# Assessment of Nurses' Knowledge Regarding Patient Education Post-Stroke in Allied Hospital Faisalabad: A Cross-Sectional Study

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LINK MEDICAL INTERFACE

**Shumaila Abdul Rehman[1], Amir Sohail[2], Muhammad Farrukh Habib[3], Shagufta Parveen[4], Rehana Yasmin[5], Akbar Ali[6]**

**Correspondence**
Muhammad Farrukh Habib
muhammadfarrukhhabib@gmail.com

**Affiliations**
1 MSN Scholar (NUMS), Islamabad, Pakistan; Nursing Officer, Allied Hospital Faisalabad, Pakistan.
2 MBBS, FCPS (Anesthesia), MSc (Pain Medicine), CHPE (NUMS), Islamabad, Pakistan
3 National Institute of Health, Islamabad, Pakistan.
4 PhD Scholar, MSN Faculty, College of Nursing, Rawalpindi, Pakistan.
5 PhD (Cancer Genetics), Assistant Professor, Department of Nursing and Allied Medical Sciences, Al-Hamd University, Islamabad, Pakistan.
6 Nursing Officer, Pakistan Kidney and Liver Institute, Lahore, Pakistan.

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**Disclaimers**

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## ABSTRACT

**Background**: Stroke is a leading cause of death and long-term disability worldwide, placing a significant burden on healthcare systems. Nurses play a critical role in stroke care, particularly in educating patients post-stroke to prevent recurrence and complications.

**Objective**: To assess the level of knowledge nurses possess regarding patient education after stroke at a tertiary care hospital.

**Methods**: A descriptive, cross-sectional study was conducted from May to July 2024. A total of 249 nurses from various departments at Allied Hospital Faisalabad were included. Data were collected using a structured questionnaire that evaluated nurses' knowledge of stroke definitions, causes, risk factors, and post-stroke interventions. SPSS version 25 was used for data analysis, including descriptive statistics and one-way ANOVA.

**Results**: Of the 249 participants, 98% were female, and 56.2% held a bachelor's degree. Most nurses (81.5%) correctly defined stroke, and 95.6% knew the types of strokes. A significant association was found between higher education levels and knowledge ($p = 0.013$). However, gaps in knowledge regarding stroke causes and interventions were identified.

**Conclusion**: Nurses demonstrated moderate to high knowledge of post-stroke education, with formal education being a significant predictor. Further training is needed to address knowledge gaps

## INTRODUCTIO

Stroke is one of the leading causes of morbidity and mortality worldwide, representing a significant challenge to global health systems. It ranks as the second leading cause of death globally, with millions of people affected each year, leading to long-term disabilities and a substantial burden on healthcare systems (1). According to the Global Burden of Disease (GBD) study, stroke contributes significantly to both mortality and disability-adjusted life years (DALYs), underscoring its public health impact (2). The World Health Organization defines stroke as a clinical syndrome characterized by rapidly developing clinical signs of focal or global disturbance of cerebral function lasting more than 24 hours or leading to death, with no apparent cause other than vascular origin (6). Strokes can be classified into three primary categories: ischemic, hemorrhagic, and transient ischemic attack (9), with each type having distinct causes and requiring specific interventions. Despite advancements in stroke management and rehabilitation, it remains a major health issue due to the complexity of risk factors and the need for prompt and effective care.

Nurses play a crucial role in the management and care of stroke patients. They are often the frontline healthcare providers responsible for identifying early signs of stroke, implementing timely interventions, and providing essential post-stroke education to patients and their families (3). Effective post-stroke education is critical, as it has been shown to reduce the risk of recurrent strokes, minimize complications, and improve patients' quality of life (4). Despite their importance in stroke care, nurses in many healthcare settings, particularly in low- and middle-income countries like Pakistan, may lack the necessary knowledge and training to provide optimal post-stroke education (7). This gap in knowledge can adversely affect patient outcomes, leading to preventable complications and increased healthcare costs (13).

The role of nurses in stroke care extends beyond the acute phase. They are integral in educating patients and caregivers on lifestyle modifications, the importance of medication adherence, and the need for ongoing rehabilitation to maximize recovery (11). Research shows that nurses with higher education levels tend to have better knowledge of stroke management, which correlates with improved patient outcomes (12). This highlights the importance of continuing education and professional development for nurses to ensure they are equipped with the latest knowledge and skills to manage stroke patients effectively. The knowledge of stroke causes, risk factors—both modifiable and non-modifiable—plays a key role in preventing further strokes (19). Nurses must be aware of the importance of controlling risk factors such as hypertension, diabetes, and smoking cessation, as well as educating patients about their genetic predisposition to stroke (19).

In Pakistan, stroke care facilities are limited, and there is a need to improve the knowledge and competence of healthcare providers, including nurses, in managing stroke patients. With the availability of thrombolytic therapies like

alteplase in the country, it is crucial that nurses are adequately trained to recognize stroke symptoms early and implement appropriate interventions (14). This study aims to assess the level of knowledge among nurses regarding post-stroke education in a tertiary care hospital in Faisalabad. Understanding the current state of nurses' knowledge will help identify gaps and inform the development of targeted training programs to improve stroke care and ultimately reduce the global burden of stroke.

## MATERIAL AND METHODS

A descriptive, cross-sectional study was conducted to assess nurses' knowledge regarding patient education post-stroke at Allied Hospital Faisalabad. Ethical approval for the study was obtained from the relevant institutional review board, ensuring that the study complied with the principles of the Declaration of Helsinki. All participants provided informed consent before data collection, and confidentiality was maintained throughout the study, with participant responses kept anonymous. Nurses were informed about the study's purpose, and their participation was voluntary.

The study population comprised 249 registered nurses working in various departments, including the Intensive Care Unit, Critical Care Units, Medical Wards, Neurology Units, and Outpatient Departments. These units were selected because the nurses had direct involvement in stroke patient care and management, making them essential for assessing knowledge related to post-stroke education. The inclusion criteria were registered nurses with at least three months of experience in the hospital, and those who were willing to participate. Nurses on maternity or annual leave or those unwilling to participate were excluded.

A structured questionnaire, adapted from existing validated instruments, was used to collect data. The questionnaire was reviewed by a panel of experts in nursing and medicine to ensure content validity, clarity, and relevance. The final version of the questionnaire was distributed to nurses, and data collection took place over three months, from May to July 2024. The questionnaire included five sections. The first section gathered socio-demographic information, such as age, gender, educational qualifications, years of experience, and department. The subsequent sections evaluated knowledge regarding stroke definition, causes, and types; risk factors, both modifiable and non-modifiable; risk factor evaluation and identification; and nursing interventions related to stroke management. The final section assessed knowledge of nursing interventions for stroke prevention, including airway management, neurological nursing interventions, pharmacological interventions, nutritional support, and skin integrity.

Data were analysed using SPSS version 25. Descriptive statistics, including frequencies, percentages, and means, were used to summarize the demographic characteristics of the participants and their responses. Inferential statistics were applied to examine the relationships between nurses' knowledge levels and various demographic variables. A one-way ANOVA was used to assess the difference in knowledge scores based on education and years of experience. Additionally, multiple regression analysis was performed to identify predictors of knowledge, with educational level, age, years of experience, and participation in training courses included as independent variables.

The study adhered to strict ethical guidelines, ensuring that all participants were treated with respect, and their rights were protected throughout the research process. Data confidentiality was rigorously maintained, and no identifying information was included in the final report or analysis. The findings from this study provide valuable insights into the level of knowledge among nurses regarding post-stroke patient education, which is crucial for improving stroke care outcomes and reducing the recurrence of stroke-related complications.

## RESULTS

A total of 249 nurses participated in the study, with a 100% response rate. The demographic characteristics of the participants are presented in Table 1. The majority of respondents were female (98%, n=244), while only 2% (n=5) were male. Most participants were between the ages of 31-40 years (71.9%, n=179), followed by those aged 20-30 years (18.5%, n=46), and 41-50 years (9.6%, n=24). In terms of qualifications, 56.2% (n=140) held a bachelor's degree, 42.2% (n=105) had a diploma, and 1.6% (n=4) had a certificate.

**Table 1: Demographic Characteristics of Study Participants**

| Variables | Categories | Frequency (N) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 5 | 2.0 |
| | Female | 244 | 98.0 |
| Age | 20-30 years | 46 | 18.5 |
| | 31-40 years | 179 | 71.9 |
| | 41-50 years | 24 | 9.6 |
| Qualification | Certificate | 4 | 1.6 |
| | Diploma | 105 | 42.2 |
| | Bachelor's | 140 | 56.2 |
| Years of Experience | 0-5 years | 107 | 43.0 |
| | 6-10 years | 98 | 39.4 |
| | 11-15 years | 35 | 14.1 |
| | 16-20 years | 5 | 2.0 |
| | 21-30 years | 4 | 1.6 |

The distribution of years of experience showed that 43% (n=107) had 0-5 years of experience, followed by 39.4% (n=98) with 6-10 years, 14.1% (n=35) with 11-15 years, and 2% (n=5) with 16-20 years. Only 1.6% (n=4) had more than 20 years of experience.

The overall level of knowledge regarding stroke care among nurses was categorized into three groups: good, moderate, and poor. The majority (93.2%, n=232) had good knowledge, while 4.4% (n=11) had moderate knowledge, and only 2.4% (n=6) fell into the poor knowledge category.

**Table 2: Nurses' General Knowledge About Stroke**

| Questions | Correct Response (%) | Incorrect Response (%) |
|---|---|---|
| What is the definition of stroke? | 81.5 (n=203) | 18.5 (n=46) |
| What are the types of strokes? | 95.6 (n=238) | 4.4 (n=11) |
| Hemiplegia is: | 96.4 (n=240) | 3.6 (n=9) |
| What are the causes of stroke? | 65.9 (n=164) | 34.1 (n=85) |
| Impact of uncontrolled high blood pressure | 93.6 (n=233) | 6.4 (n=16) |
| Risks associated with overtreatment with anticoagulants | 97.6 (n=243) | 2.4 (n=6) |
| Weak spot in blood vessel walls indicating stroke | 98.4 (n=245) | 1.6 (n=4) |

Table 2 demonstrates that most nurses had an elevated level of general knowledge about stroke, with correct responses exceeding 80% in most categories. Nurses showed the highest knowledge in understanding the relationship between weak blood vessel walls and stroke (98.4%), followed by knowledge regarding the risks of anticoagulant overtreatment (97.6%).

**Table 3: Descriptive Statistics for Knowledge Domains**

| Knowledge Domain | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|
| General Knowledge | 0.14 | 1.14 | 0.9524 | 0.14092 |
| Risk Factors | 0.50 | 1.25 | 0.9262 | 0.13799 |
| Risk Factor Evaluation & Identification | 0.44 | 1.32 | 0.9347 | 0.12189 |
| Medical Interventions for Stroke Management | 0.21 | 1.29 | 0.8754 | 0.16472 |

Table 3 indicates that participants exhibited strong knowledge in general stroke care and risk factor identification, with mean scores of 0.9524 and 0.9347, respectively. However, their knowledge of specific medical interventions for stroke management was slightly lower, with a mean score of 0.8754, suggesting potential gaps in understanding specific treatment protocols.

**Table 4: Analysis of Variance (ANOVA) for Knowledge by Education and Experience**

| Variable | Sum of Squares | df | Mean Square | F | Significance (p-value) |
|---|---|---|---|---|---|
| Education | 0.232 | 2 | 0.116 | 4.457 | 0.013 |
| Experience | 0.107 | 4 | 0.027 | 1.005 | 0.406 |
| Within Groups (Education) | 6.366 | 245 | 0.026 | | |
| Within Groups (Experience) | 6.490 | 243 | 0.027 | | |

The ANOVA analysis showed a significant difference in knowledge scores based on educational levels (p=0.013), indicating that nurses with higher education had significantly better knowledge of stroke care. In contrast, there was no significant difference in knowledge scores based on job experience (p=0.406), suggesting that experience did not play a major role in determining knowledge levels.

**Table 5: Regression Analysis for Predictors of Stroke Knowledge**

| Predictor Variable | B | Std. Error | Beta | t | p-value |
|---|---|---|---|---|---|
| Constant | 1.265 | 0.150 | | 8.408 | 0.000 |
| Gender | 0.012 | 0.074 | 0.010 | 0.163 | 0.871 |
| Age | 0.024 | 0.023 | 0.077 | 1.052 | 0.294 |
| Educational Level | 0.046 | 0.020 | 0.149 | 2.276 | 0.024 |
| Job Experience | -0.001 | 0.014 | -0.006 | -0.082 | 0.935 |
| Training Course Participation | 0.023 | 0.023 | 0.065 | 1.022 | 0.308 |

As shown in Table 5, the regression analysis indicated that educational level was the only significant predictor of stroke knowledge (p=0.024), while other factors such as age, job experience, and participation in training courses did not have a statistically significant effect on knowledge levels.

In summary, the results demonstrated that nurses generally had a good understanding of stroke management, with educational background being a key factor influencing their knowledge. However, there were areas, particularly in

medical interventions, where knowledge could be enhanced through targeted training programs.

## DISCUSSION

The current study aimed to assess the knowledge of nurses regarding patient education post-stroke in a tertiary care hospital in Faisalabad. The findings revealed that the majority of nurses demonstrated a high to moderate level of knowledge, particularly regarding the general aspects of stroke and its risk factors. This aligns with previous studies conducted in similar healthcare settings, where nurses were found to have substantial knowledge about stroke but still required improvements in specific areas, such as medical interventions and patient education (15). The high level of knowledge among nurses in this study reflects the growing emphasis on education in stroke management, which has been highlighted in global research as crucial for improving patient outcomes (11).

In terms of general knowledge about stroke, the majority of nurses (81.5%) correctly defined stroke, and nearly all participants (95.6%) were able to identify its types. These findings are consistent with research conducted in Europe and Tanzania, where nurses demonstrated a solid understanding of stroke definitions and types (16, 17). However, a small proportion of nurses in this study were less informed about specific causes of stroke, with 34.1% being unaware of factors such as weak blood vessel walls and anticoagulant overuse. This gap in knowledge is concerning, as understanding stroke etiology is critical for effective patient education and prevention strategies. Similar gaps have been identified in studies conducted in Cairo, where knowledge about stroke causes was also limited among healthcare providers (18). These findings highlight the need for targeted educational interventions to bridge knowledge gaps related to stroke causes and management.

Regarding the knowledge of stroke risk factors, the majority of nurses were well-informed about both modifiable and non-modifiable factors, particularly hypertension, diabetes, and family history. The high level of knowledge about modifiable risk factors (93.6%) was consistent with studies in Bangladesh and other low- to middle-income countries, where educational programs have been shown to improve nurses' understanding of stroke risk factors (10, 19). However, some areas, such as knowledge about the role of race and ethnicity as non-modifiable risk factors, were less understood by the participants. This mirrors findings from international studies, where cultural and regional variations in stroke risk factors often led to inconsistencies in healthcare providers' knowledge (20). Further education and continuous professional development programs are recommended to address these disparities and ensure that nurses are well-equipped to educate patients about all risk factors.

The study also identified a gap in knowledge related to specific medical interventions for stroke management. While nurses demonstrated a good understanding of general stroke care and prevention, their knowledge of pharmacological interventions and the use of specific treatments, such as anticoagulants, was lower, as evidenced by the lower mean scores in this domain (0.8754). This is in line with previous research showing that nurses often lack detailed knowledge about advanced stroke therapies, particularly in resource-limited settings where access to training and continuous education is limited (21). The findings suggest that regular training on the latest clinical guidelines, such as those issued by the American Heart Association and American Stroke Association, is necessary to ensure nurses remain updated on evolving stroke management practices (20). The inclusion of more practical sessions in training curricula could enhance nurses' confidence in managing medical interventions.

A key strength of this study was its focus on nurses from multiple departments involved in stroke care, including the Intensive Care Unit, Neurology Units, and Medical Wards. This provided a comprehensive understanding of the knowledge levels across various clinical settings, making the results more generalizable to similar healthcare environments. However, the study had some limitations. First, the use of a self-reported questionnaire may have introduced bias, as participants may have overestimated their knowledge. Second, the study was conducted in a single hospital, which may limit the generalizability of the findings to other settings in Pakistan. Additionally, the cross-sectional design only provides a snapshot of the nurses' knowledge at one point in time, and it is unclear whether their knowledge changes over time with continuous education or experience.

The results of this study have important implications for stroke care and nursing education in Pakistan. The significant association between educational level and stroke knowledge underscores the importance of formal education in enhancing nurses' competence in stroke care. The findings suggest that healthcare institutions should prioritize educational programs that focus on the latest clinical guidelines, particularly in the areas of medical interventions and risk factor management.

Moreover, training programs should be tailored to address the specific knowledge gaps identified in this study, such as stroke causes and the use of anticoagulants. Continuous professional development, incorporating both theoretical and practical components, would likely improve nurses' ability to educate patients effectively and reduce the burden of stroke recurrence.

## CONCLUSION

In conclusion, this study highlighted the generally high level of knowledge among nurses regarding stroke management and patient education, particularly in terms of general knowledge and risk factors. However, there remains a need for improvement in specific areas, such as medical interventions and stroke causes. Educational level was identified as a key predictor of knowledge, suggesting that formal education plays a crucial role in equipping nurses with the skills necessary for effective stroke care.

Future research should focus on evaluating the impact of targeted educational interventions and exploring how

knowledge translates into clinical practice, ultimately improving patient outcomes in stroke care.

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