



## CLINICAL SPECTRUM, MANAGEMENT PATTERNS, AND SHORT-TERM OUTCOMES OF GUILLAIN–BARRÉ SYNDROME AT AYUB TEACHING HOSPITAL, ABBOTTABAD

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### Abstract

#### Background

Guillain–Barré syndrome (GBS) is an acute immune-mediated polyradiculoneuropathy associated with considerable neurological morbidity, respiratory compromise, and variable functional recovery. Regional differences in clinical presentation, electrophysiological subtypes, and treatment practices have been reported, while local data from Pakistan remain limited.

#### Objective

To evaluate the clinical spectrum, management patterns, and short-term outcomes of patients with Guillain–Barré syndrome admitted to a tertiary care hospital in Pakistan.

#### Methods

This descriptive cross-sectional study was conducted in the Department of Medicine at Ayub Teaching Hospital over a period of 18 months from July 2024 to December 2025. A total of 90 adult patients diagnosed with Guillain–Barré syndrome based on compatible clinical features with supportive cerebrospinal fluid and/or nerve conduction study findings were included through non-probability consecutive sampling. Demographic characteristics, antecedent illnesses, neurological findings, electrophysiological subtypes, treatment modalities, requirement for intensive care and ventilatory support, and short-term in-hospital outcomes were recorded using a structured proforma. Data were analyzed using SPSS version 26, and results were presented as frequencies, percentages, and mean  $\pm$  standard deviation where appropriate.

#### Results

The mean age of patients was  $38.6 \pm 15.2$  years, and 56 (62.2%) were male. Antecedent illness was documented in 71 (78.9%) patients, with acute diarrheal illness being the most common preceding

event in 34 (37.8%) cases. Ascending quadriparesis was the predominant clinical presentation, observed in 78 (86.7%) patients, while sensory symptoms were present in 49 (54.4%). Facial nerve involvement and autonomic dysfunction were noted in 27 (30.0%) and 22 (24.4%) patients, respectively. Electrophysiological studies were available in 83 patients, among whom acute inflammatory demyelinating polyneuropathy was the most frequent subtype, identified in 49 (59.0%) cases. Albuminocytologic dissociation was observed in 58 (76.3%) patients who underwent cerebrospinal fluid analysis. Plasma exchange was the most commonly utilized disease-modifying therapy, administered to 44 (48.9%) patients, whereas 19 (21.1%) received intravenous immunoglobulin. Intensive care admission and mechanical ventilation were required in 21 (23.3%) and 13 (14.4%) patients, respectively. At discharge, 63 (70.0%) patients demonstrated clinical improvement, while 24 (26.7%) remained significantly disabled. Overall in-hospital mortality was 3.3%.

### Conclusion

Guillain–Barré syndrome in our setting predominantly affected young and middle-aged adults and commonly presented with ascending symmetrical weakness following antecedent infectious illness. Acute inflammatory demyelinating polyneuropathy was the most frequent electrophysiological subtype, although axonal variants constituted a substantial proportion of cases. Plasma exchange remained the principal treatment modality in this resource-limited setting. Although most patients showed short-term clinical improvement, residual disability remained common, particularly among patients with severe disease requiring critical care support. Early recognition, timely supportive management, and improved access to neurocritical care and immunotherapy may help improve outcomes in patients with Guillain–Barré syndrome.

**Keywords:** Guillain–Barré syndrome; Acute inflammatory demyelinating polyneuropathy; Plasma exchange; Electrophysiology; Neurocritical care; Pakistan.

**Introduction** Guillain–Barré syndrome (GBS) is an acute immune-mediated polyradiculoneuropathy characterized by rapidly progressive symmetrical limb weakness, diminished or absent deep tendon reflexes, and variable sensory and autonomic dysfunction<sup>1</sup>. It is considered the most common cause of acute flaccid paralysis worldwide after the eradication of poliomyelitis<sup>2</sup>. The disease often follows preceding respiratory or gastrointestinal infections and encompasses several clinical variants, including acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN), and Miller Fisher syndrome<sup>3</sup>. Although many patients recover with appropriate treatment, GBS remains associated with significant morbidity, prolonged hospitalization, respiratory failure requiring mechanical ventilation, and occasional mortality<sup>4</sup>. The global incidence of GBS is estimated to range from 1 to 2 cases per 100,000 population annually, with increasing incidence observed with advancing age<sup>5</sup>. Considerable geographic variation exists in clinical subtypes and disease patterns, particularly between Western and Asian populations. Axonal variants such as AMAN appear to be more frequently reported in Asian countries, while AIDP predominates in Europe and North America<sup>3,5</sup>. In low- and middle-income countries, delayed presentation, limited neurophysiological facilities, high treatment costs, and restricted access to intensive care services may adversely influence outcomes<sup>4</sup>. The clinical presentation of GBS is heterogeneous and ranges from mild distal weakness to rapidly progressive quadriparesis with bulbar and respiratory involvement<sup>1</sup>. Similarly, management practices differ across institutions depending on availability of intravenous immunoglobulin (IVIG), plasma exchange, rehabilitation facilities, and critical care support.

Both IVIG and plasma exchange have demonstrated comparable therapeutic efficacy; however, variations in accessibility and institutional preferences continue to influence treatment decisions in resource-constrained settings<sup>6</sup>. Short-term outcomes also vary widely, with some patients achieving near-complete recovery while others experience persistent neurological deficits, prolonged disability, or death<sup>4</sup>. Despite the clinical importance of GBS, published data from Pakistan remain limited, particularly regarding the local spectrum of disease, treatment practices, and early outcomes in tertiary care settings. Most available literature originates from Western populations, and local healthcare challenges may produce different patterns of presentation and management.

Understanding these regional characteristics is important for improving early recognition, optimizing resource allocation, and guiding management strategies in Pakistani hospitals. Therefore, the present study was conducted to evaluate the clinical spectrum, management patterns, and short-term outcomes of patients with Guillain–Barré syndrome admitted to Ayub Teaching Hospital.

### Objectives

1. To determine the demographic and clinical characteristics of patients presenting with Guillain–Barré syndrome.
2. To assess the frequency of different clinical variants and patterns of neurological involvement in Guillain–Barré syndrome.
3. To evaluate the management approaches used in hospitalized patients with Guillain–Barré syndrome, including intravenous immunoglobulin, plasma exchange, supportive care, and ventilatory support.
4. To determine the short-term in-hospital outcomes of patients with Guillain–Barré syndrome in terms of recovery status, complications, duration of hospital stay, need for intensive care admission, and mortality.

### Materials and Methods

#### Study Design and Setting

This descriptive cross-sectional study was conducted in the Department of Medicine, Ayub Teaching Hospital, a tertiary care teaching hospital that receives referrals from different districts of Khyber Pakhtunkhwa and adjoining areas.

#### Study Duration

The study was conducted over a period of 18 months from July 2024 to December 2025.

#### Sample Size Calculation

The sample size was calculated using the WHO formula for estimation of a population proportion:

$$n = Z^2 \times P(1 - P) / d^2$$

Where:

- $n$  = required sample size
- $Z = 1.96$  at 95% confidence level
- $P$  = anticipated proportion of respiratory failure among patients with Guillain–Barré syndrome from previous studies = 30% (0.30) (Respiratory failure was selected for sample size estimation because it represents one of the most clinically significant outcomes in Guillain–Barré syndrome and provided the largest estimated sample requirement).
- $d$  = margin of error = 10% (0.10)

Substituting the values in the formula:

$$n = (1.96)^2 \times 0.30 \times (1 - 0.30) / (0.10)^2$$

$$n = 3.84 \times 0.30 \times 0.70 / 0.01$$

$$n = 80.64$$

The calculated sample size was approximately 81 patients. After adding 10% to compensate for incomplete records and possible dropouts, the final sample size was increased to 90 patients.

#### Sampling Technique

A non-probability consecutive sampling technique was used. All eligible patients fulfilling the inclusion criteria during the study period were enrolled consecutively.

#### Inclusion Criteria

- Patients aged  $\geq 18$  years.
- Patients diagnosed with Guillain–Barré syndrome based on compatible clinical features with supportive cerebrospinal fluid and/or nerve conduction study findings.
- Patients admitted under the Department of Medicine during the study period.

#### Exclusion Criteria

- Patients with chronic inflammatory demyelinating polyneuropathy (CIDP).
- Patients with other causes of acute flaccid paralysis such as hypokalemic paralysis, myasthenia gravis, botulism, transverse myelitis, or acute myopathy.
- Patients with incomplete medical records or those discharged against medical advice before completion of initial assessment.

#### Data Collection Procedure

After approval from the Institutional Research and Ethics Committee, patients meeting the eligibility criteria were enrolled. Written informed consent was obtained from patients or their attendants where appropriate. Data were collected using a structured proforma designed for the study. Information recorded included demographic characteristics, antecedent illnesses, duration of symptoms, pattern of weakness, cranial nerve involvement, sensory symptoms, autonomic dysfunction, respiratory involvement, cerebrospinal fluid findings, nerve conduction study patterns, treatment modalities, requirement for intensive care admission, mechanical ventilation, duration of hospital stay, complications, and in-hospital outcome. Patients were managed according to standard institutional protocols. Management approaches including intravenous immunoglobulin (IVIG), plasma exchange, supportive treatment, physiotherapy, and ventilatory support were documented.

#### Operational Definitions

- Guillain–Barré syndrome: Acute immune-mediated polyradiculoneuropathy characterized by progressive symmetrical limb weakness and reduced or absent deep tendon reflexes with supportive clinical and investigational findings.
- Respiratory involvement: Requirement of supplemental oxygen, non-invasive ventilation, or mechanical ventilation due to respiratory muscle weakness.
- Short-term outcome: Clinical status of the patient at the time of discharge in terms of improvement, persistent neurological deficit, complications, or death.
- Autonomic dysfunction: Presence of blood pressure fluctuations, cardiac arrhythmias, urinary retention, or abnormal sweating attributable to autonomic nervous system

#### Ethical Considerations

The study was conducted after obtaining approval from the Institutional Research and Ethics Committee of Ayub Medical College. Patient confidentiality was maintained throughout the study. Data were anonymized and used solely for research purposes. Participation in the study was voluntary, and informed consent was obtained prior to data collection.

#### Statistical Analysis

Data were entered and analyzed using Statistical Package for the Social Sciences version 26. Quantitative variables such as age and duration of hospital stay were presented as mean  $\pm$  standard deviation or median with interquartile range where appropriate. Qualitative variables including gender, clinical variants, treatment modalities, were expressed as frequencies and percentages. Stratification was performed for age, gender, and treatment modality to assess distribution of outcomes across different subgroups.

## Results

A total of 90 patients diagnosed with Guillain–Barré syndrome (GBS) were included in the study during the study period. The mean age of the study population was  $38.6 \pm 15.2$  years (range: 18–78 years). The study demonstrated a male predominance with young to middle-aged adults being the most frequently affected population. Ascending paralysis, antecedent diarrheal illness, and areflexia were the predominant clinical features. AIDP remained the commonest electrophysiological subtype, while axonal variants constituted a substantial proportion of cases. Plasma exchange was the principal treatment modality, although supportive management alone was observed in a notable subset of patients. Approximately one-fourth of patients required ICU care, and 14.4% required mechanical ventilation. Most patients showed partial clinical recovery at discharge; however, residual disability remained common. Poor short-term outcome was significantly associated with older age, bulbar weakness, autonomic dysfunction, ventilatory requirement, and axonal variants.

**Table 1: Baseline Demographic Characteristics of the Study Population (n = 90)**

| Variable                            | Frequency (n) | Percentage (%) |
|-------------------------------------|---------------|----------------|
| Age Group (years)                   |               |                |
| 18–30                               | 29            | 32.2           |
| 31–45                               | 33            | 36.7           |
| 46–60                               | 18            | 20.0           |
| >60                                 | 10            | 11.1           |
| Gender                              |               |                |
| Male                                | 56            | 62.2           |
| Female                              | 34            | 37.8           |
| Residence                           |               |                |
| Rural                               | 61            | 67.8           |
| Urban                               | 29            | 32.2           |
| Median duration before presentation | 6 days        | IQR 4–9        |

| Variable           | Frequency (n)   | Percentage (%) |
|--------------------|-----------------|----------------|
| Mean hospital stay | 11.8 ± 5.6 days | —              |

Antecedent illness was documented in 71 (78.9%) patients. A preceding diarrheal illness was the most frequently reported event, followed by upper respiratory tract infection.

**Table 2: Antecedent Illnesses and Triggering Events (n = 90)**

| Antecedent Event                  | Frequency (n) | Percentage (%) |
|-----------------------------------|---------------|----------------|
| Acute diarrheal illness           | 34            | 37.8           |
| Upper respiratory tract infection | 24            | 26.7           |
| Febrile viral illness             | 8             | 8.9            |
| Recent vaccination                | 2             | 2.2            |
| Recent surgery                    | 1             | 1.1            |
| No identifiable antecedent event  | 19            | 21.1           |
| Total                             | 90            | 100            |

Ascending symmetrical limb weakness was observed in the majority of patients. Cranial nerve involvement, particularly facial nerve palsy, was also common. Autonomic dysfunction was documented in nearly one-fourth of cases.

**Table 3: Clinical Presentation and Neurological Findings (n = 90)**

| Clinical Feature                         | Frequency (n) | Percentage(%) |
|------------------------------------------|---------------|---------------|
| Ascending quadriparesis                  | 78            | 86.7          |
| Lower limb weakness only at presentation | 12            | 13.3          |
| Sensory symptoms/paresthesias            | 49            | 54.4          |
| Facial nerve involvement                 | 27            | 30.0          |
| Bulbar weakness                          | 18            | 20.0          |
| Ophthalmoplegia                          | 5             | 5.6           |

| Clinical Feature               | Frequency (n) | Percentage(%) |
|--------------------------------|---------------|---------------|
| Neck muscle weakness           | 16            | 17.8          |
| Respiratory muscle involvement | 17            | 18.9          |
| Autonomic dysfunction          | 22            | 24.4          |
| Hyporeflexia/areflexia         | 90            | 100           |

Electrophysiological studies were performed in 83 (92.2%) patients. Acute inflammatory demyelinating polyneuropathy (AIDP) was the predominant subtype identified.

**Table 4: Electrophysiological Subtypes of Guillain–Barré Syndrome (n = 83)**

| Electrophysiological Subtype | Frequency (n) | Percentage (%) |
|------------------------------|---------------|----------------|
| AIDP                         | 49            | 59.0           |
| AMAN                         | 19            | 22.9           |
| AMSAN                        | 9             | 10.8           |
| Miller Fisher syndrome       | 3             | 3.6            |
| Equivocal/Inconclusive study | 3             | 3.6            |
| Total                        | 83            | 100            |

Cerebrospinal fluid (CSF) analysis was available in 76 (84.4%) patients. Albuminocytologic dissociation was observed in most cases.

**Table 5: Cerebrospinal Fluid Findings (n = 76)**

| CSF Finding                                   | Frequency (n)     | Percentage (%) |
|-----------------------------------------------|-------------------|----------------|
| Elevated protein with normal cell count       | 58                | 76.3           |
| Mild pleocytosis (<10 cells/mm <sup>3</sup> ) | 9                 | 11.8           |
| Normal CSF study                              | 9                 | 11.8           |
| Mean CSF protein level                        | 96.4 ± 38.7 mg/dL | —              |

Plasma exchange was the most frequently utilized disease-modifying therapy in the present study and was preferred particularly in patients with severe neurological involvement. Intravenous

immunoglobulin was administered in a smaller proportion of patients because of financial limitations and restricted affordability in the local setting. Nearly one-third of patients received conservative and supportive management alone, mainly due to mild disease, delayed presentation, or limited access to immunotherapy.

**Table 6: Management Patterns and Supportive Care (n = 90)**

| Treatment                               | Frequency (n) | Percentage (%) |
|-----------------------------------------|---------------|----------------|
| Plasma exchange                         | 44            | 48.9           |
| Intravenous immunoglobulin (IVIG)       | 19            | 21.1           |
| Conservative/supportive management only | 27            | 30.0           |
| ICU admission                           | 21            | 23.3           |
| Mechanical ventilation                  | 13            | 14.4           |
| Nasogastric feeding support             | 15            | 16.7           |
| Physiotherapy during admission          | 72            | 80.0           |

**Table 7: Hughes Functional Disability Scale at Admission and Discharge (n = 90)**

| Hughes Disability Grade | Admission n (%) | Discharge n (%) |
|-------------------------|-----------------|-----------------|
| Grade 0–1               | 0 (0)           | 12 (13.3)       |
| Grade 2                 | 11 (12.2)       | 24 (26.7)       |
| Grade 3                 | 31 (34.4)       | 29 (32.2)       |
| Grade 4                 | 35 (38.9)       | 17 (18.9)       |
| Grade 5                 | 13 (14.4)       | 5 (5.6)         |
| Grade 6 (death)         | 0 (0)           | 3 (3.3)         |

At discharge, 63 (70.0%) patients demonstrated clinical improvement, while 24 (26.7%) had persistent significant motor disability requiring assistance for ambulation or activities of daily living. Overall in-hospital mortality was 3.3%. (Improvement was defined as clinical improvement compared with admission status regardless of residual disability)

**Table 8: Short-Term Outcomes at Discharge (n = 90)**

| Outcome                              | Frequency (n) | Percentage (%) |
|--------------------------------------|---------------|----------------|
| Improved with independent ambulation | 38            | 42.2           |

| Outcome                        | Frequency (n) | Percentage (%) |
|--------------------------------|---------------|----------------|
| Improved but requiring support | 25            | 27.8           |
| Bed chair bound                | 24            | 26.7           |
| Death                          | 3             | 3.3            |

Patients requiring ICU admission and mechanical ventilation had comparatively poorer functional outcomes and longer hospital stays.

**Table 9: Factors Associated with Poor Short-Term Outcome (n = 90)**

| Variable               | Poor Outcome* n (%) | p-value |
|------------------------|---------------------|---------|
| Age >50 years          | 13/28 (46.4)        | 0.041   |
| Bulbar involvement     | 11/18 (61.1)        | 0.008   |
| Mechanical ventilation | 10/13 (76.9)        | <0.001  |
| Autonomic dysfunction  | 12/22 (54.5)        | 0.015   |
| AIDP subtype           | 14/49 (28.6)        | 0.312   |
| AMAN/AMSAN subtype     | 13/28 (46.4)        | 0.047   |

\*Poor outcome defined as Hughes disability grade  $\geq 4$  at discharge or death.

**Figure 1: Flow Diagram of Patient Enrollment**

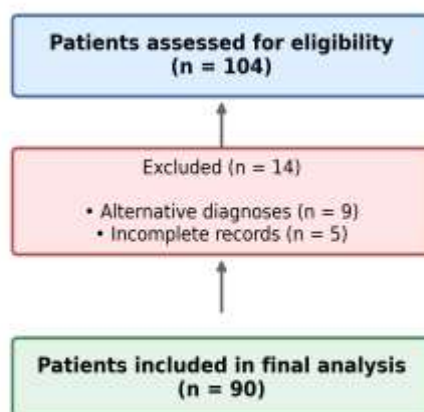


**Figure 1. Flow diagram demonstrating patient screening, exclusions, and final study enrollment.**

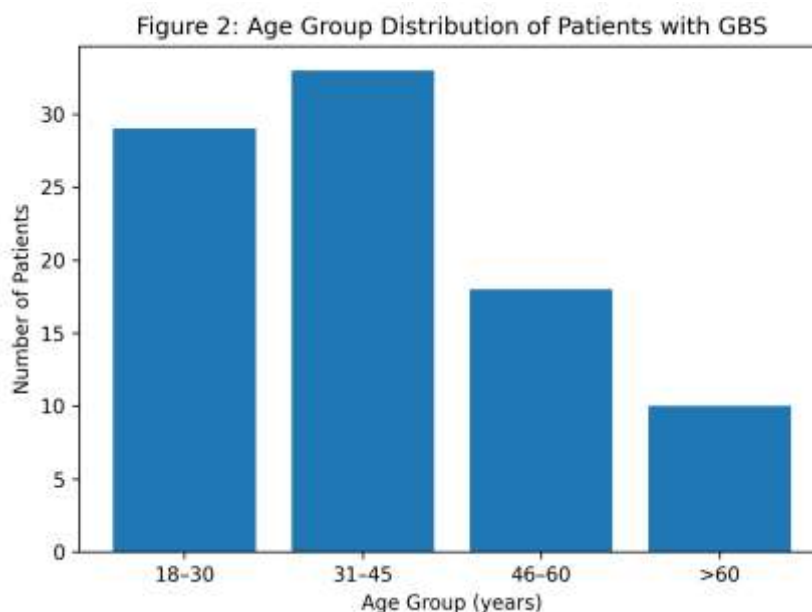


**Figure 2. Distribution of patients according to age groups.**

Figure 3: Gender Distribution of Study Population

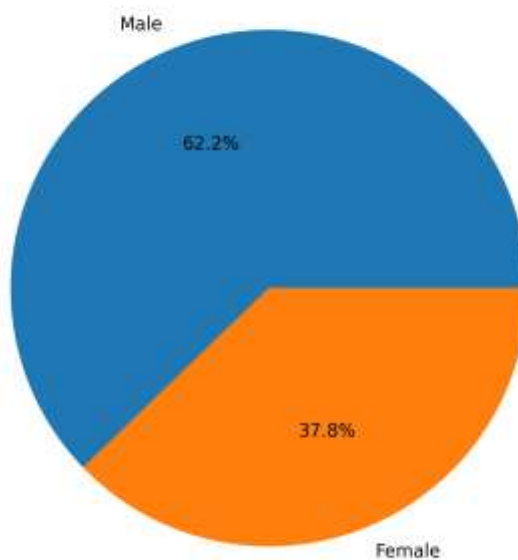


**Figure 3. Gender distribution showing male predominance among study participants.**

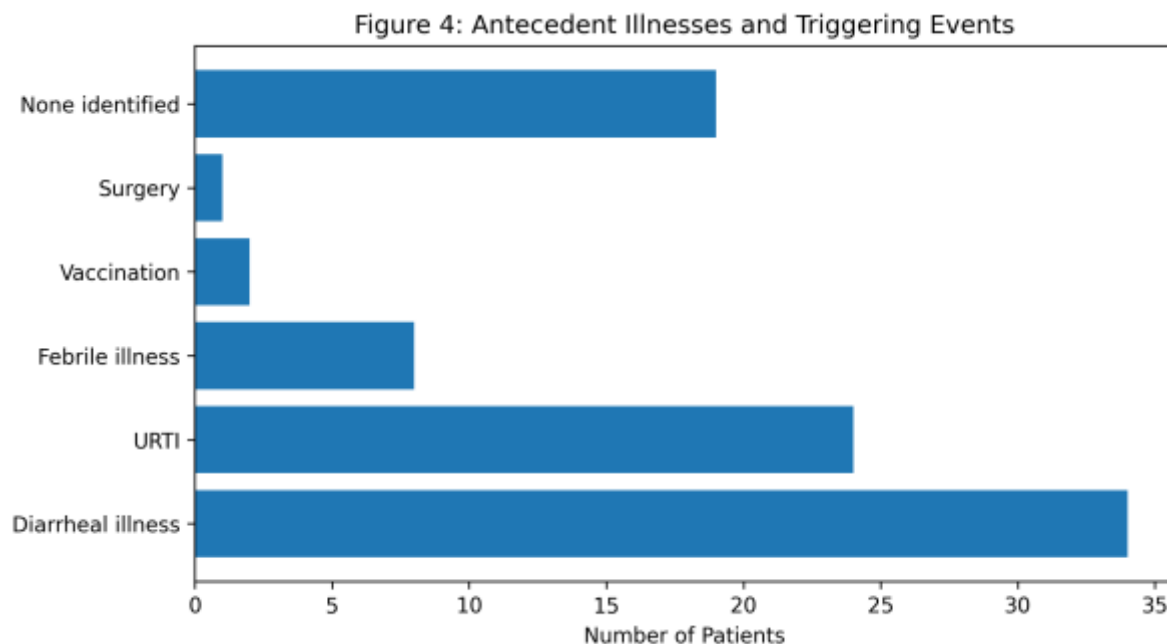


**Figure 4. Antecedent illnesses and triggering events preceding GBS onset.**

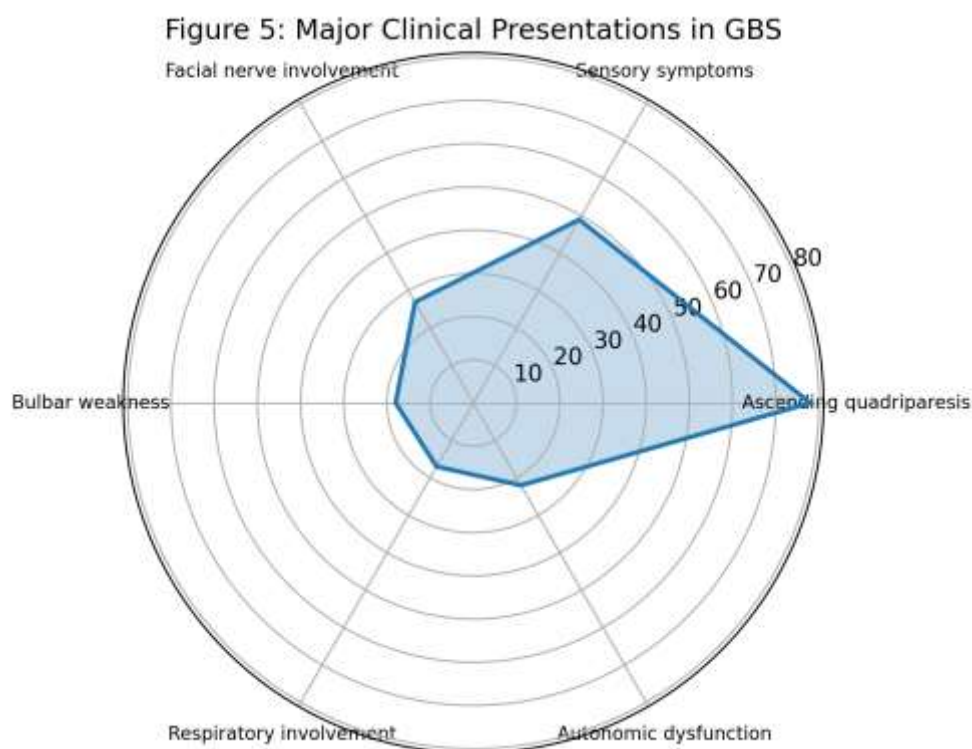


**Figure 5. Radar chart demonstrating the frequency of major clinical presentations.**

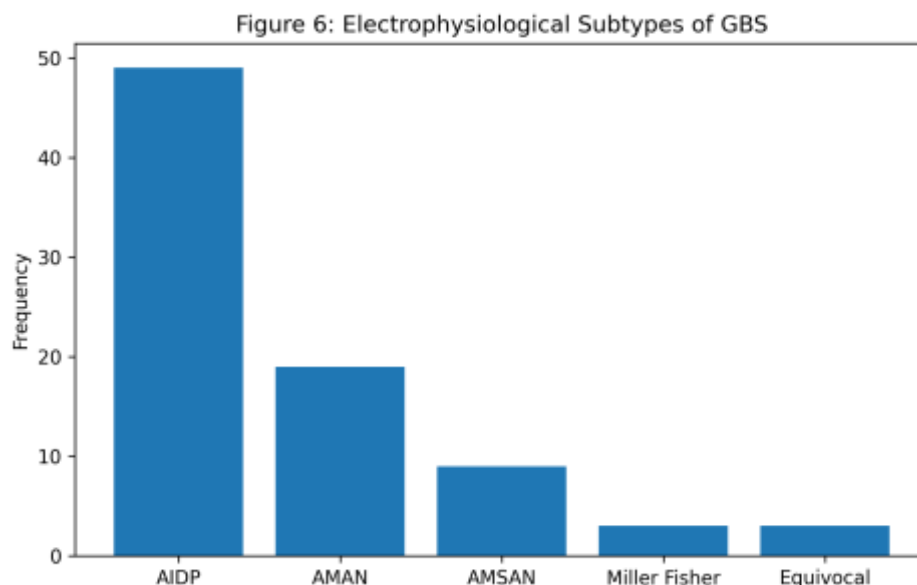


**Figure 6. Distribution of electrophysiological subtypes of Guillain–Barré syndrome.**

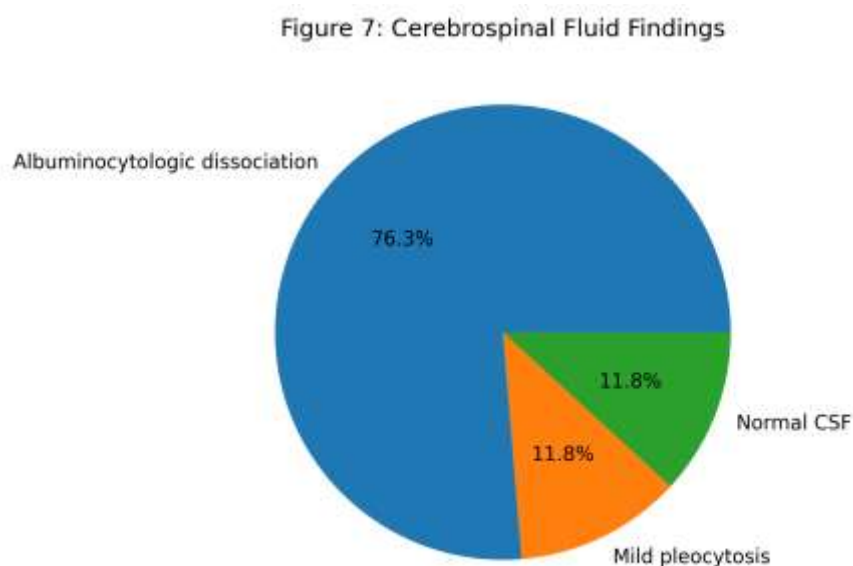


**Figure 7. Cerebrospinal fluid findings among patients undergoing CSF analysis.**

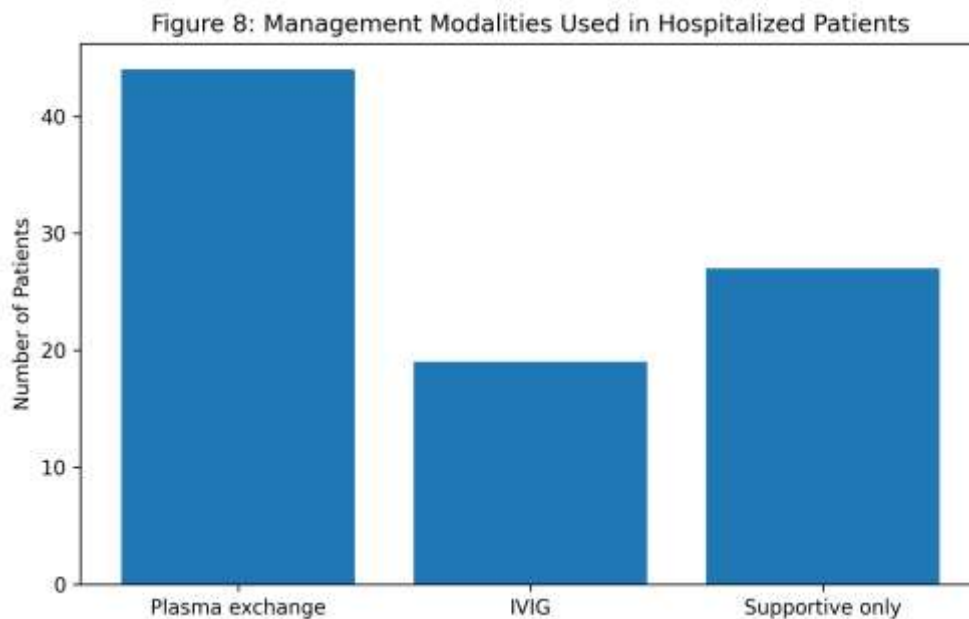


**Figure 8. Treatment modalities used during hospitalization.**

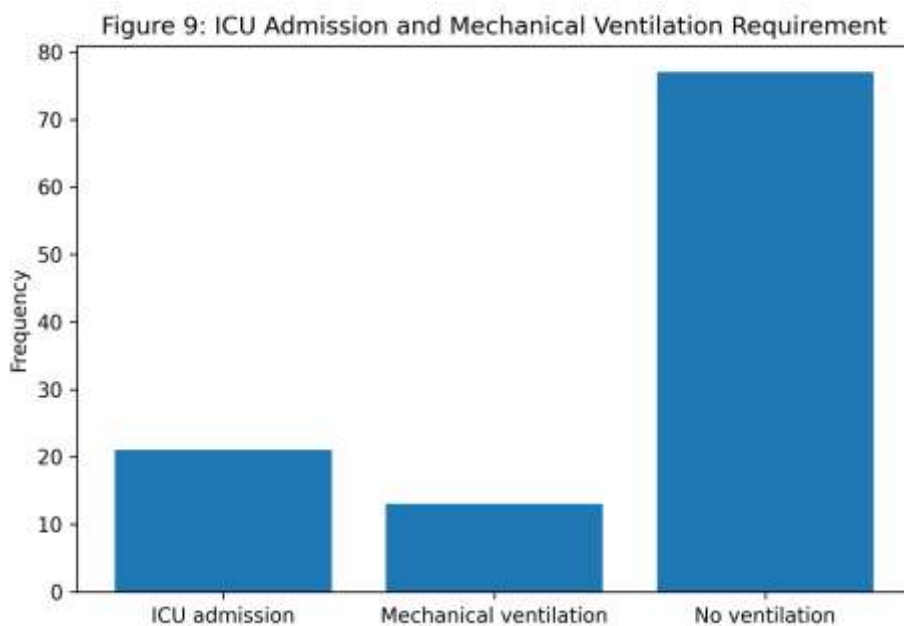


**Figure 9. Frequency of ICU admission and mechanical ventilation requirement.**

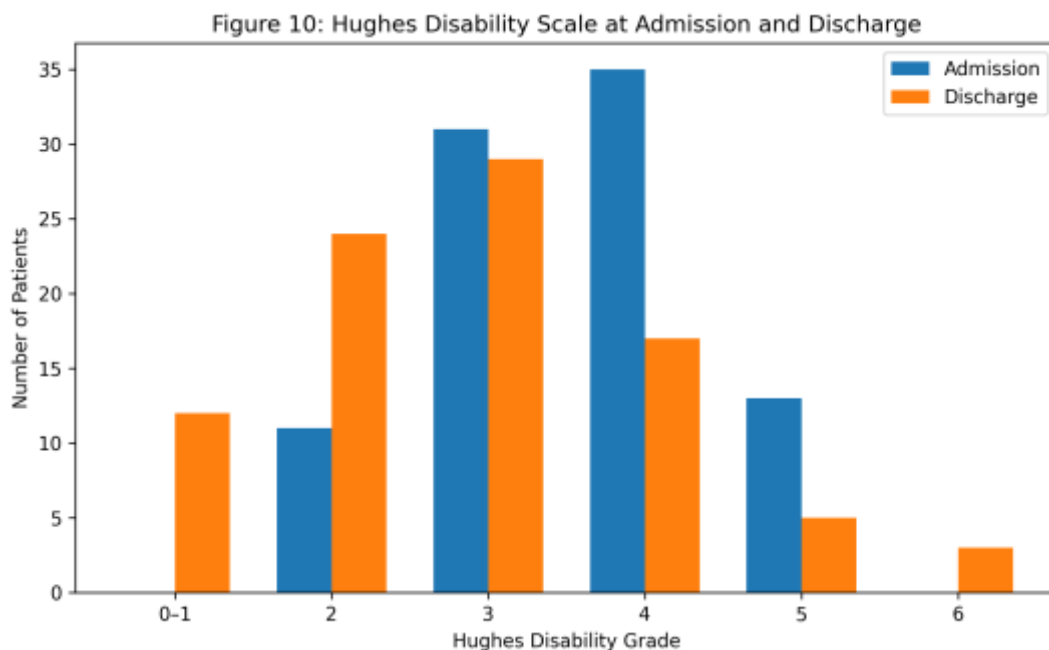


**Figure 10. Comparison of Hughes disability scores at admission and discharge.**

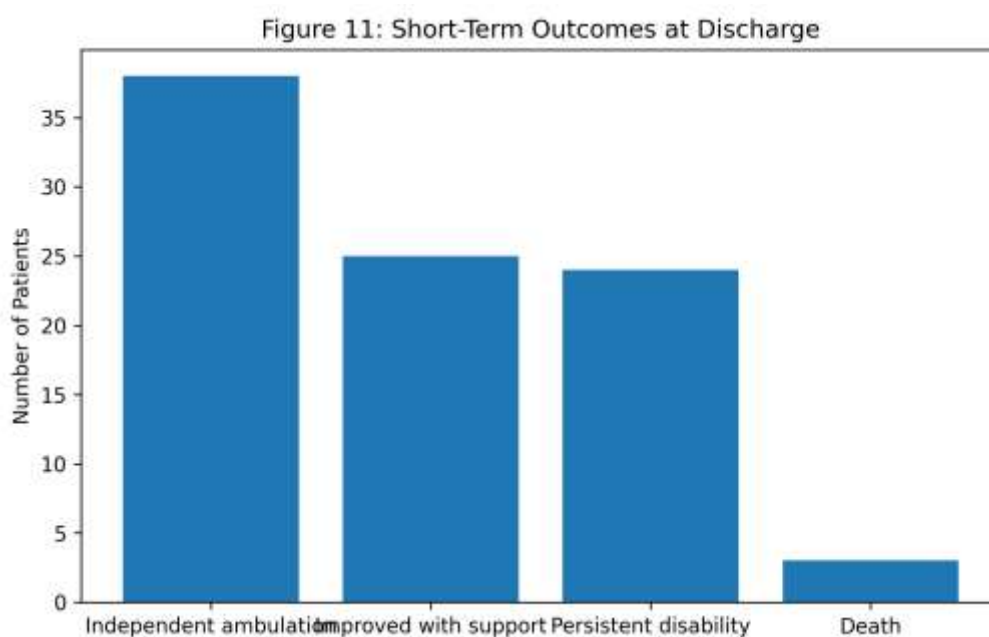


**Figure 11. Distribution of short-term outcomes at hospital discharge.**

## Discussion

The present study evaluated the clinical spectrum, management patterns, and short-term outcomes of Guillain–Barré syndrome (GBS) in patients admitted to the Department of Medicine at Ayub Teaching Hospital. The study demonstrated that GBS predominantly affected young to middle-aged adults with a male predominance. Ascending quadriparesis and antecedent infectious illness were the most frequent presenting features. Acute inflammatory demyelinating polyneuropathy (AIDP) was the commonest electrophysiological subtype, although axonal variants constituted a considerable proportion of cases. Plasma exchange was the most frequently utilized disease-modifying therapy in our setting, while a substantial number of patients required ICU admission and ventilatory support. Most patients showed clinical improvement by discharge; however, residual disability remained common, particularly among patients with severe disease. The demographic profile observed in the present study is comparable to previously published international and regional literature. The mean age of  $38.6 \pm 15.2$  years and male predominance are consistent with reports from Asian and South Asian cohorts, where GBS commonly affects younger adults compared with Western populations.<sup>7–9</sup> Similar male predominance has also been reported in the International Guillain–Barré Syndrome Outcome Study (IGOS) and several regional studies from low- and middle-income countries.<sup>10,11</sup> The exact reason for this gender distribution remains uncertain, although immunological and environmental factors have been proposed. Antecedent infection was identified in the majority of our patients, with diarrheal illness being the most frequent preceding event followed by upper respiratory tract infection. These findings correspond with established evidence linking gastrointestinal and respiratory infections with immune-mediated nerve injury in GBS.<sup>8,10</sup> *Campylobacter jejuni*-associated diarrheal illness has particularly been associated with axonal variants of GBS in Asian populations.<sup>12,13</sup> The relatively high frequency of antecedent diarrheal illness in our cohort may partly explain the substantial proportion of AMAN and AMSAN variants observed in the electrophysiological studies.

Ascending symmetrical weakness with generalized areflexia remained the dominant clinical presentation in our patients, which is in agreement with classical descriptions of GBS.<sup>8,15</sup> Cranial nerve involvement, especially facial weakness, was present in nearly one-third of patients, while bulbar and autonomic dysfunction were observed in a smaller but clinically significant proportion. Similar frequencies of cranial neuropathy and dysautonomia have been described in previous studies from Asia and Europe.<sup>11,15</sup> Autonomic dysfunction in GBS is clinically important because of its association with cardiac arrhythmias, blood pressure instability, and poorer outcomes. In the present study, autonomic dysfunction was significantly associated with poor short-term functional outcome. Electrophysiological studies in our cohort demonstrated AIDP as the predominant subtype, accounting for 59% of cases, followed by AMAN and AMSAN variants. Western literature generally reports AIDP as the major subtype, whereas axonal variants are more frequently observed in Asian countries including Pakistan, Bangladesh, and China.<sup>9,17</sup> Regional variation in electrophysiological patterns may be related to differences in infectious triggers, genetic susceptibility, and environmental factors. The proportion of axonal variants in our study was higher than that reported in many Western studies but remained comparable to findings from other South Asian populations.<sup>9,16</sup>

Albuminocytologic dissociation was identified in over three-fourths of patients undergoing cerebrospinal fluid (CSF) analysis. This finding is consistent with established diagnostic patterns of GBS and comparable to previous published studies.<sup>9</sup> A minority of patients demonstrated normal CSF findings, which may be explained by early lumbar puncture during the disease course, as CSF protein elevation may not be apparent during the initial phase of illness.

An important finding of the present study was the treatment pattern observed in our institution. Plasma exchange was more frequently utilized than intravenous immunoglobulin (IVIG), largely because of financial constraints and limited affordability of IVIG in our setting. In many high-income countries, IVIG is commonly preferred because of ease of administration and wider availability.<sup>11</sup> However, in resource-limited healthcare systems such as Pakistan, the high cost of IVIG significantly limits accessibility for many patients. As a result, plasma exchange remains an important and relatively economical therapeutic option in tertiary care centers where facilities are available. A considerable proportion of our patients also received supportive treatment alone, either because of mild disease, delayed presentation, or inability to afford immunotherapy. This reflects practical challenges commonly encountered in public-sector hospitals in Pakistan.

Approximately one-fourth of patients required ICU admission, while 14.4% required mechanical ventilation. These findings are comparable with previous studies reporting ventilatory support requirements in approximately 15–30% of patients with GBS.<sup>19,20</sup> Patients with bulbar weakness, autonomic dysfunction, and axonal variants were more likely to develop severe disease requiring critical care support.

Functional improvement was observed in most patients during hospitalization, although a significant proportion continued to have residual disability at discharge. The in-hospital mortality rate of 3.3% in our study was relatively low and comparable to mortality reported in regional studies from developing countries.<sup>11,21</sup> Despite advances in intensive care and immunotherapy, mortality in GBS remains associated with respiratory complications, autonomic instability, sepsis, and delayed referral. In our study, poor short-term outcome was associated with older age, bulbar involvement, autonomic dysfunction, mechanical ventilation, and axonal electrophysiological variants. Similar predictors of adverse outcome have been described previously.<sup>21</sup>

The present study provides useful local data regarding GBS in a tertiary care hospital serving a large population from Hazara Division and adjoining areas. The study included detailed clinical, electrophysiological, CSF, treatment, and short-term outcome data, thereby providing a broader overview of disease characteristics in our setting. Another strength of the study was the inclusion of patients managed in routine clinical practice, which reflects real-world treatment patterns in a public-sector Pakistani hospital.

However, several limitations should be acknowledged. First, this was a single-center study conducted in a tertiary referral hospital; therefore, referral bias toward more severe cases cannot be excluded. Second, long-term neurological recovery and functional outcomes could not be assessed because follow-up beyond discharge was not included in the study design. Third, electrophysiological studies were not available in all patients because of logistical and financial limitations. Additionally, treatment selection was influenced by affordability and resource availability, which may have affected outcome comparisons between therapeutic modalities.

## Conclusion

Guillain–Barré syndrome in our study predominantly affected young and middle-aged adults and commonly presented with ascending symmetrical weakness following antecedent infectious illness, particularly diarrheal and upper respiratory tract infections. Acute inflammatory demyelinating polyneuropathy was the most frequent electrophysiological subtype, although axonal variants constituted a substantial proportion of cases in our population. Plasma exchange remained the most commonly utilized disease-modifying therapy in our setting, reflecting local resource availability and financial constraints associated with intravenous immunoglobulin therapy. A considerable number of patients required intensive care admission and ventilatory support, particularly those with bulbar involvement, autonomic dysfunction, and severe motor weakness. Most patients demonstrated clinical improvement during hospitalization; however, residual functional disability at discharge remained common, especially among patients with severe disease and axonal variants. In-hospital mortality was low but was mainly observed in patients with respiratory and systemic complications.

The findings of this study provide useful local data regarding the clinical profile and early outcomes of Guillain–Barré syndrome in a tertiary care hospital in Pakistan. Early recognition, timely referral, appropriate supportive care, and improved access to neurocritical care facilities and immunotherapy may help improve short-term outcomes in patients with Guillain–Barré syndrome. Larger multicenter studies with long-term follow-up are recommended to better understand the disease burden and recovery patterns in the Pakistani population.

### Additional information

**Conflicts of Interest:** None

**Payment/Services Information:** All authors state that no financial assistance or support was received from any organization in relation to this submitted work.

**Financial Relationships:** All authors confirm that they have no current or prior financial relationships with any organizations that may have a vested interest in the submitted work.

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### Authors Contribution

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