Annals of Psychiatric Research
An official journal of Indian Psychiatric Society, Rajasthan Chapter

RESEARCH ARTICLE
p-ISSN: 2455-6599
Doi: 10.70468/aopr.v02.i2.06

Socio-demographic, Clinical and Treatment-Related Factors Associated with Psychiatric Re-hospitalization: A Retrospective Study

Apurva Mehra[1*], Jitendra Jeenger[2], Medha Mathur[3]

[1]*Department of Psychiatry, Government Medical College, Dungarpur, Rajasthan, India.*
[2]*Department of Psychiatry, Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India.*
[3]*Department of Community Medicine, Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India.*

Abstract

Introduction: Acute psychiatric care is associated with frequent readmissions and discharges; the estimated rate of re-hospitalization is approximately 40 to 50%. The present study aimed to identify the sociodemographic, clinical, and treatment-related factors responsible for re-hospitalization.

Method: This retrospective study consisted of 343 patients who were re-hospitalized during the study period, of which 43 were excluded. The remaining 300 patients were further subdivided based on the duration between discharge from the index episode and readmission (< 1 and >1 year), and sociodemographic and clinical profiles were compared. A logistic regression model was used to perform 25 imputations including all outcome variables, predictors, and covariates.

Results: The mean age of the admitted patients was 32.33 ± 9.27 years. Patients with affective disorders had the highest re-hospitalization (36.33%), followed by substance use disorders (28.3%) and psychotic disorders (27%). Over 57% of re-hospitalizations occurred within one year. Logistic regression analyses showed that precipitating factors according to presumptive stressful life events (PSLE) scale (OR-0.578), comorbid medical disorder (OR-2.898), duration of hospital stay (OR-1.231), and non-compliance to treatment (4.114) after discharge were associated with early readmission.

Conclusion: The rate of re-hospitalization was higher within one year, as compared to other similar studies. Young, educated and married males who had a shorter duration of hospital stay had a higher amount of re-hospitalization. The majority of readmitted patients had a diagnosis of mood disorders; substance use disorder and psychosis. Also combined treatment with pharmacotherapy and modified electroconvulsive therapy resulted in a lesser risk of re-hospitalizations.

ARTICLE INFO

***Correspondence:**
Apurva Mehra
apurva456.mehra@gmail.com
Department of Psychiatry, Government Medical College, Dungarpur, Rajasthan, India.

Dates:
Received: 20-11-2024
Accepted: 12-01-2025
Published: 25-03-2025

Keywords:
Re-hospitalization, Treatment adherence, Stress

How to Cite:
Mehra A, Jeenger J, Mathur M. Socio-demographic, Clinical and Treatment-Related Factors Associated with Psychiatric Re-hospitalization: A Retrospective Study. Annals of Psychiatric Research. 2024;2(2): 71-78. Doi: 10.70468/aopr.v02.i2.06

Introduction

Re-hospitalization is defined as an unplanned, inpatient admission for any condition. Despite the well-documented negative consequences of multiple psychiatric admissions such as poor outcomes, non-compliance, co-morbidity, and economic burden, readmission rates have been increasing worldwide[1].

Over the last few decades, with an increase in awareness of psychiatric disorders and the number of mental health professionals worldwide, recurrent readmissions have exacerbated the challenge of the shortage of hospital beds in psychiatric hospitals.[2] In the 2007 annual meeting of the American Mental Associations House of Delegates, a resolution was passed urgently calling for attention to the national scope of the psychiatric bed availability problem and its impact on the nation's emergency departments.[2] Factors linked to bed availability, such as length of stay (LOS), readmission rate, and inappropriate admissions, are major contributors. Admissions increase the caregiver load and also as most of them are involuntary, they involve the help of police and other services.

In most countries, readmission is commonly used as an outcome or quality indicator for inpatient psychiatric services as evidence suggests that mental health conditions and symptoms can directly or indirectly raise physical health readmission rates.[1]

Psychiatric readmissions are a consequence of a complex combination. An increased likelihood of readmission was observed to be associated with many factors including the availability of services, quality and continuity of care, and family and social support, among others.[1] Several studies have identified strong predictors of readmission, such as duration of hospital stay, poor treatment adherence, deficient follow-up after hospital discharge, involuntary admission, lack of social or family support, and diagnoses of schizophrenia and substance use disorders. Social factors, such as lower socioeconomic status, living alone and receiving a disability or unemployment benefit, were reported as significant predictors for early readmission of psychiatric patients.[1,2]

Due to the paucity of published data and research in this direction, especially in the Indian subcontinent, this study aimed to find various socio-demographic and clinical factors associated with multiple psychiatric admissions in a tertiary care hospital.

Methods

This is a retrospective study using data from patients' medical records. The study was conducted after obtaining clearance from the institution's ethical committee utilizing data from patient's medical records. The study took place in the Department of Psychiatry at Geetanjali Medical College and Hospital (GMCH), Udaipur, Rajasthan in years January 2017 to December 2019. The department is part of a private multispecialty general hospital rendering tertiary-level health services with a bed capacity of 25 male and 15 female beds in the psychiatry ward.

Admission of patients is facilitated by the consultant doctor from the outpatient or emergency unit. Patients are typically brought in by family members, other health services, or referred by other departments within the same hospital or from other hospitals. A study was conducted on all the readmitted patients during this period. Patients aged over 18 years admitted for the first time in GMCH were considered the" index episode" irrespective of any prior admission in any other health centers. Patient records were retrieved and reviewed for socio-demographic details, diagnosis based on ICD-10 Classification, illness type and duration, past history, family history, course of hospital stay, and all other details of index admission. The dependent variable was readmission, defined as the second admission following the index admission. Any stressful life events prior to re-admission were assessed on the PSLE scale as a part of the initial assessment and documentation of all patients admitted to the psychiatry ward.[3]

A total of 343 patients were readmitted during the study time period, of which 43 were incomplete admissions (meaning patient's records missing or incomplete (n = 16), requiring intensive care (n = 10), patient transferred to another medical unit (n = 8), patient admitted for forensic assessment (n = 7), death (n = 2)). The remaining 300 patients were included in the study, with 205 males and 95 females. All patients were further subdivided on the basis of duration between discharge from index episode and readmission (< 1 and >1 year) and were compared for the sociodemographic and clinical profile.

The SPSS software (version 16; IBM Corp., Armonk, New York) was used for data entry and analysis. A total of 25 imputations were performed by a logistic regression model, including all outcome variables, predictors and covariates. Data were described using numbers and percentages.

Results

Tables 1 and 2 present the socio-demographic and clinical characteristics of the patients, indicating a mean patient age of 32.33 ± 9.27 years. Males comprised 68.3% and females comprised 31.7% with 82% being married, 90.3% educated, 59.7% residing in urban areas, and 50.3% coming from joint families. The majority of patients had a stressful life event present prior to re-admission (54.3%), a negative past history (75%), and a family history (72.3%) of psychiatric illness. The most common diagnosis was a depressive episode (20.0%) followed by a manic episode (12.0%) and schizophrenia (7.7%). Over 69% of patients had a hospital stay of less than 2 weeks, and 60% were treated with combined pharmacotherapy and modified electroconvulsive therapy (MECT).

Table 3 compares socio-demographic and clinical variables in patients readmitted within one year and after one year. The presence of stressful life events (p <0.001), presence of medical co-morbidity (p <0.001), less than 2 weeks of hospital stay (p = 0.003) and non-compliance to treatment (p <0.001) were statically significant reasons for readmission.

Table 4 illustrates the logistic regression analysis of the factors associated with hospital readmission. It includes *p-values*, odds ratios (ORs), and 95% confidence intervals for each feature using binary logistic regression. It was found that patients with the presence of precipitating factors as per PSLE (p <0.001; OR = 0.578; 95% CI = 1.210–1.592) had nearly 0.6 times higher risk of readmission. Patients with comorbidities present (p < 0.00; OR = 2.898; 95% CI = 1.038–8.086) showed nearly 3 times higher readmission. It was observed that those who had hospital stays of > 2 weeks (p < 0.003; OR = 1.231; 95% CI = 1.390–3.887) had 1.2 times higher readmission within 12 months of duration. Patients with non-compliance to treatment (p <0.001; OR = 4.114; 95% CI = 1.662–10.182) were found to have 4 times higher readmission.

Reasons for readmission included non-compliance to treatment, which could be due to lack of regular follow-up as advised at discharge, patient being off medication or taking irregular medication for at least one month, secondary substance use (except for nicotine and caffeine) not meeting the criteria for dependence leading to re-occurrence or exacerbation of symptoms of mental illness leading to readmission and partial response to treatment (<50%) due to unplanned discharge (discharge on request, discharge against medical advice, etc.), resulting in incomplete recovery leading to readmission.

Table 1: Socio-demographic characteristics of patients (n = 300)

Patients characteristic	*n =300 (%)*
Mean age ± SD	32.33 ± 9.27
Male Female	205 (68.3%) 95 (31.7%)
Marital status	
Unmarried Married	54 (18%) 246 (82%)
Education	
Illiterate Educated	29 (9.7%) 271 (90.3%)
Domicile	
Rural Urban	121 (40.3%) 179 (59.7%)
Family type	
Nuclear Joint/extended	149 (49.7%) 151 (50.3%)
Family income	
Holding BPL card Not holding BPL card	222 (74%) 78 (26%)

Discussion

The total study period spanned three years, during which 57% of patients were readmitted within a year of discharge from the index episode, a rate higher than a study conducted in Oman (39%), and a similar study in Australia (46%).[2] The average duration of admissions in India is shorter compared to other countries, and a short hospital stay is associated with readmission.[4,5]

In our study, males under 35 years of age, married and educated showed a higher number of readmissions within one year. This aligns somewhat with the socio-demographic profile of patients with early readmission in a study conducted by Afaf Ibrahim Al-Shehhi[1] and a multicentre study conducted in

Table 2: Clinical profile of patients (n = 300)

Clinical profile	*Frequency (%)*
Diagnosis	
Mental and behavioural disorder due to alcohol use	26 (8.7%)
Mental and behavioural disorder due to opioids	46 (15.3%)
Mental and behavioural disorder due to cannabinoids	11 (3.7%)
Mental and behavioural disorders due to multiple substance use	2 (0 .8%)
Schizophrenia	23 (7.7%)
Persistent delusional disorders	2 (0.8%)
Acute and transient psychotic disorders	20 (6.7%)
Unspecified nonorganic psychosis	36 (12.0%)
Manic episode	5 (1.7%)
Bipolar affective disorders	60 (20.0%)
Depressive episode	25 (8.3%)
Recurrent depressive disorder	19 (6.3%)
Phobic anxiety disorders	2 (0.7%)
Obsessive-compulsive disorders	5 (1.7%)
Dissociative disorders	18 (6%)
Others	21 (7%)
Nature of Illness	
Episodic	129 (43%)
Continuous	171 (57%)
Number of life events according to PSLE Scale	
Nil	137 (45.7%)
Present	163 (54.3%)
Past episode	
Positive for psychiatric illness	75 (25%)
Negative for psychiatric illness	225 (75%)
Family history	
Positive for psychiatric illness	83 (27.7%)
Negative for psychiatric illness	217 (72.3%)
Treatment	
Only on oral medication	180 (60%)
Oral medication + MECT	120 (39%)
Duration of hospital stay	
<2 weeks	207 (69%)
>2 weeks	93 (31%)
Reason for readmission	
Non-compliance to treatment	156 (52%)
Substance use	77 (25.6%)
Incomplete recovery	132 (44%)
Number of readmissions	
1	245 (81.6%)
2–4	50 (16.6%)
>4	5 (0.1%)

Duration between admissions	
<12 months	165 (55%)
>12 months	135 (45%)
Diagnosis	
Revised	38 (14.8%)
Not revised	262 (87.33%)
Revised diagnosis	
BPAD	8 (3.1%)
RDD	2 0(7.8%)
Delusional disorder	2 (0.8%)
Schizophrenia	4 (1.6%)
Schizoaffective	4 (1.6%)

MECT= Modified electro convulsive therapy

Egypt and Saudi Arabia[6], S. Vasudeva *et al.*[4] Lower socio-economic status was identified as one of the major reasons for re-admission in various studies.[7-10] Our study noted that being married was associated with early readmission, in contrast to the findings of a few previous studies.[8,11-13] Our study also showed higher readmission within one year in people residing from urban joint families, possibly due to easy accessibility to healthcare facilities in urban areas and higher support from family members in joint families.

Patients with a diagnosis of mood disorders (30.66%) had the majority of readmissions, followed by substance use disorders (24%) and psychosis (22.66%). This observation was similar to previous studies that also showed high readmissions in patients with psychosis and substance use disorders.[4,8,9] The higher incidence of mood disorder patients in our study might be due to more patients with affective disorders and substance use disorders in the psychiatric unit of a private hospital.

Modified electroconvulsive therapy has shown promising results in the treatment of psychiatric disorders in inpatients. The present study also showed that patients treated with both MECT and pharmacotherapy had lower readmission rates than patients managed only with pharmacotherapy.

In the clinical profile, patients with precipitating stressful life events, co-morbid medical disorders, less than 2 weeks of hospital stay, and poor compliance to treatment showed early readmission (<1 year) these findings remained significant in univariate analysis also and are similar to previous studies.[1]In the univariate analysis, four factors were found to be significantly associated with early readmission with poor compliance being one of them. Poor compliance can result in irregular follow-ups and also exacerbation or re-occurrence of symptoms leading to readmission. A few previous studies have also found poor adherence to medications as an independent predictor for readmission.[8,9,14] This finding differed from the study conducted by Yussuf AD *et al.* in which poor compliance was not associated with re-admission.[15]

Patients with unplanned discharge due to personal reasons or discharge against medical advice resulting in a shorter duration of hospital stay are more likely to have poor follow-up, poor compliance and also incomplete recovery. It was found to be significantly associated with early readmission in current and also in previous studies[1,6] Co-morbidities can cause distress in patients and also a challenge in treating psychiatric patients; they can lead to fewer treatment options, more adverse effects, and thereby more admissions in the hospital. As the study was conducted in a tertiary care center with all other medical faculty and services provided, it can also be associated with frequent readmissions.[16-18]

The current study highlights the impact of stressful life events in patients' lives prior to readmission, significantly associated with early readmission. According to the authors' hypothesis, this might be due to poor coping with stress and impulsivity, which is often seen in patients with mental illness.

To the authors' best knowledge, not much work has been done in the Indian scenario that

Table 3: Comparison of socio-demographic and clinical variables of patients readmitted within one year and after one year

Variables		*Frequency (%)*		*Chi-Square test value; p-value*
	Duration between re-admission			
	< One year (n = 171)	*>One year (n = 129)*		
Age	<35	103 (34.33%)	65 (21.67%)	X^2 =2.893; *p* = 0.89
	>35	68 (22.67%)	64 (21.33%)	
Marital status	Unmarried	34 (11.33%)	26 (8.67%)	X^2 =.955; *p* = 0.328
	Married	137 (45.67%)	109 (36.33%)	
Sex	Male	124 (41.33%)	81 (27%)	X^2 =3.21; *p* = 1.073
	Female	47 (15.67%)	48 (16%)	
Domicile	Urban	101 (33.67%)	78 (26%)	X^2 =0.061; *p* = .807
	Rural	70 (23.33)	51 (17%)	
Education	Illiterate	12 (4%)	17 (5.67%)	X^2 =3.19; *p* = .074
	Educated	159 (53%)	112 (37.33%)	
Family type	Nuclear	87 (29%)	62 (20.67%)	X^2 =.233; *p* = .629
	Joint	84 (28%)	67 (22.33%)	
Family income	<10000	128 (42.67%)	94 (31.33%)	X^2 =0.15; *p* = 0.698
	>10000	43 (14.33)	35 (11.66%)	
Illness type	Continuous	96 (32%)	75 (25%)	X^2=0.120; *p* = 0.729
	Episodic	75 (25%)	54 (18%)	
PSLE factor	Nil	63 (21%)	74 (25%)	X^2=12.481; *p* = 0.000*
	Present	108 (36%)	55 (18.33%)	
Past history	Absent	133 (44.33%)	42 (14%)	X^2 =1.637; *p* = 0.201
	Present	38 (12.67%)	37 (12.33%)	
Co-morbidity	Absent	97 (32.33%)	19 (6.33%)	X^2 =54.68; *p* = 0.000*
	Present	74 (24.67%)	110 (36.67%)	
Family history	Negative	121 (40.33%)	96 (32%)	X^2=0.492; *p* = 0.483
	Positive	50 (16.67%)	33 (11%)	
Duration of hospital stay	<2 Weeks	106 (35.33%)	101 (33.67%)	X^2=9.104; *p* = 0.003*
	>2 Weeks	65 (21.67%)	28 (9.33%)	
M.E.C.T given	No	108 (36%)	72 (24%)	X^2=1.652; *p* = 0.199
	Yes	63 (21%)	57 (19%)	
Reason: Non-compliance to treatment	Present	131 (43.67%)	24 (8%)	X^2=99.064; *p* = 0.000*
	Absent	40 (13.33%)	104 (34.67%)	
Reason: Substance use	Present	41 (13.67%)	36 (12%)	X^2=.595; *p* = 0.440
	Absent	130 (43.33%)	93 (31%)	

Reason: Incomplete recovery	Present	17 (5.67%)	15 (5%)	X^2 =0.219; p = 0.639
	Absent	154 (51.33%)	114 (38%)	

*p-value is statistically significant

Table 4: Univariate logistic regression analysis of readmitted patients

Variables	*p-value*	*OR*	*90% CI*	
			Upper	*Lower*
Precipitating factor according to PSLE Present Absent*	0.000**	0.587	1.210	1.592
Co-morbidity Present Negative*	0.000**	2.898	1.038	8.086
Duration of hospital stay >2 Weeks <2 Weeks*	0.003**	1.231	1.390	3.887
Reason: Non-compliance to treatment Positive Negative*	0.000**	4.114	1.662	10.182

*Reference category.
**p-value is statistically significant.
OR: odd ratio; CI: confidence interval

would explore both sociodemographic and clinical variables responsible for early readmission. A large sample size and a tertiary health care setting add to the merits of the study; however, being a retrospective study confined to the variables available in the case records, and the lack of confirmation of previous history of admissions in the same or any other hospital are the study's shortcomings.

Conclusion

Identifying risk factors during the current psychiatric hospitalization and proactively addressing them holds the key to preventing early re-hospitalization. Our study concluded that the rate of readmission was higher within one year, as compared to other similar studies. Young, educated and married males who had a shorter duration of hospital stay had a higher amount of re-admission. The majority of readmitted patients had a diagnosis of mood disorders; substance use disorder and psychosis. Also combined treatment with pharmacotherapy and MECT resulted in a smaller number of readmissions. In order to address these an implementation of support services post-discharge, exploring short-term alternatives to psychiatric re-hospitalization, and adopting long-term strategies for mitigating psychiatric re-hospitalization challenges are pivotal steps. By strategically focusing on the factors contributing to readmission, we can pave the way for more effective and sustainable mental health care practices.

Financial Support and Sponsorship

Nil.

Conflicts of Interest

The authors have no conflicts of interest.

References

1. Al-Shehhi AI, Al-Sinawi HN, Jose S, Youssef R. Rate and predictors of 1-year readmission in tertiary psychiatric hospitals. Saudi J Med Med Sci. 2017 Sep;5(3):224.
2. Zhang J, Harvey C, Andrew C. Factors associated with length of stay and the risk of readmission in an acute psychiatric inpatient facility: A retrospective study. Aust N Z J Psychiatry. 2011;45:578-85.
3. Singh G, Kaur D, Kaur H. Presumptive stressful life events scale (PSLES)—a new stressful life events scale for use in India. Indian J Psychiatry. 1984 Apr;26(2):107.
4. Vasudeva S, Kumar MN, Sekhar KC. Duration of first admission and its relation to the readmission rate in a psychiatry hospital. Indian J Psychiatry. 2009 Oct;51(4):280.
5. Auffarth I, Busse R, Dietrich D, Emrich H. Length of psychiatric inpatient stay: comparison of mental health care outlining a case mix from a hospital in Germany and the United States of America. Ger J Psychiatry. 2008;11(2):40-4.
6. El-Sayed S, El-Hadidi M. Predictors of psychiatric early readmission in two Arab hospitals. Arab J Psychiatry. 2012;23:12-21.

7. Lin CH, Chen WL, Lin CM, Lee MD, Ko MC, Li CY. Predictors of psychiatric readmissions in the short- and long-term: A population-based study in Taiwan. Clinics (Sao Paulo). 2010;65:481-9.
8. Silva NC, Bassani DG, Palazzo LS. A case-control study of factors associated with multiple psychiatric readmissions. Psychiatr Serv. 2009 Jun;60(6):786-91.
9. Rady H, El-Nady MT. Risk factors associated with readmissions of hospitalized mentally ill patients. J Nurs Health Sci. 2017.
10. Ng CG, Loh HS, Yee HA, Zainal NZ. The prevalence and associated factors of psychiatric early readmission in a teaching hospital, original paper. MJP Online Early. 2012.
11. Olfson M, Mechanic D, Boyer CA, et al. Assessing clinical predictions of early re-hospitalization in schizophrenia. J Nerv Ment Dis. 1999;187:721–9.
12. Gastal FL, Andreoli SB, Quintana MI, et al. Predicting the revolving door phenomenon among patients with schizophrenia, affective disorders and non-organic psychoses. Rev Saude Publica. 2000;34:280–5.
13. Miettunen J, Lauronen E, Veijola J, et al. Socio-demographic and clinical predictors of occupational status in schizophrenic psychoses: follow-up within the Northern Finland 1966 birth cohort. Psychiatry Res. 2007;150:217–25.
14. Lay B, Kawohl W, Rössler W. Predictors of compulsory re-admission to psychiatric inpatient care. Front Psychiatry. 2019 Mar 21;10:120.
15. Yussuf AD, Kuranga SA, Balogun OR, Ajiboye PO, Issa BA, Adegunloye O, et al. Predictors of psychiatric readmission to the psychiatric unit of a tertiary health facility in a Nigerian city – A 5-year study. Afr J Psychiatry (Johannesbg). 2008;11:187-90.
16. Šprah L, Dernovšek MZ, Wahlbeck K, Haaramo P. Psychiatric readmissions and their association with physical comorbidity: a systematic literature review. BMC Psychiatry. 2017 Dec 1;17(1):2.
17. Jaramillo LE, Sánchez R, Herazo MI. Factores relacionados con el número de rehospitalizaciones en pacientes psiquiátricos [Factors related to the number of readmissions in psychiatric patients]. Rev Colomb Psiquiatr. 2011;doi:10.1016/S0034-7450(14)60136-0.
18. Morrow-Howell NL, Proctor EK, Blinne WR, Rubin EH, Saunders JA, Rozario PA. Post-acute dispositions of older adults hospitalized for depression. Aging Ment Health. 2006;10(4):352-6.