Quetta, on October 25, 2023. A self-structured questionnaire comprising 11 questions was developed by a team of neurologists to evaluate stroke knowledge, attitudes, and practices among students. The survey included questions with Yes or No responses and multiple-choice questions, with the first six questions focusing on knowledge and the remaining five assessing attitudes and practices related to stroke. Trained doctors and field supervisors, specially trained for this purpose by neurologists and epidemiologists, administered the survey. Prior approval was obtained from the university's vice-chancellor and faculty members. To minimize bias, students were instructed not to discuss the questions until completion of the survey.

In addition to the questionnaire, screening for risk factors such as blood pressure, blood sugar, and cholesterol levels was performed concurrently. Subjects were selected using a systematic sampling strategy, where individuals interested in participating on that particular day were chosen. Data collection occurred on a single day to ensure uniformity and avoid potential variations in responses over different days. Participants were excluded based on predefined criteria, including pregnancy, lactation, or any medical condition affecting cognitive function. Statistical analysis was performed using IBM SPSS Version 20.0. Descriptive statistics were initially applied, followed by the chi-square test to assess associations between demographic variables

(age, gender, religion, family history of stroke) and stroke risk factors. A total of 255 questionnaires were distributed, achieving a 100% response rate. Data were coded, entered into SPSS, and screened for missing values and outliers. Descriptive analyses were conducted, including frequency tables and graphical representations using pie charts.

RESULTS

A total of 255 undergraduate students from the science faculty participated in the study. All the participants were female by gender as it was a female university. The age range of the participants was 18–25 years, with a 20-year mode and a mean age of 20.88 years. The degree of variation in the age distribution was determined to be 2.844 by computing the variance in age. The standard deviation measures the average variation of each data point from the mean, and the value for age was 1.687.

Knowledge:

A remarkable 94.9% of the 255 participants in our study correctly classified stroke as a brain disease, whereas only 1.6% incorrectly linked it with heart pathology. Moreover, just 0.8% of respondents believed that stroke had pulmonary or renal causes, and 2.0% were unsure about the cause. A majority (74.1%) of participants correctly identified the exact cause of stroke: 9.4% attributed compression of the nerve, 3.9% coronary artery obstruction, and 12.5% stress. In terms of symptomatology, 25.5% reported speech difficulties and 58.8% noted limb weakness.

A minority of respondents linked vertigo (2.4%), headaches (9.8%), and chest pains (3.4%) to strokes. The vast majority (94.9%) agreed that stroke is preventable, with hypertension (58.4%) being the most commonly identified risk factor. A thorough breakdown of the results is given in Table 1.

Table 1: Knowledge

Stroke Occurs In	Frequency	Percent
Brain	242	94.9
Heart	4	1.6
Kidney	2	.8
Lungs	2	.8
Unsure	5	2.0
Causes of Stroke		
When a blood vessel in the brain gets blocked or burst that part of the brain does not work.	189	74.1
When you sleep on one side of your body and pinch the nerves in your arm and leg.	24	9.4
When you have blocked blood vessels in your heart.	10	3.9
When you become very stressed, you feel heavy head and cannot work.	32	12.5
Difficulty in Speaking	65	25.5
Weakness of arms & Legs	150	58.8
Vertigo	6	2.4
Pain in Chest	9	3.5
Headache	25	9.8
Hypertension	149	58.4
Diabetes	23	9.0
High Cholesterol	30	11.8
old age	20	7.8
Migraine	21	8.2
Smoking	12	4.7

Practices:

The majority of students (225, 88.2%) in our survey supported hospitalization as the preferred course of action following a stroke episode, demonstrating a solid grasp of suitable medical management. A minority did, however, have different opinions; 13 people (5.1%) supported *dum* (exorcise), which is the name given to a customary ritual that consists of recitations meant to drive out imaginary evil spirits. Furthermore, just one (0.4%) of the respondents claimed they would seek assistance, whilst 9 (3.5%) said they would rather wait for their recovery at home. Interestingly, seven participants (2.7%) thought that a combination treatment including medication and *dum* was appropriate. There was substantial variation in beliefs regarding techniques for preventing stroke. Consumption of fruit (137, 53.7%) was the most frequently referenced metric, followed by red meat (24, 9.4%), vegetables (47, 18.4%), fish (35, 13.7%), and lentils (1, 0.4%), eggs (6, 2.4%), nuts (2, 0.8%), and Landi (a traditional ancient dish of dried beef which is commonly used in winter) (3, 1.2%) were among the other responses.

When it came to available treatments, the majority preferred medication (120, 47.1%), while lesser percentages recommended surgery (1, 0.4%), rehabilitation (24, 9.4%), or were not sure (12, 4.7%). Notably, 98 people (38.4%), supported all forms of treatment. Regarding preventive measures, a significant proportion supported daily exercise (115, 45.1%), while other recommendations included taking multivitamins (26, 10.2%), controlling blood pressure (85, 33.3%), quitting smoking (23, 9.0%), or switching to a low-fat diet (6, 2.4%).

Risk Factors in Study Participants:

When it came to risk factors, a significant number of students (120, 47.1%) reported not getting enough exercise. Not far behind, high blood pressure was found to be the second most common risk factor, impacting ninety people (35.3%). Furthermore, 32 pupils (12.5%) were found to be obese, whereas a lesser percentage (11, 4.3) had elevated cholesterol. A significant proportion of the student population, 179 people (70.2%), had a family history of the disease, highlighting the stroke's notable familial prevalence.

DISCUSSION

Stroke is a global burden, especially in low- and middle-income countries. Prevention strategies are mandatory as the cost of stroke treatment is extremely

high. Out of 255 participants, 242(94.9%) correctly identified the brain as an organ affected by a stroke which is much higher than the 25% reported by Jittima et al in Taiwan and 52.4% by Westermann et al.⁵⁻⁷ Out of 255 participants, 189 (74.1%) correctly identified the cause of a stroke as a blockage or bursting of blood vessels in the brain which shows a better understanding of stroke mechanism and better stroke knowledge than that estimated in studies conducted in Lebanon (61%), Malaysia (66.7%) and Ireland (60.3%) but much lower in an Indian study(31%).⁸⁻¹¹ Weakness of the arm and leg was the most commonly identified symptom of stroke marked by 58.8% of participants which is comparable to other studies from India, the United States, and Korea followed by difficulty in speaking (25.5%), headache (9.8%) and then vertigo by only 2.4% of participants.^{10,12,13} In the majority of studies the participants mentioned paresis, speech problems, and dizziness as stroke symptoms but in our study, vertigo was selected by very few numbers of participants.¹⁴⁻¹⁶ Vast majority of participants consider stroke as a preventable disease. High blood pressure was identified as the most important risk factor for stroke which was chosen by 58.4% of participants followed by high cholesterol, diabetes, and migraine which were similar to percentages identified by other studies. Smoking is a very important risk factor for stroke in Pakistan which was selected by only 2 % of students which is a much lower number than those estimated in Australian study.^{17,18}

According to the majority of participants, the immediate response to stroke was hospitalization (88.2%) followed by *dum* (5.1) which is a practice in Balochistan where patients consult faith healers first after the onset of stroke symptoms for *dum* as a treatment of stroke. This very good response of considering hospitalization first is mentioned by a group of educated participants but this is promising. Fruits, vegetables, and fish were identified as a diet for stroke prevention which is according to stroke prevention guidelines. Landi is a dried fatty and salty meat ingested during winter in Balochistan and considered a healthy diet and selected by three participants. In clinical practice, we encounter daily with the patients who ingest Landi and land in hospital with stroke though we don't have documented published evidence. In the present study, only 1.2% of participants considered Landi as a diet for stroke prevention which is again a biased result due to only educated individuals participating in the study. Twelve participants did not identify any stroke treatment but the majority selected

medicine followed by a group selecting all above showing medicine, surgery, and rehabilitation as a treatment for stroke.

The present study also estimated the risk factors of the participants of the study; 47.1% of participants chose lack of exercise followed by high blood pressure in 35.3% of participants compared to 18.9% of Pakistani people who suffered from hypertension estimated by the National Health Survey of Pakistan, which is extremely alarming indicating a high prevalence of young hypertension and needs a clinical trial to prove this.¹⁹ A higher prevalence (12.3%) of stroke is reported in first-degree relatives of stroke survivors, like our study.²⁰ In a large cohort study in China, a family history of stroke was an independent risk factor of stroke, the more first-degree relatives are affected by stroke, the higher the individual risk of suffering from stroke.²¹

Our study shows a very good knowledge about stroke among the students at Sardar Bahadur Khan University, but our results are biased due to addressing only an educated group of people. Further future studies are required.

CONCLUSION

Our study shows a good knowledge about stroke among the students at Sardar Bahadur Khan University. To fully assess stroke awareness levels and develop impactful educational programs, further research in various kinds of university systems and among the general public is needed. We can endeavor to lessen the burden of stroke-related morbidity and mortality in our communities by improving stroke literacy.

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Anjum Altaf; Concept, data analysis, manuscript writing, manuscript revision

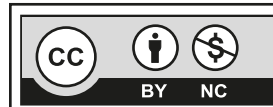
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Abdul Aleem; Data collection, data analysis, manuscript writing

Muhammad Rizwan; Data collection, data analysis, manuscript writing

The authors have approved the final version of the article, and agrees to be accountable for all aspects of the work.



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