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A comparative study on sociodemographic and clinical profile of patients undergoing admission and readmission in a mental health institute

Abstract

Aims: Psychiatric patients have a high rate of readmission. So, we need to understand what kind of patients are more likely to be readmitted, to predict the clinical and social factors that place them at risk, and to identify potential limitations in existing healthcare delivery systems. Objective of the study was to find out and compare sociodemographic and clinical profiles of patients getting first admission and readmission. **Methods:** It was a retrospective, record-based observational study from computerised database of the institute and the case record files of patients for one year. Variables like age, sex, religion, marital status, locality, education, occupation, and diagnosis were studied. Analysis was done by chi-square test using the Statistical Package for the Social Sciences (SPSS) version 16.0. **Results:** The total number of admissions during this period was 876, among which 463 had been admitted previously in the institute and 60 had been admitted more than once in the time period. Among new admissions and readmissions, majority were unemployed, unmarried, Hindu males, 16-30 years of age, and had schizophrenia and related spectrum diagnosis (F20-F29). No significant difference in readmission rates were found for sex, marital status, religion, educational status, or locality. Readmission rates among housewives were seen less than expected. There were significant differences among different diagnoses in terms of readmission ($p<0.001$), with F30-F39 showing more than expected readmissions and F10-F19 showing more than expected first admission with less than expected readmissions. **Conclusions:** Current study reviews the scenario of mental healthcare utilisation. Decreased readmission rates of women and of patients with substance abuse disorders warrants further community-based research.

Keywords: Substance abuse disorders. Relapse. Schizophrenia.

Key messages: Readmission rates indicate the efficacy of healthcare services in the region. This study has shown increased prevalence of psychiatric disorders requiring admission among young population. Also, high rates of relapse among patients with early onset psychiatric disorders. Males appear to have better access to healthcare facilities. Substance abuse patients rarely come for readmission. Differences in healthcare utilisation require a deeper understanding.

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INTRODUCTION

Psychiatric patients have a high rate of readmission compared to admission worldwide, so much so, it is popularly known as the 'revolving door' phenomenon.[1-3] The known predictors of readmission range from severity of the illness, chronicity, earlier onset, worse condition at discharge, comorbid substance abuse, poor adherence to medications as well as bed availability.[4] Among sociodemographic predictors, being unmarried, unemployed, inadequately housed, poorly integrated in the community, criminal record, poor access to healthcare resources have been identified in various studies.[5,6]

Another factor is the reduction in number of inpatient beds with more emphasis on community service in the last few decades.[7,8] Some researchers attributed the increased readmissions to deinstitutionalisation policies and development of pharmacologic treatments.[9,10] In general, readmission rates indicate the efficacy of healthcare services in the region, and roughly correspond to the summation of healthcare provided at hospital, community interventions including awareness development and not just the success of hospital intervention per se.[11] These studies allow us to understand what kind of patients are more likely to be readmitted, to predict the clinical and social factors that place them at risk, and to identify potential limitations in

existing healthcare delivery systems or specific deficits in available treatment resources.[12] Thus, these aspects can be of great importance for the health system policies,[5] and to the development of interventions with regard to reducing readmissions[13] and the superfluous costs associated with them.

So, the objectives of the current study were to find out and compare the sociodemographic and clinical profiles of patients getting first admission and readmission in a tertiary mental health institute, namely Lokopriya Gopinath Bordoloi Regional Institute of Mental Health (LGBRIMH), Tezpur, Assam, India, in terms of variables like age, sex, religion, marital status, locality, education, occupation, and diagnosis, to find out any possible association between these variables and the propensity for readmission in the region.

METHODS

The study was conducted in LGBRIMH, a tertiary care psychiatric institute in the north eastern India.[14] The institute had 336 beds at the time of study.[14] The average duration of stay is eight to ten weeks.[15] The retrospective, record-based observational study was conducted by including all the cases undergoing admission at the indoor facilities for the period of one year from 1 January 2012 to 31 December 2012. Data was obtained from the computerised database of the institute and by consulting the patient files from the medical records department. Ethical approval was taken from Institutional Ethics Committee.

The patients undergoing admission for the first time at the institute and only once in the time period of the study were taken as new admissions and labelled as 'new admission'. If such patients had undergone admission to some other psychiatric hospital prior to being admitted here, still they were considered as a new admission for the study. However, such cases per se were very rare. It is to be noted hereby that the patients who had undergone admission previously at the institute in the past including the study period, were taken as a single case for the study, irrespective of the number of readmissions and were labelled as 'readmission'. The 'cases' were actually 'patients' rather than the 'admissions.' This was to prevent the duplication of the data of the readmitted patients and thus reducing logistical error.

The data thus obtained was analysed using the Statistical Package for the Social Sciences (SPSS) version 16.0 for sociodemographic and clinical variables like age, sex, religion, marital status, locality, education, occupation, and diagnosis, and comparisons were done between new admission and readmission by chi-square test. All the diagnoses were according to the tenth revision of the World Health Organization's International Statistical Classification of Diseases and Related Health Problems (ICD-10) guidelines.[16] However, to avoid dividing into small subgroups, data for diagnoses were analysed as broad diagnostic categories like F00-F09, F10-F19, F20-F29, F30-F39, etc.

RESULTS

A total of 1339 patients were admitted at the indoor facilities in the study period of one year. Of these, 876 were new admissions and 463 were readmissions; 60 admissions were those of patients undergoing admission more than once in the time period. Nine hundred and ninety two (74.08%) were males and 347 (25.92%) were females; 1049 (78.34%) were Hindu, 197 (14.7%) were Muslim, and 93 (6.94%) were Christian; 604 (45.1%) were married and 735 (54.9%) were single.

One thousand and seventy seven were from rural areas, whereas, 235 and 27 were from urban and suburban areas respectively. Most of the patients, 603 (45%) had middle school education, followed by illiterate (242, 18%), higher secondary education (159, 12%), and primary school education (137, 10.2%). Around half of all patients were unemployed (636, 47.5%), the next higher groups formed by cultivators (168, 12.5%) and housewives (159, 11.9%). As expected, by far, majority of patients were from the 26 districts of Assam (1208, 90%), with Nagaland (3.1%), West Bengal (2.2%), and Arunachal Pradesh (2.1%) being distant followers.

A whopping 74.4% (996) of admissions were with the diagnosis of F20-F29 (schizophrenia, schizoaffective disorder, and other nonorganic psychotic disorders), followed by affective disorders (F30-F39), (202, 15.1%). Substance abuse disorders were around 4.4% (59) of admissions. Among new admissions, 73% were male, 78% were Hindu, and 74% patients were diagnosed between F20-F29, while 13% between F30-F39 and five percent were between F10-F19 (Table 1 and Table 2).

Among readmissions, 77% were male and 23% were female, 80% were Hindu and 14% were Muslim, 49% were married and 51% were single, 46% between 16-30 years of age and 44% between 31-45 years of age, 51% were unemployed, 12% were cultivator, 11% were servicemen, and eight percent were housewives, 74% were diagnosed between F20-F29, 19% between F30-39, and three percent between F10-F19 (Table 1 and Table 3). No significant difference in readmission rates was found for sex, marital status, religion, educational status, or locality.

As age increased, the number of readmission relative to new admission also increased significantly ($p<0.001$) (Table 1). Around half of readmission was less than 30 years old. Around 60% of new admissions were in age of less than 30 years. Six percent of new admissions were more than 45 years of age and readmissions comprised of ten percent in similar age category (Table 1). No significant difference among males and females was found in terms of admission and readmission (Table 1). Trend of significant difference ($p=0.062$) was seen among new admissions and readmissions in terms of marital status. Fifty seven percent of new admissions were single and 43% married compared to 51% single and 49% married among readmissions (Table 1).

Marked similarity of percentage of admission and readmissions was seen among all religions. Among both new admissions and readmissions, Hindu : Muslim : Christian = 78% : 15% : 7% (Table 1). Eighty two percent of new admissions and 79% of readmissions were from rural areas. In readmissions, suburban population was double than that of new admissions (3.2% vs 1.4%). Both in rural and urban population, new admission : readmission = 2 : 1. In suburban

Table 1: Description and comparison of sociodemographic variables between newly admitted patients and patients with readmission - I

Variable	New admission (N)	N%	Readmission (N1)	N1%	Total (N+N1)	χ^2	df	p
Age (years)						24.519	4	<0.001*
<30	519	59.2	212	45.8	731			
31-45	305	34.8	203	43.8	508			
>45	52	5.9	48	10.4	100			
Sex						2.47	1	0.116
Male	637	72.7	355	76.7	992			
Female	239	27.3	108	23.3	347			
Marital status						3.477	1	0.062
Married	379	43.3	225	48.6	604			
Currently single	497	56.7	238	51.4	735			
Religion						0.399	3	0.819
Hindu	682	77.9	367	79.3	1049			
Muslim	131	15.0	66	14.3	197			
Christian	63	7.2	30	6.5	93			
Locality						5.684	3	0.058
Rural	713	81.4	364	78.6	1077			
Urban	151	17.2	84	18.1	235			
Suburban	12	1.4	15	3.2	27			

*Significant, df: Degree of freedom

Table 2: Description and comparison of diagnostic categories of newly admitted patients and patients with readmission

Diagnosis	New admission (N)	N%	Readmission (N1)	N1%	χ^2	df	p
F00-F09	16	1.8	8	1.7	18.266	4	0.001*
F10-F19	46	5.3	13	2.8			
F20-F29	651	74.3	345	74.5			
F30-F39	115	13.1	87	18.8			
Others	48	5.5	10	2.2			

*Significant, df: Degree of freedom

population, readmissions were 55% compared to 44% new admissions (Table 1). In all categories of education status, new admission : readmission was approximately 70% : 30%, except among patients who were educated above higher secondary (XII standard), where it is 60% : 40% (Table 3).

Significant differences exist (p<0.001) among rates of admission and readmission among different occupational groups. Among the unemployed, 63% were new admissions and 37% were readmissions, whereas, among the daily labourers, 82% were new admissions and 18% were readmissions. Among servicemen and students, new admission : readmission = 50% : 50%, 56% : 44% respectively. Fourteen percent among the new admissions were housewives, whereas only eight percent among the readmissions were housewives (Table 3). No significant difference was found among rates of admission and re-admission in patients coming from different states.

Significant difference was found among rates of admission and readmission based on diagnosis (p=0.001). Seventy eight percent were admitted as new admission compared to only 22% undergoing readmission among F10-19. Fifty seven percent were new admissions compared to 43% as readmissions among F30-39. Among F20-F29, new admission : readmission = 65% : 35%. Among other disorders apart from these, 83% were new admissions, while only 17% were undergoing readmission. Similar prevalence of F20-29 among both new and readmissions (around 75%), with more substance abuse disorders (5.3% new vs 2.8% old) and others (5.5% new vs 2.2% old) among new admissions compared to more prevalence of affective disorders (19% old vs 13% new) among readmissions (Table 2).

DISCUSSION

Factors associated with readmissions are vital in understanding and planning interventions for reducing the need of repeated inpatient treatment. This study is a first attempt in India to spot the current scenario of mental hospital admissions and readmissions, and attempt to characterise and try to find out the probable causes of the findings.

The readmission rate obtained in this study (35%) is similar to studies done in countries in Europe, where readmission rates were close to 40% after one year and 50%

Table 3: Description and comparison of sociodemographic variables between newly admitted patients and patients with readmission - II

Variable	New admission (N)	N%	Readmission (N1)	N1%	Total (N+N1)	χ^2	df	p
Education						7.02	5	0.219
Illiterate	170	19.4	72	15.6	242			
Primary	96	11.0	41	8.9	137			
Middle	384	43.8	219	47.3	603			
Secondary	89	10.2	43	9.3	132			
Higher secondary	98	11.2	61	13.2	159			
Graduate and above	39	4.5	27	5.8	66			
Occupation						35.03	6	<0.001*
Unemployed	401	45.8	235	50.8	636			
Cultivator	114	13.0	54	11.7	168			
Labourer	72	8.2	16	3.5	88			
Business	68	7.8	33	7.1	101			
Service	49	5.6	48	10.4	97			
Student	50	5.7	40	8.6	90			
Housewife	122	13.9	37	8.0	159			
State						2.553	4	0.635
Assam	787	89.8	421	90.9	1208			
Nagaland	27	3.1	15	3.2	42			
West Bengal	23	2.6	6	1.3	29			
Arunachal Pradesh	18	2.1	10	2.2	28			
Others	21	2.4	11	2.4	32			

*Significant, df: Degree of freedom

after two years.[3] The study found increased prevalence of psychiatric disorders requiring admission among young population and high rates of relapse among patients with early-onset psychiatric disorders. In spite of no significant difference in prevalence of psychiatric disorders with chronic course requiring repeated admissions among males and females, it appears that males have better access to healthcare facilities, concluding from the male : female ratio = 74% : 26% among total admissions.

As onset of first episode of psychiatric disorder requiring admission is quite early (in late adolescence and early adulthood), compared to the average age of getting married, this nearly significant finding of more new admissions being single, is expected. But, nearly significant number of readmissions being currently single may be due to either desertion by spouses after diagnosis of a psychiatric disorder, or less rate of marriage in such patients after diagnosis, or may be due to increased incidence of relapse in persons who are single. This study thus corroborates the well-known finding of increased psychiatric morbidity among the unmarried/divorced population.[3] In a systematic review by Zanardo *et al*.,[17] it was found that young, single people, with less social support have higher chances of readmissions, while community interventions seem to reduce readmissions. An Indian study found female sex, income below the poverty level, and higher education were predictive of readmission.[18] Also, length of the initial hospital stay is important to prevent future hospitalisation.[19]

As the catchment area served by the site of study is predominantly composed of rural population, the nearly 80% prevalence of rural population among both new and readmissions is expected. The interesting finding here is that readmission rates were found to be similar among both rural and urban populations. Among higher educated patients (higher secondary and above), the frequency of readmission was more compared to those less educated. This probably reflects earlier findings that patients with more expert and humane ideas about mental patients and illness are more likely to be readmitted at a later date than are other patients.[20] Another explanation may be, that disorders requiring less readmission like substance abuse disorders being less common among the higher education group, whereas those with high rates of readmission like affective disorders and schizophrenia has similar prevalence in both groups have given rise to such findings.

More than 80% cases among the daily labourers being new admissions can be explained by the increased admission of this particular professional group with a diagnosis of substance abuse, which usually presents with lower rates of readmission compared to schizophrenia or affective psychosis. Around 14% of the new admissions were housewives compared to only eight percent among readmissions; substance abuse being unlikely among housewives, low rates of readmission may mean reduced follow-up among housewives. In the backdrop of patriarchal Indian society, housewives being abandoned by husbands after being admitted for psychiatric disorders are common, and further studies are needed in this aspect.

Nearly half of all the cases, both new and old, being unemployed reinforces the universal finding of difficulty in

obtaining a productive life by the patients and underscores the high rate of productivity loss and loss to national economy as a morbidity of psychiatric illness.[3,20] This highlights the importance and need of rehabilitation and social workers in the comprehensive management of psychiatric disorders for better fitment of patients into society. Although the site of study being a regional institute receiving significant number of patients from the entire region comprising of eight states, around 90% of patients, were from Assam. This again suggests the significance of transport facilities and availability of nearby healthcare facilities, especially in difficult terrains, in deciding healthcare utilisation by the communities.[21,22] This reflects the need for more mental health facilities of standard quality care in the region.

The prevalence of readmission was highest among affective disorder patients, as expected. Among both new admissions and readmissions, around 75% were F20-29. The bulk of the patients undergoing readmission are from the affective disorders and schizophrenia subgroups similar to other studies;[3] but, there was significant lack of admission with diagnoses like personality disorders, eating disorders, or other neurotic disorders. This may be due to increased load of such psychoses in the area, for which further studies mapping genetic predisposition are needed. Also, it may be due to less awareness about admissibility of other disorders like personality disorders, eating disorders, etc. in the rural backdrop of the catchment area of the site of study.

Among limitations of this study are those inherent to any record-based retrospective study, like the availability and accuracy of medical records. However, as all the case records in one-year time period were taken into account, selection bias is prevented. Still, socioeconomic status of the patients were not taken into account as there were not enough data, as were severity, chronicity, comorbidity, and condition at discharge of the illness, which may have served as confounding variables. Also, the admission policy for the institute being from 18-65 years of age, less than 30 years group meant 18-35 year olds and more than 45 years group virtually comprised of patients from 45-65 years of age. Again, the marital status was not separately identified as divorced, separated, widowed, or unmarried, and all these were included under 'currently single' category, leading to decreased clarity of the situation. Also, personal factors like substance abuse was not taken into consideration, as it has been shown that comorbidity with substance abuse plays a role in relapse and readmission.[23,24]

To conclude, this study gives a brief view on the current scenario of the mental healthcare utilisation. It also opens up new questions for research as to the cause of decreased readmission rates of women in spite of similar prevalence of illness, the same for substance abuse patients who rarely come for readmission for the illness and a need for a deeper community level probe to understand the sociocultural dynamics and religious aspects of the health seeking behaviour of the patients as they belong to a wide range of geographic, cultural, racial, religious, and ethnic diversity.

AUTHOR CONTRIBUTIONS

SD: Concepts, design, definition of intellectual content, data acquisition, statistical analysis, manuscript preparation, manuscript editing, and manuscript review; **SM**: Design, definition of intellectual content, literature search, data acquisition, data analysis, manuscript preparation, manuscript editing, and manuscript review; **AB**: Concepts, design, definition of intellectual content, data analysis, manuscript editing, and manuscript review; **DS**: Literature search, data acquisition, data analysis, statistical analysis, manuscript editing, and manuscript review.

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