

ORIGINAL ARTICLE

**EARLY READMISSIONS AND ASSOCIATED
SOCIO-DEMOGRAPHIC, CLINICAL FACTORS
IN A PSYCHIATRIC HOSPITAL, MALAYSIA**

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Abstract

Objective: The main aim of this study is to assess the prevalence of early readmissions to inpatient care in Hospital Bahagia Ulu Kinta and the associated socio-demographic and clinical factors. **Methods:** This is an observational study for all patients with readmissions within 3 months from the last discharge, dated from 1 January 2013 to 31 December 2013. Related socio-demographic and clinical details are obtained from the medical records and compared between the patients who were readmitted within the first month after discharge to those who were readmitted later in the second and third month. **Results:** Total of 149 records of patients who were readmitted within 3 months of last discharge were analyzed. Majority of them were from the same state of Perak (83.9%), male (74.5%), single (71.1%), unemployed (85.9%), taken care by family (75.2%), achieved secondary education level (59.7%) with mean age of 37.89 years (SD 11.53). They were discharged for a mean of 32.52 days (SD 26.48) before readmission with a mean duration of 72.98 days in the previous admission, and mean previous admissions of 10.17 times. 69.8% of the patients were treated for psychotic disorders and the main reason for readmission was relapse (84.6%). Up to 34.2% of the patients reported to have substance abuse while 25.5% had medical co-morbidities. Most of the patients (63.8%) were not compliant to the treatment from the last discharge. Socioeconomic and clinical factors did not show statistical significance when the readmissions within the first month after discharge were compared to those who were admitted later at the second and third month. **Conclusions:** Due to limitations, further studies need to be done to identify risk factors associated with readmissions and adequate measures need to be taken to prevent these readmissions. *ASEAN Journal of Psychiatry, Vol. 18 (1): January – June 2017: XX XX.*

Keywords: Readmission, Psychiatry, Risk Factors

Introduction

Mental disorders are a global concern and one of the main considerations in the utilization of healthcare resources. Referring to Global Burden of Disease Study 2010, mental illnesses accounted for 7.4% of total DALY's worldwide, making it one of the leading causes for burden in healthcare. Compare with other medical illnesses, mental disorders are the leading causes for years lived with disability (YLD) worldwide [1]. Despite that,

the resources used to manage mental disorders remained insufficient globally with varying expenditures per capita ranging from US\$0.20 in low-income countries to US\$44.84 in high-income countries [2] which lead to the persistence of mental health-related morbidity worldwide [3]. Mental disorders prove to be one of the leading causes of morbidity locally as well. In the more recent National Health and Morbidity Survey 2011, it was reported at least 1.7% adults suffering from generalized anxiety disorders while 1.8% adults have

current depression. Among the younger population, up to 20% of them have the mental health-related problem [4].

With the advancement of treatment for mental disorders, the managements of these patients are shifting from inpatient care to community-based services [4,5]. With the movement of deinstitutionalization, it is hoped that the long-term management of these patients would be away from the wards. Although the direction of community-based service is clear, in-patient psychiatry care is still needed to complement the outpatient care. Psychiatric admissions, although undesirable is needed at times. However, we aim for short hospital stay to encourage early discharge and promote rehabilitation as outpatient in the community [6]. Frequent relapses and readmissions increase the mental health workload and deplete the resources in mental health care [7,8]. After discharge from the wards, it is important to keep the patients stable and well to avoid readmissions. Repeated admissions are to be avoided as far as possible. Ministry of Health of Malaysia listed readmission as one of the key performance indicators in the National Indicator Approach in 2012 [9]. Percentage of a patient readmitted to psychiatric ward within three months after the last discharge should be kept to below 25%, and the statistic needed to be reported regularly.

There are many possible factors affecting readmissions rate. Most of the readmissions were associated with poor compliance to treatment [11]. Patients with schizophrenia, affective disorders and substance use related disorders commonly require readmission to psychiatric facilities [11,15,16,20]. Other demographic profiles and social determinants such as social support, educational level, employment and marital status also play an important role [10,16,17,19,20]. History of frequent previous admissions also appeared to predict future readmissions [12-14,18]. While there may be limited data on the local scene, but the few studies done on readmission reflected the global findings. There were significant associations between frequent hospitalization and socio-demographic factors with readmissions in a hospital in Kuantan [21], while study conducted in a teaching

hospital in Kuala Lumpur shows many correlations with many clinical factors such as psychotic disorders, poor compliance and severity of the illness [22,23].

Therefore, it is important to study the prevalence of readmissions and the factors contributing to early readmissions among psychiatric patients in the local settings to help to plan out preventive measures. This will prove to be beneficial to reduce the morbidity of the illnesses and help patients to recover. This study aims to determine the prevalence of early readmissions among those who were discharged from a Malaysian psychiatric hospital and determine both the associated socio-demographic and clinical factors. Within this patient group of early readmissions, this study also tries to identify the factors that may contribute to early readmissions within a month after discharge compared to those who were readmitted later. The recognition of these factors could be used in identifying high-risk patients, and appropriate management could be instituted to prevent early readmissions later.

Methods

Study setting and design

This is an observational study conducted in Hospital Bahagia Ulu Kinta (HBUK). HBUK is located in Tanjung Rambutan, Perak and is the earliest mental institution established in Malaysia. With the change of psychiatric management approach, currently HBUK is functioning as a referral hospital for psychiatric patients, providing both in patients and out patients services. HBUK caters to the local population in Ipoh and Kinta area, and also referral center from other states, including up north to Perlis, down south to Selangor and also Kelantan in east coast.

Study sample

Universal sampling method was used to recruit the samples for this study. All medical records for patients with readmissions within 3 months from discharge, dated from 1 January 2013 to 31 December 2013 were selected. Early readmissions under court order (section 344,

348 of Criminal Procedure Code) are excluded from the study.

Statistical analysis

The medical records for study sample were reviewed and both the clinical, and the socio-demographic data were obtained (Appendix 1). Socio-demographic data captured includes age, gender, ethnicity, marital status, educational level, employment status, social support and recent life events. Clinical data captured includes diagnosis, co-morbidities, treatment, previous readmission, reason for readmissions and time to last discharge. Descriptive epidemiological statistics were analyzed using Statistical Package for Social Study (SPSS). The interval periods from index discharge to readmissions were analyzed with

socio demographic and clinical data using univariate and multivariate analysis. Related factors for patients who were readmitted early within the first month after index discharge compare to those who were readmitted later within the second and third month after discharges were analyzed using chi square.

This study is registered under National Medical Research Register (NMRR) and the ethical approval is obtained from Ministry of Health Ethics Committee (MREC).

Results

A total of 149 patients were admitted within 3 months of discharge. All the records of these patients were reviewed, and the included in the analysis.

Table 1. Sociodemographic data of the patients readmitted early

	Mean	Standard deviation (SD)
Age (years)	37.89	11.53
	Total (n)	Percentage (%)
State		
Perak	125	83.9
Selangor/ KL	22	14.8
Kedah	1	0.7
Pahang	1	0.7
Gender		
Male	111	74.5
Female	38	25.5
Ethnicity		
Malay	64	43
Chinese	49	32.9
Indian	32	21.5
Others	4	2.7
Marital status		
Married	34	22.8
Single	106	71.1
Divorce/ widow	9	6
Highest education		
No formal	9	6
Primary	27	18.1
Secondary	89	59.7
Tertiary	5	3.4
No info	19	12.8
Employment		
Yes	21	14.1
No	128	85.9
Caretaker		
Self	24	16.1
Family	112	75.2
Nursing home	13	8.7
Total	149	100

Table 1 shows the mean age for the group of patients who were readmitted early was 37.89 with standard deviation of 11.53 years.

Majority of them were from the same state of Perak (83.9%). 74.5% of the patients were male and 43% are of Malay ethnicity. Only

22.8% were married while the rests were either still single (71.1%) or divorced/widowed (6%). 59.7% received education until

secondary school while only 14.1% are working. Majority of the patients were taken care by the family (75.2%) while only 16.1% live independently on their own.

Table 2. Clinical characteristics of patients readmitted early

	Mean	Standard deviation
Interval of last discharge to readmission (days)	32.52	26.483
Duration of stay during the last admission before readmission (days)	72.98	115.37
Total of previous admissions before readmissions (times)	10.17	12.374
	Total (n)	Percentage (%)
Diagnosis		
Psychotic disorder	104	69.8
bipolar disorder	16	10.7
Major depression disorder	1	0.7
Mental subnormal	16	10.7
Substance abuse	9	6
others ¹	3	2
Reasons of readmission		
Relapse/ recurrence/ not stable	126	84.6
Respite care/ poor family support	17	11.4
Side effect of treatment	4	2.7
Others	2	1.3
Comorbid substance		
Yes	51	34.2
No	98	65.8
Medical comorbid		
Yes	38	25.5
No	111	74.5
Compliance		
Yes	49	32.9
No	95	63.8
No info	5	3.4
Life events prior to admission		
Yes	10	6.7
no	139	93.3
Total	149	100

¹Others: antisocial personality disorder, organic brain syndrome, frontal temporal lobe dementia

Table 2 shows that the patients were discharged for a mean of 32.52 days with a standard deviation of 26.48 days before readmitted. Most of the patients were not newly admitted as they were admitted for a mean of 10.17 times previously. In the last admission, the patients were admitted for a mean duration of 72.98 days. 69.8% of the patients were treated for psychotic disorders while 10.7% of them were treated for bipolar

disorder and mental subnormal respectively. Relapses of the psychiatric disorders were the main reason of readmissions (84.6%). Up to 34.2% of the patients reported to have a substance abuse while only 25.5% had medical co-morbidities on admission. Most of the patients (63.8%) were not compliant with the treatment from the last discharge. Only 6.7% of the patients reported life events prior to the readmission.

Table 3. Associated sociodemographic, clinical factors and interval from discharge to readmissions

Sociodemographic and clinical factors	Readmission < 1 month	Readmission within 1-3 months	Odds ratio	95% CI	P
State Perak Outside Perak	68 (54.4%) 15 (62.5%)	57 (45.6%) 9 (37.5%)	0.716	0.292- 1.757	0.464
Age Below 38 years Above 38 years	45 (60.8%) 38 (50.7%)	29 (39.2%) 37 (49.3%)	1.511	0.789- 2.895	0.213
Gender Male Female	61 (55.0%) 22 (57.9%)	50 (45.0%) 16 (42.1%)	0.887	0.421- 1.868	0.753
Ethnicity Malay Others	33 (51.6%) 50 (58.8%)	31 (48.4%) 35 (41.2%)	0.745	0.388- 1.432	0.377
Education ^a Primary and below Secondary and above	20 (55.6%) 55 (58.5%)	16 (44.4%) 39 (41.5%)	0.886	0.408- 1.924	0.760
Marital status Married Single/ divorced/ widow	19 (55.9%) 64 (55.7%)	15 (44.1%) 51 (44.3%)	1.009	0.467- 2.181	0.981
Employment Employed Not employed	11 (52.4%) 72 (56.3%)	10 (47.6%) 56 (43.8%)	0.856	0.339- 2.157	0.741
Caretaker Self Family/ nursing home	14 (58.3%) 69 (55.2%)	10 (41.7%) 56 (44.8%)	1.136	0.469- 2.753	0.777
Life events Present Absent	6 (60.0%) 77 (55.4%)	4 (40.0%) 62 (44.6%)	1.208	0.326- 4.470	0.777
Diagnosis Psychotic disorders Others	53 (51.0%) 30 (66.7%)	51 (49.0%) 15 (33.3%)	0.520	0.251- 1.078	0.076
substance abuse Present Absent	29 (56.9%) 54 (55.1%)	22 (43.1%) 44 (44.9%)	1.074	0.543- 2.125	0.837
Co-morbid medical illness Present Absent	21 (55.3%) 62 (55.9%)	17 (44.7%) 49 (44.1%)	0.976	0.465- 2.049	0.949
Compliance ^a Compliant Non-compliant	28 (57.1%) 53 (55.8%)	21 (42.9%) 42 (44.2%)	1.057	0.527- 2.119	0.877
Previous admission duration Below 72 days Above 72 days	66 (58.9%) 17 (45.9%)	46 (41.1%) 20 (54.1%)	1.688	0.799- 3.567	0.168
Number of previous admissions <10 10 and above	59 (58.4%) 24 (50.0%)	42 (41.6%) 24 (50.0%)	1.405	0.704- 2.802	0.334

^a: patients with no data available are excluded from analysis

Within this group of patients who were readmitted early within 3 months after their discharge, further analysis was done to determine the predictive factors for determining readmission within the first month after discharge compared to those who were admitted slightly later at second and third month (Table 3). Patients outside the state of Perak, younger patients below 38 years old, female gender, non Malay, patients with secondary education and above, married and unemployed patients have higher odds of readmitting within the first month of discharge. However, the difference was not statistically significant. Presence of life event, diagnosis other than psychotic disorder, absence of co-morbid medical illness appeared to have higher odds of readmitting within the first month as well, but the difference was not statistical significant. Patients with comorbid substance abuse early (OR 1.074, CI 0.543-2.125) and patients who were not compliant to treatment (OR 1.057 , CI 0.527-2.119) have higher odds of readmitting but there is no statistical difference. Other clinical factors associated with readmission within the first month include shorter duration of previous admission of below 72 days and fewer previous admissions of less than 10. However, the difference is not statically significant.

Discussion

The care for psychiatric patients are shifting from in patient custodial care to the community-based approach [25]. Ideally, it is hoped that once patient is clinically stable after admission to the psychiatric hospital, they could be discharged and continue their care in the outpatient settings. It is important that after the discharge, the treatment and rehabilitation services were continued to promote recovery for the patients. One of the main aims of the current treatment in psychiatry is to prevent relapses and to regain functionality. Readmission rate is one of the key performance indexes that reflects good psychiatric services rendered to the patients. Early readmission rate within the year of study ranges from 11.2% for January to June to 13.0% for July to December [24]. Both the figures are in keeping with the Ministry of Health key performance index [9].

The socio demographic data on the patients who were readmitted early within three months of last discharge reflected the general patients who were receiving psychiatric care in the national setting. 83.9% of the patients readmitted early is from the state of Perak due to the location on the study site itself in the same state. Patients who returned to their respective state will continue further follow up in their own closest health centre and would be admitted to the nearest hospital if in the event of early relapse. Compare to the socio demographic data in the National Mental Health Registry, similarly the majority of the patients are male (74.5% in study population), mean of age in their thirties, mainly not married, with highest education until secondary school. 85.9% of the study population are unemployed comparable to the national 60% for male, 80% for female patients [25]. The high unemployment rate among patients illustrated the need for a good rehabilitation program for them as obtaining and securing work is not an easy task for patients in the competitive market. Majority of the patients are from Malay ethnicity followed by Chinese and Indian patient's proportion as this would reflect the racial composition locally in the study hospital and surrounding area. Majority of the patients who were readmitted have psychotic disorder, which is in keeping with the in patients treated in the hospital. In the year of 2013, 80.3% of all the patients admitted into the study hospital as in patients are treated for schizophrenia [24]. Similar presentation of admissions diagnoses are shown in other hospitals as well. Earlier study in Hospital Kuala Lumpur showed that schizophrenia was the main diagnosis for patients admitted as in patients up to 62% of the total admission [25]. Co-morbid substance abuse is present in 34.3% of the population of patients readmitted comparing to the national data of 20%. Our study population has a high noncompliance rate of 63.8% as well. The higher representation of co-morbid substance abuse and poor compliance in our population may be one of the causes of the readmission compare to the patient who remained well as outpatients. Most of the patients in the population are not new patients with a mean of 10 previous admissions and have a mean of 72.98 days of admission in the last admission before discharge. This group of patients may

represent a chronic group of patients compare to the newly onset or newly diagnose patients.

Further analysis was done to determine the sociodemographic and clinical factor which may determine the time period before the early readmission. Unfortunately our analysis did not show any significant socio-demographic or clinical factors for the patients readmitted early within the first month of discharge compare to those who were readmitted later at second or third month. Although patients with substance abuse and poor compliance to treatment have higher odds of readmitted within the first month, our analysis fails to demonstrate statistical significance compare to other studies which managed to establish it as one of the important factors to predict readmissions [28]. Other risks of readmission shown in other studies include history of previous frequent admissions, longer length of hospital stay and also socioeconomic factors [12,13,16,18]. Unemployment may be also one of the predictive factors for readmission within the first month after discharge [14]. Local study had demonstrated patients with psychotic disorder, previous admissions, poor compliance were associated with higher risk of readmissions [22]. Although it is not demonstrated in our analysis, it is understandable that co-morbid substance abuse and poor compliance is poor prognostic factor associated with frequent relapse. These factors will prevent the patients from getting the treatment that they need and patients may present with earlier admissions. Patients with frequent previous hospital admissions or longer previous stay in hospital may be associated with patients who are more difficult to treat, which may be a risk factor for early readmissions.

There are limitations within the study which lead to difficulties to demonstrate statistical findings. It would be ideal to compare the patients who were readmitted early to those who managed to remain as outpatient at the time of study. Identifying protective factors would benefit organizing resources to help them to continue treatment as outpatient. However, the population in this study is the patients readmitted within three months after discharge into the same hospital. The study hospital caters for patients who were admitted

from different area, districts and even different states. After discharge from the ward, these patients will return to their respective home in different states and continue their care there. It is difficult to determine whether patients remain in outpatient care or trace the readmissions for those patients who were readmitted into other hospitals, and their data may not be captured. Analysis was done only within the group of patients readmitted within 3 months after discharge and did not manage to capture the data for those who were readmitted later or remain as outpatient. Comparison with these other groups would give a more complete picture and may demonstrate some predictive factors for early readmissions.

Conclusion

Early readmission was associated with burden both to the patients and also mental health services. Therefore, it is important to identify risks involves with early relapse and early readmission. Adequate measures need to be taken to manage these predictive factors to prevent relapses and to assist the patients in remaining in remission and to attain recovery.

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