

Demographic and Clinical Profile of Patients Attending a Neurological Physiotherapy Outpatient Department: A Cross-Sectional Observational Study from a Tertiary Care Centre in Kota, Rajasthan

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ABSTRACT

Background: Physiotherapy outpatient departments (OPDs) in tertiary care hospitals serve as primary interfaces for neurological and other disabling conditions. Epidemiological data from the Hadoti region of Rajasthan remain scarce.

Objectives: To describe the demographic and clinical profile of patients attending the Physiotherapy OPD of a tertiary care centre in Kota, Rajasthan.

Methods: A cross-sectional observational study of 99 consecutive patients attending the Physiotherapy OPD. Demographic and clinical data were extracted from medical records. Diagnoses were categorised into neurological subtypes. Descriptive statistics were computed.

Results: 99 patient analysable records; 63 (63.6%) were male, and 36 (36.4%) female (M: F = 1.75:1). Mean age was 56.1 ± 18.8 years (range 16–98); peak incidence was in the 61–70-year age group (22.2%). Cerebrovascular disease dominated, accounting for 65.7% of diagnoses; ischemic stroke was the leading category (46.5%). Motor deficits (58.6%), speech/language impairment (52.5%), and sensory disturbances (45.5%) were the most frequent presentations.

Conclusion: Neurological disorders, principally ischemic stroke, dominate the diagnostic case-mix in this tertiary Physiotherapy OPD. The preponderance of older male patients and the high burden of post-stroke disability underscore the urgent need for a structured, protocol-driven neurological rehabilitation programme at this institution.

Keywords: physiotherapy OPD; neurological rehabilitation; stroke; demographics; cross-sectional study; Rajasthan

1. INTRODUCTION

Physiotherapy is a dynamic healthcare discipline concerned with the assessment, diagnosis, treatment, and prevention of physical impairments and functional limitations arising from neurological, musculoskeletal, cardiopulmonary, and other health conditions. Among service delivery models, the outpatient department (OPD) represents one of the most frequently utilised points of care, accommodating patients who require rehabilitation without hospitalisation.

The global burden of neurological disease has grown substantially over recent decades. The World Health Organization (WHO) estimates that more than 2.4 billion people worldwide could benefit from rehabilitation services at some point in their lives [1]. In India, rapid urbanisation, population ageing, and increasing non-communicable disease (NCD) prevalence have amplified the demand for physiotherapy, particularly for post-stroke and neurological rehabilitation [2,3].

Tertiary care hospitals manage a broad spectrum of complex, often disabling, health conditions and are uniquely positioned to characterise the rehabilitation needs of the population they serve. Understanding who attends physiotherapy OPDs — and what conditions they present with — is essential for service planning, resource allocation, and development of evidence-based rehabilitation protocols [4,5]. Despite this, published epidemiological data from tertiary Physiotherapy OPDs in Rajasthan, particularly the Hadoti region, remain scarce.

The present study therefore aimed to systematically characterise the demographic and clinical profile of adult patients attending the Physiotherapy OPD of a tertiary care centre in Kota, Rajasthan, to generate local evidence to guide rehabilitation planning.

2. MATERIALS AND METHODS

Study Design and Setting

A cross-sectional observational study was conducted in the Physiotherapy OPD of a tertiary care hospital in Kota, Rajasthan, India, over a four-month data collection period. The unit serves urban, semi-urban, and rural referrals and receives patients primarily from the neurology, medicine, and surgical departments.

Participants

One hundred consecutive adult patients attending the OPD during the study period were enrolled using non-probability consecutive sampling. One record was excluded as a duplicate, yielding a final analysable sample of N = 99.

Inclusion criteria:

- Age ≥ 18 years
- Registered in the Physiotherapy OPD during the study period
- Complete demographic and clinical information in the medical record
- Both sexes

Exclusion criteria:

- Age < 18 years
- Incomplete records
- Duplicate registrations

Data Collection

Data were extracted from OPD case sheets and departmental patient registers. Variables collected included: age, sex, primary diagnosis/comorbidity, and clinical symptom presentation. Diagnoses were categorised into established neurological subtypes (ischemic stroke, haemorrhagic stroke,

encephalitis/encephalopathy, GBS/polyneuropathy, seizure disorder, and miscellaneous) by the investigators.

Statistical Analysis

Descriptive statistics were computed for all variables. Continuous variables are reported as mean $\pm$ standard deviation (SD) and range; categorical variables as frequency and percentage. No inferential statistical testing was pre-planned, given the descriptive observational design. Analyses were performed using SPSS v.25 (IBM Corp., Armonk, NY, USA).

Ethical Considerations

The study was approved by the Institutional Ethics Committee (IEC) of Career Point University, Kota. Written informed consent was obtained from all participants (or their legally authorised representatives). Confidentiality was maintained throughout.

3. RESULTS

Demographic Profile

Of 99 analysable records, 63 (63.6%) were male, and 36 (36.4%) were female (M: F = 1.75:1). Mean age was 56.1 ± 18.8 years (median 58 years; range 16–98 years). Key demographic characteristics are summarised in Table 1.

Table 1. Summary of demographic characteristics of study participants (N = 99).

Variable	Value
Total Patients (N)	99
Males, n (%)	63 (63.6%)
Females, n (%)	36 (36.4%)
Male:Female Ratio	1.75:1
Mean Age (years)	56.1 ± 18.8
Median Age (years)	58
Age Range (years)	16–98
Largest Age Group	61–70 years (22.2%)
Patients ≥ 60 years, n (%)	46 (46.5%)

Age Group Distribution

The largest proportion of patients was in the 61–70-year age group (n = 22; 22.2%), followed by 71–80 years (n = 18; 18.2%) and 51–60 years (n = 16; 16.2%). Patients aged ≥ 60 years collectively constituted 46.5% of the cohort (Table 2). In the 18–30-year age bracket, females outnumbered males (8 vs. 5), attributable to the disproportionate burden of cerebral venous thrombosis (CVT) and autoimmune encephalitis in young women. Conversely, males predominated in the 41–70-year brackets, consistent with the established higher stroke risk in middle-aged men.

Table 2. Distribution of study participants by age group and sex.

Age Group (Years)	Total n (%)	Male n	Female n
<18	1 (1.0%)	0	1
18–30	13 (13.1%)	5	8
31–40	10 (10.1%)	6	4
41–50	13 (13.1%)	11	2
51–60	16 (16.2%)	13	3
61–70	22 (22.2%)	15	7
71–80	18 (18.2%)	10	8
>80	6 (6.1%)	3	3
Total	99 (100%)	63	36

Clinical Diagnosis Profile

Ischemic stroke (MCA/PCA/thalamic infarct and unspecified CVA combined) was the dominant diagnosis, accounting for 46 patients (46.5%). All cerebrovascular disorders (ischemic and haemorrhagic stroke combined) totalled 65 cases (65.7%). The ischemic to haemorrhagic ratio was approximately 2.3:1. MCA territory infarct was the most common specific subtype (n = 31; 31.3%). Haemorrhagic stroke subtypes comprised intracerebral haemorrhage (12.1%), intracranial haemorrhage (4.0%), subarachnoid haemorrhage (3.0%), and subdural haematoma (1.0%) — totalling 20 patients (20.2%). CVT was identified in 4 patients (4.0%), predominantly young females. The complete diagnostic distribution stratified by sex is presented in Table 3.

Table 3. Distribution of clinical diagnoses by category and sex (N = 99).

Diagnosis Category	Total n (%)	Male n	Female n
Ischemic Stroke (MCA/PCA/Thalamic Infarct)	31 (31.3%)	19	12
Ischemic Stroke/CVA (Unspecified)	15 (15.2%)	10	5
Intracerebral Haemorrhage (BG/Thalamic/Brain Stem)	12 (12.1%)	10	2
Intracranial Haemorrhage (ICH/Frontoparietal)	4 (4.0%)	4	0
Subarachnoid Haemorrhage (SAH)	3 (3.0%)	2	1
Subdural Haematoma (SDH)	1 (1.0%)	0	1
Cerebral Venous Thrombosis (CVT)	4 (4.0%)	2	2
Transient Ischaemic Attack (TIA)	3 (3.0%)	2	1

Diagnosis Category	Total n (%)	Male n	Female n
Viral Encephalitis/Encephalopathy	3 (3.0%)	1	2
Autoimmune Encephalitis	2 (2.0%)	1	1
Metabolic Encephalopathy	3 (3.0%)	3	0
GBS/Polyneuropathy (including Polio)	3 (3.0%)	2	1
Seizure Disorder/Status Epilepticus	3 (3.0%)	2	1
Cerebral Palsy	1 (1.0%)	0	1
Myasthenia Gravis	1 (1.0%)	0	1
Cardiac (Post-PTCA)	2 (2.0%)	1	1
Other (ICSOL, CSF Rhinorrhea, etc.)	8 (8.1%)	4	4
Total	99 (100%)	63	36

Clinical Symptom Profile

Multiple overlapping symptom clusters were documented; figures below are not mutually exclusive (Table 4). Motor deficits (hemiplegia/hemiparesis/weakness) were recorded in 58 patients (58.6%), constituting the primary indication for physiotherapy referral. Speech and language impairment (aphasia/dysarthria/dysphagia) was present in 52 patients (52.5%). Sensory disturbances affected 45 patients (45.5%), and balance/gait impairment was documented in 41 patients (41.4%). Visual disturbances, headache, and cognitive impairment were also prevalent at 38.4%, 35.4%, and 28.3%, respectively.

Table 4. Frequency of key clinical symptom clusters in the study cohort (N = 99).

Clinical Symptom Cluster	n (approx.)	% of Cohort
Motor Deficits (Hemiplegia/Hemiparesis/Weakness)	58	58.6%
Speech/Language Impairment (Aphasia/Dysarthria)	52	52.5%
Sensory Changes (Numbness/Tingling/Burning)	45	45.5%
Balance/Gait Impairment (Ataxia/Vertigo)	41	41.4%
Visual Disturbances (Diplopia/Vision Loss)	38	38.4%
Headache	35	35.4%
Nausea/Vomiting	30	30.3%
Confusion/Cognitive Impairment	28	28.3%
Swallowing Difficulty (Dysphagia)	22	22.2%

Clinical Symptom Cluster	n (approx.)	% of Cohort
Loss of Consciousness/Altered Sensorium	20	20.2%
Seizures/Convulsions	18	18.2%
Memory Impairment	15	15.2%

4. DISCUSSION

This cross-sectional observational study provides the first systematic characterisation of the demographic and clinical profile of patients attending a Physiotherapy OPD in the Hadoti region of Rajasthan. The findings are consistent with and extend the existing Indian and global neurological rehabilitation literature.

Sex and Age Distribution

The male preponderance (63.6%; M:F = 1.75:1) observed here aligns with data from major Indian stroke registries — including the Trivandrum Stroke Registry and ICMR-India Stroke Registry — which report male predominance of 55–68% [6,7]. The higher stroke burden in men is attributable to the greater prevalence of hypertension, diabetes mellitus, tobacco use, and dyslipidaemia in this demographic. An additional contributor may be differential access to rehabilitation among female patients in rural and semi-urban areas [8].

The reversal of this trend in the 18–30-year cohort (8 females vs. 5 males) reflects the disproportionate burden of CVT and autoimmune encephalitis among young women — conditions strongly associated with oral contraceptive use, puerperium, and immune dysregulation [9]. CVT patients in this cohort had a mean age of approximately 32 years, highlighting the need for vocational rehabilitation components tailored to younger survivors.

The mean age of 56.1 ± 18.8 years is consistent with South Asian cohort data — notably lower than Western cohorts (mean stroke age >65 years) — reflecting premature cardiovascular risk-factor exposure, including poorly controlled hypertension and diabetes in India [10]. Patients aged ≥ 60 years constituted 46.5% of the cohort, underscoring the dominant role of age-related neurodegeneration in service demand.

Diagnostic Profile

The dominance of cerebrovascular disease (65.7% of all diagnoses) is consistent with the selective referral pattern of physiotherapy departments, which disproportionately receive post-stroke patients. The ischemic to haemorrhagic ratio of approximately 2.3:1 is slightly lower than the 70:30 or 75:25 ratios reported in most Indian hospital-based stroke studies [11], potentially reflecting regional variation in hypertension control in the Kota population. MCA territory infarct was the most common specific subtype (31.3%), as expected from its large territory and vulnerability to cardioembolism and large-vessel atherosclerosis [12]. The identification of 4 CVT patients (4.0%), predominantly young females, carries distinct physiotherapy implications. These patients frequently present with headache, seizures, and motor deficits alongside anticoagulation requirements — necessitating vigilance during mobilisation and progressive exercise.

The 8.1% burden of encephalitis and encephalopathy reflects the relevance of these conditions to physiotherapy rehabilitation, particularly autoimmune encephalitis, which produces severe cognitive and motor deficits requiring intensive, prolonged input. GBS/polyneuropathy (3.0%) typically presents with ascending paralysis and demands intensive early subacute physiotherapy for balance and gait rehabilitation [13].

Clinical Symptom Burden and Rehabilitation Implications

The high prevalence of motor deficits (58.6%) necessitates interventions including task-oriented motor relearning, constraint-induced movement therapy (CIMT), and progressive strengthening programmes [14]. Balance and gait impairment (41.4%) demands structured vestibular rehabilitation, balance training on stable and unstable surfaces, and treadmill-based gait retraining.

The high rate of speech and language impairment (52.5%) — encompassing aphasia, dysarthria, and dysphagia — underscores the necessity for integrated speech-language pathology services alongside physiotherapy. Dysphagia is particularly significant given its association with aspiration pneumonia, malnutrition, and prolonged rehabilitation. Sensory deficits (45.5%) require sensory re-education programmes, as proprioceptive impairment directly impacts motor recovery and balance retraining efficacy [15].

The substantial burden of cognitive impairment (28.3%) requires adaptation of physiotherapy protocols to accommodate attentional deficits, impaired motor learning, and poor carryover of therapeutic gains — mandating close neuropsychological collaboration.

Limitations

The present study has several limitations. The sample of 99 patients may not fully represent the OPD population across different seasons and years. Clinical data were extracted from non-standardised records, potentially leading to under-ascertainment of some symptoms. Functional outcome measures (e.g., Barthel Index, FIM, mRS) were not available, limiting assessment of disability severity. The cross-sectional, record-based design precludes conclusions regarding rehabilitation outcomes or treatment response.

5. CONCLUSION

This study provides the first systematic demographic and clinical characterisation of a Physiotherapy OPD population in the Hadoti region of Rajasthan. Cerebrovascular disease dominates the diagnostic spectrum (65.7%), with ischemic stroke as the predominant diagnosis (46.5%). The patient cohort is predominantly older and male, with a high burden of motor, communicative, and sensory deficits. These findings underscore the urgent need for a structured, protocol-driven neurological rehabilitation programme at this institution. Future prospective studies incorporating validated functional outcome instruments, longitudinal follow-up, and multi-centre collaboration are required to fully characterise rehabilitation needs and outcomes in this population.

DECLARATIONS

Ethics Approval and consent to participate: Approved by the Institutional Ethics Committee, Career Point University, Kota. Written informed consent was obtained from all participants.

Availability of data: The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare no competing interests.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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