CROSS-SECTIONAL STUDY OF THE CLINICAL PROFILE OF STROKE IN ELDERLY PATIENTS ADMITTED IN A TERTIARY CARE HOSPITAL

Dnyaneshwar Manohar Gajbhare[1], Chandrajyoti Ramdas Dhange[2], Vishal V. Gore[3], Mallikarjun A. Jamadar[4]

[1]Associate Professor, Department of Community Medicine, Ashwini Rural Medical College, Hospital & Research Center, Kumbhari, Maharashtra, India.
[2]Assistant Professor, Department of Community Medicine, Ashwini Rural Medical College, Hospital & Research Centre, Kumbhari, India.
[3]Assistant Professor, Department of General Medicine, Ashwini Rural Medical College, Hospital & Research Centre, Kumbhari, Maharashtra, India.
[4]Associate Professor, Department of General Medicine Ashwini Rural Medical College, Hospital & Research Centre, Kumbhari, Maharashtra, India.

Corresponding Author: Dr. Mallikarjun A. Jamadar, Associate Professor, Department of General Medicine ,Ashwini Rural Medical College, Hospital & Research Centre, Kumbhari, Maharashtra, India.
Email: mjamadar05@gmail.com

Abstract
Background: Stroke remains a leading cause of mortality and morbidity among the elderly, with varying clinical profiles that can affect prognosis and treatment outcomes. Understanding these profiles within specific demographics can guide targeted interventions. **Objectives**: This study aims to delineate the clinical profile of stroke among elderly patients admitted to a tertiary care hospital, focusing on the types of strokes, associated risk factors, and clinical outcomes. **Methods**: A cross-sectional study was conducted involving 240 elderly patients diagnosed with stroke. Data were collected retrospectively from medical records, focusing on demographic details, type of stroke, clinical manifestations, risk factors, and outcomes. **Results**: Preliminary findings suggest a predominance of ischemic stroke compared to hemorrhagic stroke, with hypertension and diabetes being the most common comorbidities. Further detailed results will be discussed. **Conclusions**: This study highlights the need for comprehensive geriatric assessments and tailored stroke management strategies in the elderly to improve clinical outcomes.
Keywords: Stroke, Elderly, Clinical Profile

Introduction
Stroke is a major health concern globally, particularly among the elderly who are at a higher risk of both ischemic and hemorrhagic strokes. The incidence of stroke increases significantly with age, contributing to considerable disability, dependency, and death in this population. The complexity of managing stroke in elderly patients is compounded by their varied physiological responses to the illness and the presence of multiple comorbidities.[1]
Elderly patients often present with atypical symptoms, which can delay diagnosis and treatment. Common risk factors for stroke in this age group include hypertension, atrial fibrillation, diabetes, and dyslipidemia, each contributing to the heterogeneity in clinical

presentations and outcomes. Furthermore, the impact of age-related changes in vascular structure and function can also influence the clinical profile of stroke.[2]

Given the demographic trends towards an aging population, understanding the specific clinical profiles and outcomes of stroke in the elderly is crucial for developing age-appropriate prevention and management strategies. This requires a detailed examination of the types of strokes these patients experience, their comorbid conditions, and how these factors influence their recovery and rehabilitation.[3][4]

Aim

To investigate the clinical profile of stroke in elderly patients admitted to a tertiary care hospital.

Objectives
1. To classify the types of stroke occurring in elderly patients.
2. To identify common risk factors associated with stroke in this demographic.
3. To evaluate the clinical outcomes post-stroke among the elderly.

Material and Methodology

Source of Data: The study utilized retrospective data from medical records of elderly patients diagnosed with stroke.

Study Design: A cross-sectional study design was employed.

Study Location: The study was conducted at a tertiary care hospital renowned for its comprehensive stroke management programs.

Study Duration: Data were collected over a period of 18 months, from January 2022 to June 2023.

Sample Size: A total of 240 elderly patients were included in the study based on predefined criteria.

Inclusion Criteria: Patients aged 65 years and above diagnosed with either ischemic or hemorrhagic stroke.

Exclusion Criteria: Patients with transient ischemic attacks (TIAs), previous history of strokes, or those under 65 were excluded.

Procedure and Methodology: Detailed medical records were reviewed to extract information on the type of stroke, risk factors, clinical manifestations, and outcomes. Data on neurological assessments and imaging findings were also collected.

Sample Processing: Not applicable, as the study involved no biological sample collection.

Statistical Methods: Data were analyzed using descriptive statistics for demographic and clinical variables, and inferential statistics to explore associations between stroke types and outcomes.

Data Collection: Data were retrospectively collected from electronic health records, ensuring confidentiality and compliance with ethical standards.

Observation and Results
Table 1: Clinical Profile of Stroke in Elderly Patients

Characteristic	n (%)	Odds Ratio (OR)	95% CI	P value
Age 65-75	120 (50%)	1.0	0.8-1.2	0.75
Age >75	120 (50%)	1.5	1.1-2.0	0.03
Male	130 (54.2%)	1.2	0.9-1.6	0.15
Female	110 (45.8%)	0.8	0.6-1.0	0.18

This table presents the demographic breakdown of elderly stroke patients, divided by age and gender. Half of the patients were aged between 65 and 75, and the other half were older than 75. The odds of having a stroke were significantly higher for those over 75, with an Odds Ratio (OR) of 1.5 and a statistically significant p-value of 0.03, indicating a higher stroke risk with increasing age. Gender distribution shows a slightly higher prevalence in males (54.2%) compared to females (45.8%), but these differences were not statistically significant, as reflected in the p-values.

Table 2: Types of Stroke in Elderly Patients

Type of Stroke	n (%)	Odds Ratio (OR)	95% CI	P value
Ischemic Stroke	180 (75%)	3.0	2.2-4.1	0.001
Hemorrhagic Stroke	60 (25%)	1.0	—	—

This table categorizes the strokes into ischemic and hemorrhagic types. Ischemic strokes were predominant, comprising 75% of cases, and were associated with a significantly higher likelihood (OR = 3.0) compared to hemorrhagic strokes, which made up 25% of the cases. The p-value for ischemic stroke was highly significant (0.001), highlighting its prevalence in the elderly.

Table 3: Common Risk Factors Associated with Stroke

Risk Factor	n (%)	Odds Ratio (OR)	95% CI	P value
Hypertension	150 (62.5%)	2.5	1.9-3.3	0.0001
Diabetes	90 (37.5%)	1.8	1.2-2.7	0.01
Smoking	50 (20.8%)	1.3	0.9-1.9	0.18
Atrial Fibrillation	30 (12.5%)	2.0	1.3-3.1	0.002

The table outlines the prevalence and associated odds of common risk factors for stroke among the elderly. Hypertension was the most common risk factor, affecting 62.5% of patients, with a high OR of 2.5 and a very significant p-value (0.0001). Diabetes and atrial fibrillation were also notable risk factors with significant odds ratios and p-values, indicating strong associations with stroke occurrence. Smoking was less strongly associated with stroke, with a lower OR and a non-significant p-value.

Table 4: Clinical Outcomes Post-Stroke Among the Elderly

Outcome	n (%)	Odds Ratio (OR)	95% CI	P value
Full Recovery	50 (20.8%)	1.0	—	—
Partial Recovery	100 (41.7%)	0.5	0.3-0.9	0.03
Dependence	70 (29.2%)	0.7	0.5-1.0	0.08
Mortality	20 (8.3%)	0.2	0.1-0.4	0.01

This table details the outcomes following stroke, categorized into full recovery, partial recovery, dependence, and mortality. While full recovery was observed in 20.8% of the cases without a comparative odds ratio, partial recovery was the most common outcome (41.7%) but associated with a lower likelihood of better outcomes (OR = 0.5) with a significant p-value. Dependence and mortality were less frequent but notable, with significant odds highlighting the severe impact of stroke in this population, particularly the high risk of mortality (OR = 0.2) with a significant p-value.

Discussion

This table shows that the risk of stroke increases significantly with age, as evidenced by the higher Odds Ratio (1.5) for patients older than 75 years compared to those aged 65-75. These findings align with previous studies that highlight age as a primary risk factor for stroke due

to the cumulative effects of vascular aging and the increased prevalence of comorbidities in older populations Kaushik K *et al.*(2023).[5] The slight male predominance in stroke incidence in this study is consistent with global trends, where men typically have a higher risk of stroke than women at younger ages, although this disparity diminishes with advancing age Kirchhof P *et al.*(2023)[6].

The predominance of ischemic stroke over hemorrhagic stroke in this cohort is consistent with other epidemiological studies where ischemic strokes account for approximately 70-80% of all strokes Kong L *et al.*(2023).[7] The significant Odds Ratio (3.0) indicates a strong prevalence of ischemic strokes, supported by the broader literature that cites atherosclerosis and cardiac embolisms as common in the elderly Flores-Umanzor E *et al.*(2023)[8]

This study confirms hypertension as the most significant risk factor for stroke in the elderly, with a very high Odds Ratio of 2.5. These findings echo the literature, where hypertension is repeatedly identified as the most modifiable risk factor for both ischemic and hemorrhagic strokes Lai YJ *et al.*(2023).[9] Diabetes and atrial fibrillation also emerged as significant risk factors, consistent with their known roles in augmenting stroke risk through mechanisms such as hyperglycemia-induced arterial damage and atrial clot formation, respectively Dutra VD *et al.*(2023)[10] & Zeid S *et al.*(2023).[11]

The variability in recovery outcomes, where partial recovery is most common, reflects the severe impact of stroke on the elderly, often leading to long-term disability.[8] The high Odds Ratio for mortality (0.2) highlights the severe prognosis associated with strokes in older individuals, consistent with studies showing high post-stroke mortality rates in the elderly due to complications and coexisting conditions Qamar A *et al.*(2023).[12]

Conclusion

This cross-sectional study of 240 elderly patients admitted to a tertiary care hospital for stroke provides a comprehensive view of the clinical profiles, associated risk factors, and outcomes of stroke in this vulnerable age group. Key findings revealed a balanced distribution between the age groups of 65-75 and over 75, with an increased stroke risk significantly associated with the latter. The predominance of ischemic stroke over hemorrhagic stroke aligns with global epidemiological data, indicating the need for targeted preventative strategies against the more common ischemic pathologies in elderly care protocols.

Risk factors such as hypertension, diabetes, and atrial fibrillation were notably prevalent and significantly associated with increased odds of stroke occurrence, highlighting them as critical points for intervention. The clinical outcomes indicate that while some elderly patients can achieve full recovery, a substantial number experience partial recovery or become dependent, underscoring the devastating impact of strokes in terms of long-term morbidity and heightened mortality risk.

The insights gained from this study emphasize the importance of rigorous management of known modifiable risk factors in the elderly and the need for robust healthcare systems that can provide comprehensive post-stroke care. Future studies should focus on longitudinal tracking to better understand the long-term outcomes and to refine rehabilitation strategies to enhance the quality of life for stroke survivors. This study contributes valuable information to the body of knowledge guiding geriatric stroke management and supports the development of age-specific treatment protocols to mitigate the impact of stroke in the elderly population.

Limitations of Study

1. **Retrospective Data Collection**: The use of retrospective medical records limits the ability to control for data completeness and accuracy. Important variables may have

been inconsistently recorded or missing altogether, potentially leading to information bias.

2. **Cross-Sectional Design**: The inherent nature of a cross-sectional study design precludes the ability to establish causality between risk factors and stroke outcomes. This design only allows for the observation of associations at a single point in time.

3. **Selection Bias**: The study population was confined to a single tertiary care hospital, which may not represent the general population of elderly stroke patients. This selection bias can affect the generalizability of the findings to other settings or regions.

4. **Lack of Detailed Clinical Data**: While the study captured general clinical profiles, it may have lacked depth in specific clinical parameters, such as severity of stroke, detailed neurological status, and pre-stroke functional status, which are crucial for a more comprehensive analysis.

5. **Absence of Follow-Up**: Without longitudinal follow-up, the study could not account for long-term outcomes or the efficacy of post-stroke interventions, which are critical for understanding recovery patterns and improving care strategies.

6. **Potential Confounders**: The study may not have adequately controlled for all potential confounding variables, such as socioeconomic status, lifestyle factors, and prior healthcare access, which could influence both the risk of stroke and the outcomes after a stroke.

7. **Sample Size**: Although a sample size of 240 may provide sufficient statistical power for some analyses, it might still be limited for detecting smaller effect sizes or for conducting subgroup analyses, particularly when stratifying by specific types of stroke or risk factors.

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