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Study on Quality of Life and Psychological Morbidity in Patients Undergoing Inpatient Neurological Rehabilitation.

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Abstract

Background: Neurological disorders such as stroke and spinal cord lesions are frequently accompanied by disability, poor quality of life, and psychological morbidity. Objective: To assess quality of life and the prevalence of psychological problems in patients undergoing inpatient neurological rehabilitation, and to examine their relationship with functional ability. ***Methods:*** This prospective cross-sectional study was conducted in the neurological rehabilitation unit of Rajshree Medical Research Institute, Bareilly. Forty-five consecutive inpatients were evaluated using the World Health Organization Quality of Life-BREF (WHOQoL-BREF), Hospital Anxiety and Depression Scale (HADS), General Health Questionnaire-12 (GHQ-12), and Barthel Index (BI). ***Results:*** The study included 31 men and 14 women with a mean age of 35.42 ± 11.64 years. Diagnoses included stroke (n=18), traumatic spinal cord injury (n=11), and non-traumatic spinal cord lesions (n=16). Thirty-three patients (73.3%) fulfilled GHQ-12 caseness criteria. Abnormal anxiety was present in 38 patients (84.4%), whereas abnormal depression was present in 26 patients (57.8%). Mean WHOQoL-BREF transformed scores were 37.42 ± 7.84 in the physical domain, 51.38 ± 9.62 in the psychological domain, 47.86 ± 17.93 in the social domain, and 48.74 ± 10.41 in the environmental domain. The social domain demonstrated a significant positive correlation with BI scores (r=0.38, P=0.010). ***Conclusion:*** Patients undergoing neurological rehabilitation have substantial impairment in all domains of quality of life and a high burden of anxiety, depression, and general psychological distress. Social quality of life appears to have the strongest association with functional outcome.

Keywords: Barthel Index; neurological rehabilitation; psychological morbidity; quality of life; spinal cord injury; stroke.

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INTRODUCTION

Quality of life (QoL) is a multidimensional construct that reflects an individual's perception of physical health, psychological well-being, social relationships, and environmental circumstances within a given cultural context.1 Chronic neurological diseases often compromise these domains simultaneously and may therefore produce outcomes that are not adequately captured by neurological or functional examination alone.2

Stroke and spinal cord disorders are among the most important causes of long-term disability in adults. Previous studies have shown that survivors frequently report reduced QoL across physical, psychological, social, and environmental domains, and that these impairments may persist for months or years after the primary neurological insult.2-4 Psychological morbidity is also common in this population. Anxiety, depression, and emotional distress can adversely affect adaptation to disability, participation in rehabilitation, and eventual functional recovery.5 Consequently, assessment of QoL and psychological health should complement routine functional evaluation in rehabilitation practice.

Despite the clear clinical importance of QoL and psychological outcomes in neurological rehabilitation, these dimensions remain inadequately assessed in routine clinical practice in India.6 Incorporation of standardized QoL and psychological screening instruments alongside conventional functional scales is essential for holistic patient management and for monitoring therapeutic efficacy.7-8 The present study was designed to evaluate QoL and the prevalence of psychological problems in patients admitted for inpatient neurological rehabilitation at a tertiary medical institution in northern India, and to examine the interrelationships among QoL domains, psychological morbidity, and functional ability.

MATERIALS AND METHODS

Study design and participants

This prospective cross-sectional study was carried out in the Department of Medicine of Rajshree Medical Research Institute, Bareilly, from January 2023 to July 2024. Forty-five consecutive inpatients (31 males, 14 females) aged 16–58 years (mean: 35.42 ± 11.64 years) admitted with stroke or spinal cord disorder to the neurological rehabilitation unit were enrolled. The illness duration at the time of admission ranged from 3 to 32 months (mean: 11.04 ± 8.17 months). Patients with stroke presenting with global or sensory aphasia or significant cognitive impairment (assessed clinically and confirmed by neuropsychological screening) were excluded so as to ensure the validity of self-reported questionnaire responses.

Hospital Anxiety and Depression Scale (HADS)

The HADS is a validated, 14-item, self-report questionnaire originally developed for use in non-psychiatric hospital settings.9 It comprises two seven-item subscales assessing anxiety and depression, each scored from 0 to 3, yielding subscale scores ranging from 0 to 21. Scores are interpreted as follows: 0–7 (normal), 8–10 (mild), 11–14 (moderate), and 15–21 (severe) anxiety or depression. Patients scoring ≥8 were classified as having abnormal anxiety or depression; those scoring ≥11 were categorized as having moderate-to-severe symptoms.

General Health Questionnaire-12 (GHQ-12)

The GHQ-12 is a widely used self-administered screening instrument designed to detect short-term changes in psychological well-being, encompassing domains of depression, anxiety, social dysfunction, and somatic symptoms.10 Items are rated on a Likert scale (0–3), yielding total scores ranging from 0 to 36. Scores above 15 indicate significant psychological distress, and scores above 20 indicate severe psychological disturbance.

WHOQoL-BREF

The WHOQoL-BREF is the abbreviated 26-item version of the WHOQoL-100 instrument, developed by the World Health Organization for cross-cultural assessment of QoL across four domains: physical health (7 items), psychological status (6 items), social relationships (3 items), and environment (8 items).11 Raw domain scores are transformed to a 0–100 scale; higher scores indicate better QoL. No established cut-points demarcate good from poor QoL on this instrument.

Barthel Index (BI)

Functional independence was quantified using the Barthel Index, a validated 10-item, 100-point scale assessing performance in activities of daily living including feeding, bathing, grooming, dressing, bladder and bowel management, transfers, stair climbing, and ambulation.12 Higher scores denote greater functional independence. Mean BI scores at admission and discharge were recorded and compared.

Statistical analysis

Data were analyzed using SPSS version 25. Descriptive statistics were expressed as mean ± standard deviation and proportions. Pearson correlation was used to assess the relationship between WHOQoL-BREF domain scores and Barthel Index scores, while Spearman rank correlation was used for HADS anxiety and depression scores. Functional improvement between admission and discharge was examined using the paired Student t-test. A P value <0.05 was considered statistically significant.

RESULTS

Demographic and Clinical Profile

Forty-five patients (M:F = 31:14), aged 16–58 years (mean: 35.42 ± 11.64), were recruited. The primary diagnoses are summarized in Table 1. Duration of illness varied from 3 to 32 months, with an overall mean of 11.04 ± 8.17 months. Stroke patients had a mean illness duration of 13.56 ± 10.22 months (range: 3–32 months), while myelopathy patients had a mean duration of 9.18 ± 6.04 months (range: 4–22 months).

Table 1. Clinical diagnosis of study participants (n=45)

Diagnosis	Number of patients	Percentage
Left hemiplegia	15	33.3
Right hemiplegia	3	6.7
Traumatic spinal cord injury	11	24.4
Pott's spine	6	13.3
Transverse myelitis	5	11.1
Spinal cord tumour	2	4.4
Ossified posterior longitudinal ligament	3	6.7
Total	45	100.0

Psychological morbidity

On the GHQ-12, 33 patients (73.3%) fulfilled caseness criteria, 23 (51.1%) had scores above 15 indicating distress, and 11 (24.4%) had scores above 20 indicating severe psychological distress. On the HADS, 38 patients (84.4%) showed abnormal anxiety and 26 (57.8%) showed abnormal depression. Moderate-to-severe anxiety was present in 14 patients (31.1%), whereas moderate-to-severe depression was present in 5 patients (11.1%). The correlations between anxiety and Barthel Index score (r=-0.19, P=0.198) and between depression and Barthel Index score (r=-0.03, P=0.841) were not statistically significant.

Functional outcome

Mean Barthel Index score at admission was 42.33 ± 16.70 and improved to 65.20 ± 16.53 at discharge. This improvement was statistically significant (P<0.001), indicating meaningful functional recovery during inpatient rehabilitation.

Table 2. Barthel Index scores at admission and discharge (n=45)

Patient group	n	BI at admission (mean ± SD)	BI at discharge (mean ± SD)	Mean change	P value
Stroke	18	44.17 ± 15.38	67.92 ± 15.74	+23.75	<0.001
Myelopathy	27	40.18 ± 17.62	62.09 ± 17.44	+21.91	<0.001
Overall	45	42.33 ± 16.70	65.20 ± 16.53	+22.87	<0.001

Quality of life

Mean WHOQoL-BREF transformed scores were low in all four domains, with the physical domain showing the lowest mean score. The social domain demonstrated a statistically significant positive correlation with functional ability at admission (r=0.38, P=0.010). The physical, psychological, and environmental domains did not show significant correlations with Barthel Index scores. Duration of illness showed a significant relationship only with the social domain (r=-0.34, P=0.022).

Table 3. Correlation between Barthel Index score and WHOQoL-BREF domain scores (n=45)

Variable	Physical	Psychological	Social	Environmental
Mean WHOQoL-BREF score (± SD)	37.42 ± 7.84	51.38 ± 9.62	47.86 ± 17.93	48.74 ± 10.41
Pearson correlation coefficient (r)	0.21	0.08	0.38	0.27
P value (2-tailed)	0.166	0.609	0.010	0.074

DISCUSSION

Patients with chronic neurological conditions undergoing inpatient rehabilitation constitute a clinically complex population whose health outcomes cannot be adequately captured by functional scales alone. The present study, conducted among 45 inpatients at Rajshree Medical Research Institute, Bareilly, demonstrates a high prevalence of both impaired QoL and psychological morbidity, consistent with findings from prior research conducted in similar settings.14Anxiety was more frequent than depression in the present cohort, a pattern that may reflect uncertainty about prognosis, abrupt role disruption, altered mobility, and concern regarding social dependence during the rehabilitation phase. HADS and GHQ-12 together identified a large proportion of patients with clinically relevant emotional distress, supporting routine psychological screening in inpatient rehabilitation settings.15

The physical domain of WHOQoL-BREF had the lowest score, which is unsurprising given the motor, sensory, bladder, bowel, and self-care limitations seen in both stroke and spinal cord lesions. However, the social domain showed the strongest correlation with functional ability, suggesting that family support, interpersonal relationships, and social reintegration may influence rehabilitation outcomes in a particularly meaningful way.16 Although depression has been associated with poor recovery in several previous studies, the correlation between HADS scores and functional ability was not statistically significant in this sample. This may be related to sample size, cross-sectional design, case mix, or the modifying effect of structured multidisciplinary rehabilitation during admission.17

The significant improvement in Barthel Index scores between admission and discharge confirms the benefit of organized inpatient rehabilitation. At the same time, the persistently low QoL scores indicate that functional gains alone may not fully address the psychosocial consequences of neurological disability.18

Implications for clinical practice

The present findings advocate for the systematic integration of validated QoL and psychological screening instruments—specifically the WHOQoL-BREF, HADS, and GHQ-12—into routine neurological rehabilitation assessment protocols. Such integration enables early identification of psychological morbidity, facilitates timely referral to psychosocial support

services, and permits longitudinal monitoring of patient-centred outcomes. There is also a compelling need for structured family and caregiver education programmes, given the pivotal role of social support in driving rehabilitation outcomes.

The study is limited by its relatively small sample size (n = 45) and its cross-sectional design, which precludes causal inference or assessment of outcome trajectories over time. The exclusion of aphasic and cognitively impaired patients, while methodologically necessary for the validity of self-report instruments, introduces selection bias and limits generalizability to the broader stroke rehabilitation population. Future studies incorporating larger, longitudinal designs with stratified analyses by diagnosis, lesion level, and illness chronicity are warranted.

CONCLUSION

Patients admitted for inpatient neurological rehabilitation at a tertiary centre in northern India exhibit uniformly impaired QoL across all four WHOQoL-BREF domains, with the physical domain most severely affected. A high prevalence of psychological morbidity—encompassing anxiety, depression, and generalized distress—was identified using validated screening instruments. Functional outcomes improved significantly with inpatient rehabilitation. The social domain of QoL emerged as the most significant correlate of functional capacity, highlighting the indispensable role of psychosocial and sexual rehabilitation in holistic patient care. Routine psychological screening and QoL assessment should be embedded within standard neurological rehabilitation practice.

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