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Original Article

The Burden of Post-Stroke Depression and Anxiety Among Stroke Patients Admitted to Tertiary Care Teaching Hospitals of Khyber Pakhtunkhwa.

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ABSTRACT

Background: Stroke, a leading cause of disability and mortality worldwide, is often accompanied by post-stroke depression (PSD) and anxiety, significantly impacting the quality of life of survivors. In Khyber Pakhtunkhwa, there is a notable prevalence of stroke-related complications, influenced by factors like obesity, hypertension, and diabetes mellitus.

Objective: This study aimed to determine the frequency of PSD and anxiety among stroke patients admitted to tertiary care hospitals in Khyber Pakhtunkhwa, with a focus on understanding the distribution of these conditions among different demographic groups.

Methods: A descriptive cross-sectional study was conducted over six months (March 2021- August 2021). Participants included both genders, aged above 18, who were victims of acute post-stroke events, and capable of communication. The sample size of 109 was calculated using Raosoft software. Data collection employed the Hospital Anxiety and Depression Scale (HADS), and SPSS version 25 was used for data analysis. Descriptive statistics, histograms, pie charts, and tables were utilized for data representation.

Results: The study revealed that 63.3% of participants suffered from depression and 83.5% from anxiety. Of these, 46.8% scored in the 'abnormal' range for anxiety, and 42.2% for depression. Females constituted 54.13% of the participants, while 45.87% were males. Hemorrhagic stroke (51.85%) was more common than ischemic stroke (48.15%).

Conclusion: The high prevalence of PSD and anxiety among stroke patients in Khyber Pakhtunkhwa necessitates the incorporation of comprehensive mental health care in stroke rehabilitation programs. Tailored interventions addressing PSD and anxiety are crucial for improving patient outcomes.

Keywords: Post-stroke depression, Anxiety, Stroke, Khyber Pakhtunkhwa, Rehabilitation, Mental Health.

INTRODUCTION

The burden of post-stroke depression (PSD) and anxiety among stroke patients in tertiary care teaching hospitals in Khyber Pakhtunkhwa is a significant concern. Stroke, defined as a disruption in blood flow to crucial brain regions, causes irreversible damage and profound impacts on the nervous system (1). It is a leading cause of death and disability globally, with approximately 25.7 million stroke survivors, 6.5 million stroke-related deaths, 113 million disability-adjusted life-years lost, and 10.3 million new stroke cases reported in 2013 (2). The World Health Organization reports 15 million stroke sufferers annually (3), with the American Heart Association indicating around 70,000 cases each year in the United States alone (4). In Khyber Pakhtunkhwa, a 1.2% stroke prevalence is linked to obesity, smoking, hypertension, and Diabetes Mellitus (5).

Strokes are either hemorrhagic, thrombotic, or embolic, mostly resulting from ischemia (1). Ischemic strokes, characterized by insufficient blood and oxygen supply to the brain, contrast with hemorrhagic strokes, which involve bleeding or blood vessel leakage (6). Ischemic strokes cause brain tissue infarction due to prolonged blood flow disruption, while hemorrhagic strokes result in tissue injury from hematoma compression (7). Despite the brain's regulatory efforts to maintain balance, elevated intracranial pressure disrupts cerebrospinal fluid circulation, further damaging brain function (7).

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Stroke survivors commonly endure anxiety and depression (4). Anxiety is a temporary emotional state in response to potentially harmful situations, with uncertain or less likely harm (8). PSD affects nearly 33% of stroke survivors, significantly influencing quality of life, mortality rates, and rehabilitation outcomes (9). Its prevalence ranges from 18% to 61%, depending on patient recruitment and criteria used (10), with incidence rates of 11% to 41% within two years (11). PSD, a major complication following a stroke, leads to disability and mortality regardless of the stroke's severity and is attributed to various anatomical and neurochemical brain changes (12, 13). Damage to cortical and subcortical structures depending on the affected vasculature leads to mood disorders post-stroke (13).

Given the rising prevalence of PSD and anxiety, and the scarcity of literature specific to Mardan, this study aims to determine the frequency of PSD and anxiety among stroke patients admitted to Mardan Medical Complex.

MATERIAL AND METHODS

In this descriptive cross-sectional study, data was gathered over six months, from March to August 2021, focusing on patients admitted to tertiary care hospitals in Khyber Pakhtunkhwa. The study included both male and female patients aged over 18 years, who were victims of acute post-stroke events. Eligible participants were those who were not disoriented, had no communication barriers, and volunteered for the research project. Individuals incapable of communication due to confusion, coma, or those with other comorbidities were excluded from participation. The sample size was calculated using Raosoft software, amounting to 109 subjects, with a 95% confidence interval. A convenience sampling technique was employed for the study.

After obtaining ethical approval from the research committee of the NCS University System (reference no. NCS/DPT/1601/21, issued on July 9, 2021), each subject meeting the inclusion criteria signed a consent form, and confidentiality was strictly maintained. Participation was entirely voluntary. The primary tool for data collection was the Hospital Anxiety and Depression Scale (HADS), a self-reported questionnaire consisting of 14 items divided into two subscales: one for anxiety and the other for depression. The HADS questionnaire, validated for various populations, effectively identifies the severity and caseness of anxiety and depression. Participants responded to each question on a 4-point Likert scale (0–3), reflecting their feelings over the past week. The severity of symptoms was categorized based on the subject's scores: 0-7 as normal, 8-10 as borderline abnormal, and 11-21 as an abnormal case.

Data analysis was conducted using SPSS version 25. Descriptive statistics, including frequency and percentages, were utilized, and the results were presented in the form of graphs (histograms, pie charts) and tables.

RESULTS

In this study, the distribution of anxiety and depression levels among stroke patients was meticulously analyzed. The analysis revealed significant findings regarding the mental health impacts post-stroke, as captured in Tables 1 and 2.

Focusing first on anxiety levels (Table 1), it was observed that a substantial portion of the participants fell into the higher severity categories. Specifically, 46.8% of the patients scored between 11-21 on the Hospital Anxiety and Depression Scale (HADS), categorizing them in the abnormal range for anxiety. This suggests a pronounced presence of anxiety symptoms in almost half of the stroke survivors. The data also showed that 36.7% of the participants had borderline anxiety levels (scores 8-10), while 16.5% were found to be within the normal range (scores 0-7). These figures cumulatively accounted for 100% of the participants, as reflected in the comprehensive analysis in Table 1.

Turning to the levels of depression among the participants (Table 2), a similar trend was observed. A significant 42.2% of the study population scored in the abnormal range (11-21) for depression, indicating a high prevalence of depressive symptoms post-stroke. Borderline depression (scores 8-10) was observed in 21.1% of the participants, whereas 36.7% were categorized as normal (scores 0-7). This distribution of depression scores mirrors the anxiety findings, pointing towards a considerable impact of stroke on both mental health aspects.

Overall, the results underscored a significant burden of both anxiety and depression among stroke survivors. The data from Tables 1 and 2, combined with the insights from the bar charts, offered a comprehensive overview of the psychological impact post-stroke, highlighting the need for targeted mental health interventions in this patient population.

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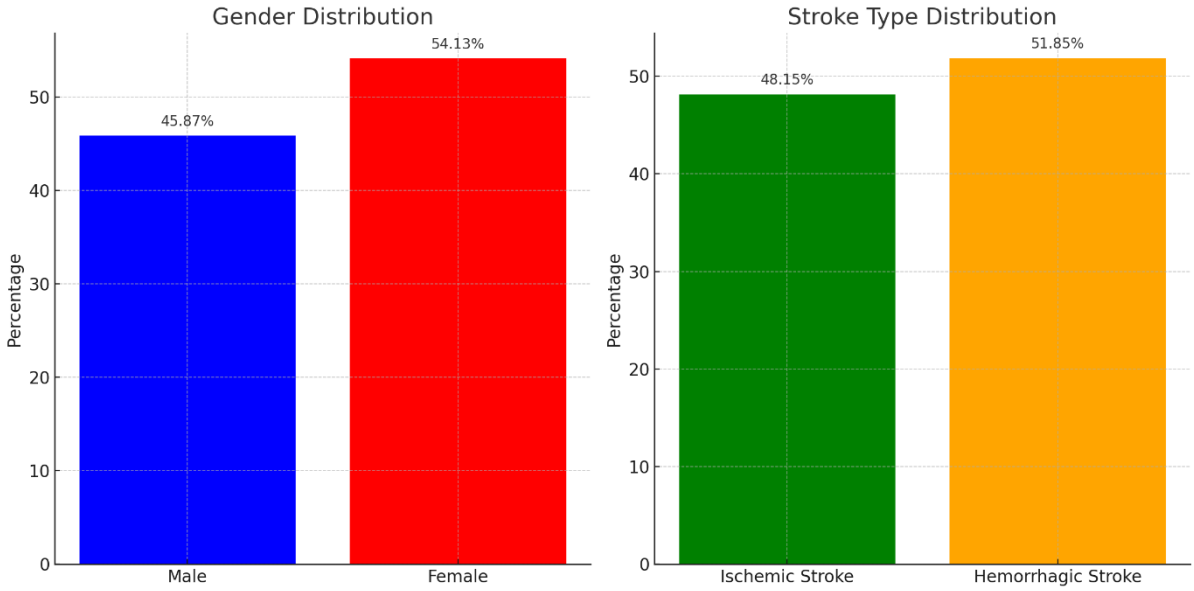

Figure 1 Gender Distribution and Stroke Types

Table 1 Anxiety among Patients

Severity (HADS Score)	Frequency	Percent
0-7 (Normal)	18	16.5%
8-10 (Borderline)	40	36.7%
11-21 (Abnormal)	51	46.8%
Total	109	100.0%

Table 2 Depression among Patients

Severity (HADS Score)	Frequency	Percent
0-7 (Normal)	40	36.7%
8-10 (Borderline)	23	21.1%
11-21 (Abnormal)	46	42.2%
Total	109	100.0%

Additionally, bar charts were generated to visually represent the gender distribution and stroke types among the participants. The first bar chart highlighted that 45.87% of the participants were male, and 54.13% were female, indicating a slightly higher prevalence of stroke in females within the study group. The second chart illustrated the types of stroke, with ischemic stroke accounting for 48.15% and hemorrhagic stroke for 51.85%. These graphical representations provided a clear visual insight into the demographic and clinical characteristics of the stroke patients involved in the study.

DISCUSSION

The primary objective of this study was to assess the prevalence of post-stroke depression (PSD) among patients over 18 years admitted to various tertiary care hospitals in Khyber Pakhtunkhwa. The findings revealed a notably high prevalence of depression and anxiety, with 63.3% and 83.5% respectively, while 36.7% of the subjects were free from depression and 16.5% from anxiety. Notably, hemorrhagic stroke was more prevalent than ischemic stroke, with a significant number of patients scoring in the 'abnormal' range (11-21) on the Hospital Anxiety and Depression Scale (HADS).

Supporting these findings, a 2015 African study by FA I Marhiagbe et al. (14) corroborated that PSD is a common psychological condition following stroke, ranking closely behind anxiety with an incidence ranging from 5% to 20%. Similarly, a 2016 longitudinal study by St Paolucci et al. (15) involving 1064 patients across 53 centers found that about 80% developed PSD within three months of the stroke. This finding is in line with a Pakistani study by Wardah Khalid et al. (16), which highlighted stroke as a major cause of disability in Pakistan, affecting around 350,000 people annually, with a significant number experiencing cognitive and communication impairments and up to 23% requiring institutional care.

Contrastingly, a 2018 study in Qatar by Stacy Schantz. Wilkins et al. (17) reported a lower prevalence of PSD at 30%. A systematic review and meta-analysis by Sahar Dalvand et al. (18) in Iran reported a prevalence of 46.9%. The variations in these findings could be attributed to the larger sample sizes and diverse socio-economic backgrounds in these studies. A 2017 study in Egypt by Eman

M. Khedr et al. (19) offered a contrasting perspective, with only 36.9% of patients showing signs of depression, which might reflect differences in socio-economic conditions between developing and more developed nations.

Additionally, a 2015 cross-sectional study in India by Elizabethe A Johnson, RN, et al. (20) demonstrated that the prevalence of PSD varies widely, depending on the measurement methods of depressive symptoms post-stroke, with rates fluctuating between 9 to 37% in the first year and rising again to 19 to 21% after two years. This discrepancy was attributed to the multi-centered nature of the study.

However, the current study faced several limitations. The use of a non-probability sampling technique might have introduced a selection bias. Being a descriptive cross-sectional study, it was not possible to establish causality, limiting the generalizability of the results. The reliance on self-administered questionnaires for data collection could also have impacted the accuracy of the findings. Future research should therefore aim to conduct analytical studies with larger and more diverse sample sizes, employing objective examination methods and focusing on associated risk factors with PSD.

The study uncovered a high prevalence of PSD among patients in Khyber Pakhtunkhwa, particularly in the 65-74 age group. Females were more affected than males, with 54.1% of the subjects being female and 45.9% male. Additionally, the incidence of hemorrhagic stroke was higher than that of ischemic stroke, underscoring the need for focused healthcare interventions for stroke survivors, particularly in managing psychological complications like PSD.

CONCLUSION

The study conclusively indicates a high prevalence of post-stroke depression (PSD) and anxiety among stroke patients in Khyber Pakhtunkhwa, with females and those suffering from hemorrhagic stroke more significantly affected. These findings underscore the critical need for integrated mental health care strategies in stroke rehabilitation programs. The insights gained call for enhanced screening and tailored interventions to address the psychological impacts of stroke, thus improving overall patient outcomes and quality of life for this vulnerable population.

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