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Clinical Profile and Short-Term Functional Outcomes of Acute Ischemic Stroke in a Tertiary-Care Hospital

Dr. Pradyut
Department of Neurology, Manipal Hospitals

Corresponding Author

Dr. Pradyut
Department of Neurology, Manipal Hospitals

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Abstract

Background: Acute ischemic stroke is an important cause of neurological disability and mortality. Its clinical presentation and recovery vary according to initial neurological severity, pre-existing vascular risk factors, the anatomical distribution of cerebral infarction and access to timely treatment. Evaluation of patients admitted to individual hospitals can help describe local disease patterns and identify factors associated with short-term functional outcomes.
Aim: To describe the clinical characteristics of patients with acute ischemic stroke and evaluate their short-term functional outcomes at a tertiary-care hospital.
Materials and Methods: This hospital-based observational study included 90 patients diagnosed with acute ischemic stroke at one year, from Jan 2020 to Dec 2020. Demographic characteristics, vascular risk factors, presenting symptoms, neurological examination findings, neuroimaging results, laboratory investigations and treatment details were recorded using a structured data collection form. Stroke severity was assessed using the National Institutes of Health Stroke Scale (NIHSS), where documented. Functional status was assessed using the modified Rankin Scale (mRS) at discharge and at [30/90 days, according to actual follow-up]. Categorical variables were summarized as frequencies and percentages, while continuous variables were presented as means with standard deviations or medians with interquartile ranges, as appropriate.
Results: A total of 90 patients diagnosed with acute ischemic stroke were included in the study. The reported age was 50 years; however, confirmation is required as to whether this represents the mean or median age. Of the 90 participants, 40 were male, accounting for 44.4% of the study population. The sex distribution of the remaining participants should be confirmed from the study records.
Conclusion: This study describes the clinical profile and short-term outcomes of acute ischemic stroke among 90 patients treated at a tertiary-care hospital. The final conclusions regarding clinical characteristics, disability and outcome predictors will be based on the completed patient dataset and verified statistical analysis.

Keywords: *Acute ischemic stroke; clinical profile; National Institutes of Health Stroke Scale; modified Rankin Scale; functional outcome; neurological disability; tertiary-care hospital.*

INTRODUCTION

Stroke is a major neurological disorder that can result in death, persistent disability and substantial demands on patients, caregivers and healthcare services. Ischemic stroke occurs when blood supply to part of the brain is interrupted, resulting in cerebral tissue injury. Its presentation ranges from relatively limited focal neurological deficits to severe neurological impairment requiring intensive medical management.

The burden of stroke in India has been documented in epidemiological studies, although estimates vary according to geography, study design, case ascertainment and the population examined. A systematic review of Indian studies emphasized the need for more consistent epidemiological information to guide the organization of stroke services and improve the evaluation of patient outcomes [1].

The clinical manifestations of acute ischemic stroke depend on the location and extent of the affected cerebral territory. Patients may present with unilateral weakness, facial asymmetry, speech disturbance, sensory impairment, visual abnormalities, coordination difficulties or altered consciousness. The initial assessment must distinguish ischemic stroke from intracranial haemorrhage and other disorders that can produce similar neurological symptoms.

Vascular risk factors—including hypertension, diabetes mellitus, dyslipidaemia, smoking, atrial fibrillation and previous cerebrovascular events—are important components of the clinical evaluation. Documentation of these characteristics can help describe the population treated at a hospital and support appropriate preventive management. Their association with outcomes, however, should be established through analysis rather than assumed from their presence.

Assessment of neurological severity provides a standardized way to describe the initial condition of a patient. The National Institutes of Health Stroke Scale (NIHSS) is commonly used to quantify neurological deficits and monitor changes during acute care [2]. In addition to severity at presentation, imaging findings, complications, treatment received and pre-existing functional status may influence subsequent recovery.

The modified Rankin Scale (mRS) is widely used to assess the degree of disability after stroke. Its six disability categories and death category provide a structured measure of functional status, although consistent assessment is important because differences between observers can affect scoring [3,4]. Evaluating functional status at discharge and during follow-up can therefore complement information about neurological examination findings and hospital mortality.

The 2026 American Heart Association/American Stroke Association guideline emphasizes evidence-based assessment and management throughout the emergency evaluation and early hospital care of acute ischemic stroke [5]. Local observational studies remain useful because patient characteristics, patterns of presentation, available investigations and treatment pathways differ among healthcare settings.

The present study was designed to document the clinical profile of acute ischemic stroke in a tertiary-care hospital and examine short-term functional outcomes among 90 patients admitted during a one-year study period.

AIM AND OBJECTIVES

Aim

To evaluate the clinical profile and short-term functional outcomes of patients with acute ischemic stroke admitted to a tertiary-care hospital.

Primary objective

To determine the distribution of functional outcomes among patients with acute ischemic stroke at the prespecified short-term follow-up assessment.

Secondary objectives

1. To describe the demographic characteristics and vascular risk factors of the study population.
2. To document the presenting symptoms, neurological findings and admission NIHSS scores.
3. To summarize the neuroimaging findings and relevant laboratory parameters.
4. To describe the treatment approaches and complications recorded during hospitalization.
5. To examine the relationship between selected baseline clinical characteristics and short-term functional outcomes.
6. To document in-hospital mortality and length of hospital stay.

MATERIALS AND METHODS

Study design

The study was designed as a hospital-based observational study involving 90 patients with acute ischemic stroke.

Confirm the actual study design before submission: use “prospective observational study” if information was recorded through planned follow-up of enrolled patients, or “retrospective observational study” if data were extracted from existing hospital records. The final manuscript should describe the procedure actually followed.

Study setting and duration

The study was conducted in the Department of [Neurology/General Medicine] at XXXXXX, a tertiary-care hospital.

The study covered a period of one year, from [start date] to [end date]. If 30-day or 90-day functional follow-up was performed, the final follow-up period and its completion date should also be specified.

Study population and sample size

The study population consisted of 90 patients diagnosed with acute ischemic stroke and evaluated at the study centre during the defined study period.

The sampling method was [insert the actual method, such as consecutive recruitment of eligible patients]. The sample size of 90 was specified for this manuscript. The sample-size calculation or feasibility rationale should be reported from the approved protocol or study records; it should not be reconstructed without the relevant information.

Inclusion criteria

The proposed eligibility criteria were:

1. Adult patients aged 18 years or older.
2. Patients presenting with an acute focal neurological syndrome consistent with ischemic stroke.
3. Diagnosis supported by appropriate clinical assessment and neuroimaging, with intracranial haemorrhage excluded.
4. Patients admitted to the study hospital during the defined recruitment period.
5. Patients whose eligibility and relevant clinical information could be established from consented study assessment or authorized medical records.

These criteria should be adjusted to match the approved protocol and the actual population enrolled.

Exclusion criteria

Patients should be excluded only where the study protocol specified exclusion. Suggested criteria for confirmation include:

1. Intracranial haemorrhage rather than ischemic stroke.
2. Transient ischemic attack without an established acute infarction, if outside the study definition.
3. Cerebral venous thrombosis or a non-cerebrovascular condition producing stroke-like symptoms.
4. Patients subsequently determined to have a stroke mimic rather than acute ischemic stroke.

Patients with incomplete follow-up should not automatically be removed from the baseline clinical description. Their missing outcome information and the reasons for non-completion should be documented separately.

Data collection

Clinical information was to be recorded using a structured study proforma. Data items should be retained only where they were actually collected.

The proforma may include:

- Age and sex.
- Residence and relevant sociodemographic characteristics.
- History of hypertension, diabetes mellitus and dyslipidaemia.
- Smoking or tobacco exposure.
- Atrial fibrillation and other relevant cardiac conditions.
- Previous stroke or transient ischemic attack.
- Time of symptom onset or last-known-well time, when available.
- Time of hospital arrival.
- Presenting symptoms and neurological examination.
- Admission NIHSS score.
- Brain CT or MRI findings.
- Relevant blood investigations and electrocardiographic findings.
- Acute stroke treatment and supportive management.
- In-hospital complications, length of stay and vital status.
- Functional status at discharge and the prespecified follow-up time.

The data source for each variable should be stated, particularly where history was obtained from attendants or extracted from previous medical documentation.

Clinical assessment

Patients were evaluated according to the clinical workflow of the treating team. The neurological presentation was documented, including weakness, speech disturbance, facial asymmetry, sensory symptoms, visual symptoms, gait or coordination abnormalities and altered consciousness, as applicable.

The NIHSS was used to quantify neurological impairment when it was part of the actual assessment. Admission and subsequent scores should be recorded with their corresponding assessment times. The scoring method should be consistent across patients wherever possible [2].

Clinical findings should be described in relation to the observed population rather than used to infer the affected vascular territory when imaging or specialist documentation is unavailable.

Neuroimaging and laboratory investigations

Brain imaging was reviewed to determine whether the diagnosis was consistent with acute ischemic stroke and to document the reported site and distribution of infarction.

CT or MRI findings may include the affected hemisphere, vascular territory, cortical or subcortical involvement and evidence of large-vessel disease where such information was available. Additional vascular imaging should be reported only for patients who underwent the investigation.

Relevant laboratory data may include blood glucose, glycated haemoglobin where available, complete blood count, renal

function, lipid profile and coagulation parameters when clinically indicated. Electrocardiographic or cardiac investigations may be described where performed.
Because not every participant necessarily underwent the same investigations, denominators should be reported separately for variables with missing measurements.

Assessment of functional outcomes
The primary outcome should be defined before analysis.
For this manuscript, the proposed primary outcome is functional status assessed using the mRS at **90 days after stroke onset**, if that follow-up was actually undertaken. If only discharge status was recorded, discharge mRS should be used instead and the title and objectives should be aligned accordingly.
The mRS ranges from 0 to 6, with higher scores indicating greater disability or death. For descriptive analysis, outcomes may be categorized as:

- **Favourable functional outcome:** mRS 0–2.
- **Unfavourable outcome:** mRS 3–6.

The categories should be prespecified and reported consistently. The number of patients whose outcome was unavailable should also be documented.
Secondary outcomes may include neurological severity at discharge, in-hospital mortality, length of hospital stay and complications during the admission.

Statistical analysis
Statistical analysis should be performed using [name and version of statistical software].
Categorical variables should be expressed as frequencies and percentages. Continuous variables should be assessed for distribution and summarized as means with standard deviations when reasonably normally distributed, or medians with interquartile ranges when distributions are skewed.
Comparisons between patients with favourable and unfavourable outcomes may use the chi-square test or Fisher's exact test for categorical variables, and the independent-samples t-test or Mann–Whitney U test for continuous variables, as appropriate.
Associations should be reported using effect estimates with 95% confidence intervals wherever feasible. Logistic regression may be considered to explore independent associations with unfavourable functional outcome, provided that the number of outcome events supports a stable model. The number of predictors should be limited and selected based on clinical rationale and available data.
A conventional two-sided significance threshold of $p < 0.05$ may be used if prespecified in the analysis plan. Statistical significance should not be interpreted as proof of clinical importance. Missing data, excluded observations and the number contributing to each analysis should be reported transparently.

RESULTS

Demographic Characteristics

A total of 90 patients diagnosed with acute ischemic stroke were included in the study. The reported age was 50 years; however, confirmation is required as to whether this represents the mean or median age. Of the 90 participants, 40 were male, accounting for 44.4% of the study population. The sex distribution of the remaining participants should be confirmed from the study records.

Table 1. Demographic characteristics of study participants (N = 90)

Characteristic	Number (n)	Percentage (%)
Total participants	90	100.0
Reported age	50 years	—
Male	40	44.4
Remaining participants — sex to be verified	50	55.6

Note: Confirm whether age is reported as a mean or median and verify the sex distribution before final submission.

Distribution of Vascular Risk Factors

Hypertension was documented in 20 patients (22.2%), while diabetes mellitus was present in 25 patients (27.8%). These findings describe the recorded prevalence of the two risk factors in the study population. As patients may have more than one comorbidity, these categories are not mutually exclusive.

Table 2. Distribution of selected vascular risk factors

Risk factor	Number (n)	Percentage (%)
Hypertension	20	22.2
Diabetes mellitus	25	27.8
Patients included in the study	90	100.0

Percentages are calculated using 90 as the denominator. Other vascular risk factors were not provided.

Clinical Presentation

The supplied data indicate that the most frequently reported presenting neurological feature occurred in 25 patients, equivalent to 27.8% of the study population. The specific neurological feature was not identified in the information provided and should be named before the manuscript is finalized.

Table 3. Most frequently reported presenting neurological feature

Clinical characteristic	Number (n)	Percentage (%)
Most frequent presenting neurological feature — specify feature	25	27.8
Total participants	90	100.0

DISCUSSION

Principal findings

The current study was designed to characterize 90 patients with acute ischemic stroke managed at a tertiary-care hospital over one year and to examine their short-term functional outcomes.

The principal findings should be summarized here after the tables have been completed. In particular, report the observed age and sex distribution, the most frequently documented vascular risk factors, the predominant clinical presentations, admission NIHSS scores and the proportion achieving favourable functional outcome.

The Discussion should distinguish descriptive findings from statistical associations. For example, a high prevalence of hypertension in the study sample would describe the enrolled patients; it would not, by itself, establish that hypertension independently predicted poor functional outcome.

Demographic and clinical profile

The observed demographic characteristics should be compared with relevant hospital-based and population-based research. Comparisons should take account of differences in study design, eligibility criteria, age distribution and recruitment setting. A review of Indian stroke epidemiology highlighted variations in available estimates and the importance of consistent case ascertainment, limiting direct comparisons between dissimilar populations [1].

After analysing the data, insert the relevant findings:

"In the present cohort, the mean/median age was [insert value], and [insert percentage] of participants were male. The most frequently documented vascular risk factor was [insert factor], followed by [insert factor]. The most common presenting feature was [insert feature]. These findings [were similar to/differed from] those reported in [insert relevant studies], potentially reflecting differences in study setting and participant characteristics."

This paragraph should only be retained after the corresponding values have been verified.

Neurological severity and assessment

The NIHSS provides a standardized measure of neurological deficit at presentation and can be used to follow changes during treatment [2]. Its inclusion is particularly useful when interpreting functional outcomes because patients admitted with different degrees of neurological impairment may have different recovery trajectories.

The relationship between admission NIHSS and outcome should be reported using the actual study results. If patients with greater initial neurological severity had poorer outcomes, this association should be quantified and its confidence interval reported where possible. If the association was not statistically supported, the manuscript should report that finding without implying that a clinically meaningful relationship is absent.

The distribution of clinical symptoms should also be interpreted alongside imaging results. Clinical features alone do not reliably establish the precise anatomical site or mechanism of infarction.

Imaging findings and treatment patterns

Neuroimaging is central to the assessment of suspected acute ischemic stroke because it helps distinguish ischemic from haemorrhagic disease and provides information about the extent and distribution of brain injury. Imaging findings may also guide decisions about reperfusion treatment and further vascular evaluation in eligible patients.

The 2026 AHA/ASA guideline provides updated recommendations for emergency assessment and early management of acute ischemic stroke [5]. The current study should report which investigations and treatments were actually available and used at the study centre. Differences from other settings should be discussed in relation to patient selection, arrival times, contraindications, local resources and the study period rather than attributed automatically to quality of care.

Clinical implications

A well-characterized hospital cohort can help the treating department understand the population it serves, the clinical features most frequently documented and the distribution of short-term disability. These findings can inform local audit priorities and identify questions for subsequent research.

However, a single-centre observational study cannot establish that one treatment caused a better outcome than another.

Treatment assignment in routine care is influenced by clinical severity, contraindications, timing and resource availability. These considerations must be acknowledged when discussing any differences in outcomes between patients receiving different interventions.
The practical implications of the current study should therefore be derived from its verified results and should remain proportionate to the size and design of the cohort.

Strengths and Limitations

Strengths

The study includes a defined cohort of 90 patients recruited or identified over one year. Its focus on demographic characteristics, clinical presentation, vascular risk factors, neurological severity and functional status allows a structured description of acute ischemic stroke in the study setting.
The use of standardized neurological and functional assessments, where documented, can improve consistency and make the results more interpretable alongside other observational studies.

Limitations

The study is limited by its single-centre design, which may restrict the generalizability of the results to hospitals with different referral patterns and resources. A sample of 90 patients may also limit the precision of estimates and the number of variables that can be examined reliably in multivariable analysis.
The assessment of vascular risk factors and comorbidities may depend on the accuracy of medical history and documentation. Missing or incomplete clinical and laboratory measurements should be reported because they may affect individual comparisons.
Functional outcomes may be influenced by baseline disability, initial stroke severity, treatment timing, complications, rehabilitation and comorbid conditions. If follow-up was incomplete, outcome estimates may be affected by loss to follow-up. The duration of follow-up and the number of patients with complete outcome assessment must therefore be clearly reported.
Finally, because this is an observational study, associations between baseline characteristics and outcomes should not be interpreted as proof of causation.

CONCLUSION

This study aims to describe the demographic and clinical characteristics of 90 patients with acute ischemic stroke treated a one-year period and to evaluate short-term functional outcomes using standardized neurological and disability assessments.
The final conclusion should state the observed distribution of major vascular risk factors, neurological severity and functional outcomes after the dataset has been analysed. Any factors associated with poor outcome should be reported with their effect estimates and uncertainty, with due consideration of missing data and the limitations of a single-centre observational design.
The completed findings may provide a useful local clinical profile of acute ischemic stroke and a basis for further research into hospital-based outcomes and care pathways.

Recommendations

1. Record vascular risk factors and clinical variables using standardized definitions.
2. Document neurological severity at admission and at clinically relevant follow-up points.
3. Use a defined functional outcome measure and specify the time of assessment.
4. Report loss to follow-up, missing variables and outcome denominators transparently.
5. Interpret prognostic associations in light of the observational design and available sample size.
6. Consider larger, multicentre studies to assess whether the observed patterns are consistent across different healthcare settings.

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