

ORIGINAL ARTICLE

Factors associated with long length of stay in an inpatient psychiatric facility in Lahore, Pakistan.

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ABSTRACT... Objective: To describe the clinical and socio-demographic characteristics of long-stay psychiatric inpatients and to identify factors associated with prolonged hospitalization within this cohort. **Study Design:** Hospital-based Descriptive Cross-sectional. **Setting:** Punjab Institute of Mental Health (PIMH), Lahore, Pakistan. **Period:** June to November 2025. **Methods:** A total of 128 consecutive long-stay inpatients (length of stay >90 days) were included using non-probability consecutive sampling. Socio-demographic variables (age, gender, marital status, education level, family support), clinical diagnoses, and documented psychiatric and behavioural symptoms were extracted from medical records. Length of stay (LOS) was highly skewed; therefore, Mann–Whitney U tests were used to compare LOS between groups for each binary variable, with significance set at $p < 0.05$. Analyses were done using SPSS version 25.0. **Results:** The median length of stay (LOS) was 1,825 days (interquartile range [IQR] 1,095–2,555 days), and the mean was 2,368 days (approximately 6.4 years), showing a highly skewed distribution with LOS ranging from 146 to 16,425 days (0.4–45 years). The median patient age was 45 years, and 94 (73%) were male. Older age ($p < 0.001$), low education level ($p = 0.027$), family refusal to take the patient home ($p = 0.001$), comorbid chronic medical illness ($p = 0.014$), and cognitive impairment ($p = 0.018$) were significantly associated with longer LOS. In contrast, male gender, unmarried status, schizophrenia diagnosis, intellectual disability, mandatory care, treatment resistance, medication non-compliance, substance use disorder, sleep disturbance, suicidal ideation, and violent behaviour were not statistically significantly associated with LOS (all $p \geq 0.05$). Notably, the absence of statistical significance does not eliminate potential clinical relevance, particularly in subgroups with limited statistical power. **Conclusion:** Among long-stay psychiatric inpatients, social vulnerability (older age, low education, absent family support), medical complexity (comorbid chronic illness), and cognitive impairment were the strongest correlates of prolonged hospitalization. The exceptionally prolonged stays observed in this cohort indicate systemic deficiencies in community mental health services and persistent social barriers to discharge, rather than acute psychiatric symptoms alone. Targeted discharge planning, family engagement programs, and investment in community mental health infrastructure are essential to reduce unnecessary institutionalization.

Key words: Comorbidity, Cognitive Impairment, Hospitalization, Long-Term Care, Length of Stay, Psychiatric Inpatients, Pakistan, Social Factors.

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INTRODUCTION

The prevalence of mental health disorders in Pakistan, a developing country and the world's fifth most populous nation, is rising rapidly.¹ Mental health services in Pakistan are widely recognized as insufficient, unequal, and ineffective.² In addition to the disease burden, the duration of psychiatric hospital admission shows care quality and health system efficiency. A key challenge for mental health institutions in Pakistan is that psychiatric inpatients remain hospitalized substantially longer than those in other regions.³ Prolonged hospitalization does not improve social functioning, reduce symptoms, or improve well-being⁴, and also diverts scarce

healthcare resources from other urgent clinical needs.⁵

Multiple systemic and sociocultural factors contribute to extended psychiatric admissions in Pakistan. Widespread stigma surrounding mental illness significantly limits community and family support networks for individuals returning home after hospitalization.⁶ Furthermore, the inadequate provision of community-based mental health services results in psychiatric hospitals serving as the primary, and often sole, source of treatment and care.⁷

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As a result, patients without family support frequently remain institutionalized despite clinical stability. Although the Pakistani government has introduced mental health policies and expanded psychiatric bed capacity in recent years, the absence of community reintegration pathways and persistent social barriers to discharge continue to result in exceptionally prolonged admissions.

International research has identified multiple clinical and patient factors associated with longer psychiatric admissions. These include older age, male gender, lower educational attainment, comorbid chronic medical illness, cognitive impairment, schizophrenia diagnosis, treatment resistance, and medication non-compliance, among others.⁸⁻¹² However, a critical gap exists: no systematic study has characterized the long-stay psychiatric inpatient population specifically within Pakistan or examined which factors are most strongly associated with prolonged hospitalization in this local context. Given that Pakistan has a unique combination of high disease burden, limited community mental health infrastructure, strong family and cultural influences on care-seeking, and substantial institutional populations of long-stay chronic patients, it is important to understand the profile of this cohort and the factors that contribute to their extended stays.

This study aimed to describe the clinical and socio-demographic characteristics of long-stay psychiatric inpatients (length of stay >90 days) admitted to a tertiary mental health facility in Lahore, Pakistan, and to identify factors associated with prolonged hospitalization within this cohort. Identifying these factors will help targeted discharge planning and community reintegration strategies to reduce unnecessary institutionalization and improve patient care in Pakistan.

Purpose of the study

To characterize long-stay psychiatric inpatients and identify factors associated with prolonged hospitalization within this population.

METHODS

Study Design and Setting

This was a hospital-based descriptive cross-

sectional study conducted at the Punjab Institute of Mental Health (PIMH), Lahore, Pakistan. Data were collected from June to November 2025 through retrospective review of medical records.

Sample and Sampling Strategy

A total of 128 patient charts were selected using non-probability consecutive sampling. Inclusion criteria were: (i) age 18–80 years at admission; (ii) length of stay exceeding 90 days at the time of data collection; and (iii) primary diagnosis of a mental disorder according to DSM-5 criteria. Exclusion criteria were: (i) incomplete medical records lacking data on study variables; (ii) patients who left against medical advice; and (iii) patients transferred to other hospitals or facilities.

This study focused exclusively on long-stay inpatients and examined factors associated with extended hospitalization within this group; comparisons with short-stay admissions were not conducted.

Ethical Approval

Ethical approval was obtained from the Institutional Review Board (IRB) of PIMH under reference number 28512/PIMH. All personal identifiers were removed from medical records, and each patient chart was assigned a unique pseudo-identification number to ensure confidentiality and anonymity.

Data Collection

A structured review of medical records and patient charts was conducted by trained research personnel. Data were extracted on the following domains: socio-demographic characteristics (age, gender, marital status, educational level, family support), clinical diagnoses, comorbid medical conditions, medication adherence, and documented behavioural and psychiatric symptoms during hospitalization.

Operational Definitions

Length of stay (LOS)

The number of days between admission and discharge for each admission.

Long length of stay

Hospitalization period exceeding 90 days (3 months).

Old age

Patients aged 65 years or older.

Male Gender

Biological sex recorded as male.

Unmarried

Patients documented as single, divorced, or widowed.

Low education level

Primary level education or no formal education.

Family refused to take home

Patients whose families declined to receive them upon clinical discharge readiness.

Comorbid chronic disease

Documented diagnosis of one or more of the following: diabetes mellitus, hypertension, or ischemic heart disease.

Schizophrenia

Diagnosis documented in accordance with ICD-10 (F20) or DSM-5 criteria.

Intellectual disability

Documented diagnosis consistent with ICD-10 (F70–F79) or DSM-5 criteria, including deficits in reasoning, problem-solving, and adaptive functioning.

Mandatory care

Involuntary psychiatric treatment initiated under legal or administrative authority, including: (a) care ordered by a state representative; (b) care for individuals in detention; (c) care resulting from legal decision of criminal irresponsibility; or (d) care under a temporary placement order.

Treatment resistance

Persistence of significant psychiatric symptoms despite adequate trials of at least two different antipsychotic medications from different classes at appropriate doses and durations, or trial of clozapine or electroconvulsive therapy (ECT).

Medication non-compliance

Failure to adhere to the psychiatric medications

during hospitalization, identified through medical records and clinician reports of missed doses or medication refusal.

Substance use disorder

Diagnosis based on DSM-5 or ICD-10 criteria.

Cognitive Impairment

Deficits in memory, attention, or decision-making assessed through mental state examination and documented in medical records.

Sleep disturbance

Difficulty falling asleep, remaining asleep, or obtaining restful sleep for at least three consecutive nights during hospitalization, recorded through patient self-report and medical documentation.

Suicidal ideation

Documented presence of thoughts about self-harm or suicide during the hospital stay in medical records.

Violent behavior

Recorded incidents of physical aggression or threats of violence toward others during hospitalization, as documented in medical records.

Statistical Analysis

Descriptive statistics were computed for all variables. Length of stay was first assessed for normality using stem-and-leaf plots and boxplots, which revealed a highly skewed distribution; therefore, non-parametric statistical tests were employed. For each binary predictor (No vs. Yes), the Mann–Whitney U test was applied to compare LOS between groups, and mean ranks, U values, Z statistics, and exact p-values were obtained using SPSS version 25.0 (IBM, Armonk, NY, USA). The significance level was set at $\alpha = 0.05$ for all tests. All p-values are reported to three decimal places.

RESULTS**Sample Characteristics and Length of Stay**

A total of 128 long-stay psychiatric inpatients were included. The median age was 45 years and 94 (73%) were male. The median length of stay (LOS) for the cohort was 1,825 days (interquartile

range [IQR] 1,095–2,555 days), with a mean LOS of 2,368 days (≈ 6.4 years). LOS ranged from 146 days to 16,425 days (≈ 0.4 –45 years), indicating a highly skewed distribution with a small subgroup of extremely long-stay patients.

Table-I summarises the distribution of socio-demographic and clinical variables and the

corresponding mean LOS in days for each category.

Group Comparisons of Length of Stay

Because LOS was highly skewed, group comparisons for each binary predictor were performed using the Mann–Whitney U test. Table-II presents the sample sizes, mean ranks, test statistics, and p-values for all variables.

TABLE-I			
Socio-demographic and clinical characteristics of long-stay psychiatric inpatients (n = 128)			
Variable	Category	n (%)	Mean LOS (days)
Old age (≥ 65 years)	No	119 (93)	2,032
	Yes	9 (7)	6,813
Male gender	No	34 (27)	2,550
	Yes	94 (73)	5,706
Unmarried	No	29 (23)	6,416
	Yes	99 (77)	1,839
Low education level	No	52 (41)	2,898
	Yes	76 (59)	5,357
Family refused to take home	No	22 (18)	791
	Yes	106 (82)	7,465
Comorbid chronic medical disease	No	78 (61)	4,531
	Yes	50 (39)	3,725
Schizophrenia	No	20 (16)	1,178
	Yes	108 (84)	7,078
Intellectual disability	No	82 (64)	5,049
	Yes	46 (36)	3,206
Mandatory care	No	112 (88)	7,208
	Yes	16 (12)	1,048
Treatment resistance	No	99 (78)	6,068
	Yes	29 (22)	2,188
Medication non-compliance	No	79 (62)	5,037
	Yes	49 (38)	3,219
Substance use disorder	No	62 (49)	4,200
	Yes	66 (51)	4,056
Cognitive impairment	No	33 (26)	1,696
	Yes	95 (74)	6,561
Sleep disturbance	No	37 (29)	2,338
	Yes	91 (71)	5,918
Suicidal ideation	No	90 (71)	5,682
	Yes	38 (29)	2,573
Violent behaviour	No	30 (24)	1,775
	Yes	98 (76)	6,482

Older age was strongly associated with longer LOS, with patients aged ≥ 65 years having a much higher LOS rank than younger patients (mean ranks 114.44 vs. 60.72; $U = 86.0$, $Z = -4.203$, $p < 0.001$). Patients with low education level had significantly longer stays than those with higher education (mean ranks 70.49 vs. 55.74; $U = 1,520.5$, $Z = -2.217$, $p = 0.027$). When families refused to take the patient home, LOS was substantially prolonged compared with those whose families accepted discharge (mean ranks 70.42 vs. 35.95; $U = 538.0$, $Z = -3.980$, $p = 0.001$). The presence of a comorbid chronic medical illness was also associated with longer LOS (mean ranks 74.50 vs. 58.09; $U = 1,450.0$, $Z = -2.450$, $p = 0.014$). Cognitive impairment was significantly related to increased LOS, with impaired patients having higher LOS ranks than those without impairment (mean ranks 69.06 vs. 51.38; $U = 1,134.5$, $Z = -2.367$, $p = 0.018$).

In contrast, male gender, unmarried status, schizophrenia diagnosis, intellectual disability, mandatory care, treatment resistance, medication non-compliance, substance use disorder, sleep disturbance, suicidal ideation, and violent behaviour showed no statistically significant association with LOS (all $p \geq 0.05$), although some "Yes" groups

had slightly higher mean ranks.

Summary of Main Findings

Among long-stay psychiatric inpatients (LOS > 90 days), older age, low educational attainment, family refusal to receive the patient at home, comorbid chronic medical illness, and cognitive impairment were significantly associated with longer hospitalization. In contrast, other clinical and behavioural factors commonly linked to extended admissions in the literature, including schizophrenia, substance use disorder, treatment resistance, and violent behaviour, did not demonstrate statistically significant associations with LOS in this cohort.

DISCUSSION

This study examined the clinical and socio-demographic profile of long-stay psychiatric inpatients (length of stay exceeding 90 days) at a tertiary mental health facility in Lahore, Pakistan, and identified factors associated with even longer hospitalization within this chronic cohort. Among 128 long-stay patients, five factors were significantly associated with increased length of stay: older age (≥ 65 years), low educational attainment, family refusal to receive the patient at home, comorbid chronic medical illness, and cognitive impairment.

TABLE-II

Mann-Whitney U test results for factors associated with length of stay (LOS)

Variable	Groups (No/Yes)	n (No/Yes)	Mean rank (No/Yes)	U-value	Z-value	P-value
Old age (≥ 65 years)	No / Yes	119 / 9	60.72 / 114.44	86.0	-4.203	<0.001
Male gender	No / Yes	34 / 94	75.00 / 60.70	1,241.0	-1.933	0.053
Unmarried	No / Yes	29 / 99	63.43 / 64.81	1,404.5	-0.177	0.859
Low education level	No / Yes	52 / 76	55.74 / 70.49	1,520.5	-2.217	0.027
Family refused to take home	No / Yes	22 / 106	35.95 / 70.42	538.0	-3.980	0.001
Comorbid chronic disease	No / Yes	78 / 50	58.09 / 74.50	1,450.0	-2.450	0.014
Schizophrenia	No / Yes	78 / 50	58.90 / 65.54	968.0	-0.737	0.461
Intellectual disability	No / Yes	82 / 46	61.58 / 69.71	1,646.5	-1.193	0.233
Mandatory care	No / Yes	112 / 16	64.36 / 65.50	880.0	-0.116	0.908
Treatment resistance	No / Yes	99 / 29	61.29 / 75.45	1,118.0	-1.813	0.070
Medication non-compliance	No / Yes	79 / 49	63.76 / 65.69	1,877.0	-0.288	0.774
Substance use disorder	No / Yes	62 / 66	67.74 / 61.45	1,845.0	-0.962	0.336
Cognitive impairment	No / Yes	33 / 95	51.38 / 69.06	1,134.5	-2.367	0.018
Sleep disturbance	No / Yes	37 / 91	63.19 / 65.03	1,635.0	-0.256	0.789
Suicidal ideation	No / Yes	90 / 38	63.14 / 67.72	1,587.5	-0.641	0.521
Violent behaviour	No / Yes	30 / 98	59.15 / 66.14	1,309.5	-0.906	0.365

In contrast, several clinical factors frequently cited in international literature as predictors of prolonged psychiatric admission—including schizophrenia diagnosis, substance use disorder, treatment resistance, medication non-compliance, violent behaviour, and suicidal ideation—did not reach statistical significance in this sample.

Significant Factors: Social Vulnerability and Medical Complexity

The finding that older age was the strongest correlate of prolonged hospitalization is consistent with international studies. Shinjo et al. reported that patients aged 65 years and above had significantly longer admissions in Japanese psychiatric hospitals, and similar patterns have been documented in European and North American settings. Older psychiatric inpatients often face compounded challenges, including slower treatment response, higher rates of medical comorbidity, and greater difficulty with post-discharge placement—factors clearly evident in this cohort.

Low educational attainment was also significantly associated with longer stays, consistent with findings from Saudi Arabia, where patients with primary education or less remained hospitalized substantially longer than those with secondary education. Education level may serve as a proxy for socioeconomic status, health literacy, and access to community resources, all of which influence discharge readiness and family capacity to provide home-based care.

The most striking finding was that family refusal to receive the patient at home was strongly associated with prolonged admission. This shows a critical issue of the absence of robust community-based mental health services and persistent social stigma surrounding mental illness result in families viewing psychiatric hospitals as long-term custodial institutions rather than acute treatment facilities. This pattern of “social abandonment” has been documented in other low- and middle-income countries where deinstitutionalization has not been accompanied by adequate community care infrastructure.

Comorbid chronic medical illness and cognitive

impairment were also significantly associated with longer stays, consistent with findings from Paris and other European centres. Patients with multiple chronic conditions require coordinated medical and psychiatric care, complicating discharge planning and often necessitating specialized placement unavailable in the community.

Non-Significant Factors: Interpretation and Type II Error

Several clinical variables that have been associated with prolonged hospitalization in other studies, including schizophrenia, substance use disorder, treatment resistance, medication non-compliance, violent behaviour, and suicidal ideation, did not show statistically significant associations with length of stay in this cohort. However, it is important to emphasize that absence of statistical significance does not constitute evidence of absence of effect. The failure to detect significant associations may reflect Type II error (false negative findings) due to insufficient statistical power rather than a true lack of clinical relevance.

Several factors likely contributed to limited statistical power in this study. First, some subgroups had very small sample sizes (e.g., mandatory care $n=16$, old age $n=9$), substantially reducing the ability to detect meaningful differences. Second, the study performed univariate comparisons without multivariable adjustment, which may have obscured associations after accounting for confounding. Third, because all participants already had prolonged stays (>90 days), the range restriction in the outcome variable may have attenuated associations with clinical factors that primarily influence the transition from short- to long-stay status.

Additionally, treatment resistance showed a trend toward significance ($p = 0.070$), suggesting a possible association that did not reach the conventional threshold. Given the small sample size in the “Yes” group ($n=29$), this finding warrants cautious interpretation and replication in larger samples with adequate power.

It is also plausible that in settings where nearly all patients are already chronic long-stay cases, clinical symptom severity and behavioural factors

become less discriminating because they are highly prevalent throughout the cohort. The extremely prolonged mean and median LOS observed in this sample (median 1,825 days, range 0.4–45 years) reflects a predominantly chronic, institutionalized population rather than a mix of acute and long-stay admissions typical of studies conducted in high-income countries with shorter average stays.

Contextual Factors: The Pakistani Mental Health System

The extraordinarily long length of stay observed in this cohort should be interpreted within the broader context of Pakistan's mental health system. Despite policy reforms and expansion of psychiatric bed capacity, the lack of community mental health services, inadequate social support networks, pervasive stigma, and limited psychiatric rehabilitation facilities contribute to prolonged hospitalization. Many patients remain hospitalized not due to ongoing acute psychiatric symptoms, but because of the absence of viable discharge options. In numerous cases, families view the hospital as a permanent placement, resulting in clinically stable patients remaining institutionalized for extended periods.

This pattern is similar to the “new long-stay” phenomenon documented in other countries during periods of inadequate community care infrastructure, where patients remain in hospitals despite clinical improvement because discharge pathways are obstructed by social and systemic barriers. Addressing this issue requires coordinated interventions beyond the hospital setting, including family psychoeducation, stigma reduction, development of supported housing and community rehabilitation programs, and strengthening of primary care mental health services.

Clinical and Policy Implications

The findings suggest several strategies to reduce unnecessarily prolonged psychiatric admissions in Pakistan. First, early identification of high-risk patients—particularly older adults, those with low education, cognitive impairment, and comorbid medical illness—should trigger proactive, multidisciplinary discharge planning from the point of admission. Second, systematic family engagement

and psychoeducation programmes are necessary to address reluctance to receive patients at home and to build family capacity for community-based care. Third, investment in community mental health infrastructure, including outpatient services, day hospitals, supported housing, and vocational rehabilitation, is critical to provide viable alternatives to prolonged institutionalisation.

Strengths and Limitations

This study offers the first systematic description of the long-stay psychiatric inpatient population in Pakistan and identifies the socio-demographic and medical factors most strongly associated with prolonged hospitalization. However, several important limitations should be acknowledged.

First, because the study included only patients with a length of stay exceeding 90 days, it cannot identify factors that distinguish long-stay from short-stay patients and is subject to selection bias. The findings describe variation within the long-stay cohort and should not be interpreted as predictors of becoming a long-stay patient in the general inpatient population.

Second, the retrospective chart review design relied on routine clinical documentation, which was often incomplete or inconsistently recorded, which could potentially cause misclassification of exposures. Third, the study used univariate comparisons without multivariable adjustment for confounding, limiting causal inference. Fourth, the sample size was modest and statistical power was inadequate to detect small to moderate associations, particularly for rare exposures such as mandatory care. This increases the risk of Type II error, meaning that non-significant findings should not be interpreted as definitive evidence of no association.

Fifth, the study was conducted at a single tertiary psychiatric hospital and findings may not generalize to other settings with different patient populations, discharge practices, or community resources. Finally, the cross-sectional design precludes assessment of temporal relationships and the dynamic factors influencing length of stay over time.

Future research should employ prospective

cohort designs with larger, more diverse samples, standardized diagnostic and functional assessments, multivariable modeling to control for confounding, and inclusion of both short- and long-stay patients to enable true prediction modeling. Qualitative research exploring family, patient, and clinician perspectives on barriers to discharge would also provide valuable insights for intervention design.

CONCLUSION

Among long-stay psychiatric inpatients at a tertiary mental health facility in Lahore, Pakistan, older age, low educational attainment, family refusal to receive the patient at home, comorbid chronic medical illness, and cognitive impairment were significantly associated with prolonged hospitalization. These findings highlight the central role of social vulnerability, medical complexity, and absence of family support, rather than acute psychiatric symptoms alone, in contributing to extraordinarily long admissions. The exceptionally prolonged length of stay observed in this cohort (median 5 years, range 0.4–45 years) reflects systemic gaps in community-based mental health services and persistent social barriers to discharge, rather than ongoing clinical instability.

Addressing chronic institutionalization requires coordinated interventions beyond hospital settings, including early multidisciplinary discharge planning for high-risk patients, systematic family engagement and psychoeducation, stigma reduction, and substantial investment in community mental health infrastructure. Comprehensive system-level reforms are necessary for Pakistan to advance toward a psychiatric care model that prioritizes recovery, community integration, and dignity for individuals with serious mental illness.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

1	Asma Suleman: Study design, drafting.
2	Nauman Mazhar: Data collection.
3	Farasat Ali: Data interpretation.
4	Fariha Saeed: Critically review.
5	Aneel Shafi: Data entry.
6	Ghulam Hassan: Data analysis.