Original Article

Demographic and Diagnostic Features of 3147 Inpatients With Mood Disorders in Iran

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Abstract

Objectives: To assess and compare demographic and diagnostic characteristics of inpatients with mood disorders in Iran.

Materials and Methods: We collected the demographic, clinical, and treatment characteristics of patients, who were hospitalized during five years from April 2006 to March 2010, in Iran hospital of psychiatry, a residency training center to evaluate the general clinical picture of the disorder.

Results: Overall, 95.3% of subjects had a diagnosis of bipolar I disorder (BID), 2.5% were diagnosed as bipolar II disorder (BIID) and 1.3% and 0.9% met the criteria for major depressive disorder (MDD) and bipolar not otherwise specified (NOS), respectively. Compared to patients with MDD and BIID, the onset of BID was at an earlier age (32.2 ± 1, 34.8 ± 1.5 and 29.9 ± 1.9 years old, respectively, P < 0.001). In addition, a number of admissions, mean duration of each admission and number of treatments with electro-convulsive therapy (ECT) were significantly higher in patients with BID.

Conclusions: Bipolar I disorder was the most common diagnosis for inpatients with mood disorders and a more severe course in BID may indicate more severe impairments that would result in more severe disabilities.

Keywords: Bipolar Disorders, Demographic, Iran, Major Depressive Disorder, Mood Disorders

1. Background

Mood disorders including depressive and bipolar disorders are one of the most frequent psychiatric disorders in clinical settings as well as in the community (1).

According to previous studies, the lifetime prevalence of major depressive disorder (MDD) was between 4.9 and 20 percent and the lifetime prevalence of bipolar I and II disorders have been reported to be between 1.3% and 3.9% (2-6). Considering sub-threshold diagnostic criteria, including one or two symptoms over a short time-period, an additional 5.1% of the population could be categorized as having a bipolar spectrum disorder (7). Depressive disorders and bipolar disorders are responsible for 40.5% and 7.0% of disability-adjusted life years (DALYs) caused by mental and substance use disorders, respectively (8).

All mood disorders could have a negative impact on quality of life and functioning and are concomitant with psychiatric and medical morbidity and mortality (9-12), and these features could lead to burnout in families and are a heavy burden on the society (11-13). However, according to previous results presented in numerous reports, bipolar mood disorders have major differences with MDD in clinical features, demographic attributes, response to treatment and long-term course, which are precious in diagnosis and management. These differences include clinical features such as age of onset, age of first treatment, number of episodes, and demographic differences such as gender ratio of the patients and their socio-economic status; for example male to female ratio in bipolar I disorder (BID) is about 1:1, and BID is concomitant with higher rates of positive family history, larger number of episodes with psychotic features, and higher probability of committed suicide (14-19).

In general it is valuable to investigate the mentioned features in patients with different subtypes of mood disorders in different communities. Based on some studies, it is supposed that somehow the course of mood disorders is different in Iranian patients; for instance, in contrary to other studies, in most of the Iranian bipolar patients the disorder begins with a manic episode (20). It was also found that there was no association between bipolar disorder and age or educational status in Iranian patients in

contrast to many Western studies, which showed associations of bipolar disorder with lower age and educational level (4, 9, 21-24).

This confirms the need for further investigations in order to gather more information about attributes of Iranian patients with different subgroups of mood disorders (25). Such investigations would enable us to have more precise information about patients with mood disorder in Iran that could be used in clinical decisions and health system planning.

2. Objectives

The current study was designed to assess demographic and diagnostic features of 3147 inpatients with mood disorders in a psychiatric hospital in Tehran, Iran.

3. Materials and Methods

In a cross-sectional study, we collected, via a census sampling method, the information of all inpatients hospitalized during five years from April 2006 to March 2010 in Iran hospital of psychiatry, a university affiliated referral mental hospital in Tehran through studying their medical charts. This study was authorized by the research deputy and ethics committee of the faculty of medicine, Iran University of medical sciences, Tehran, Iran and it conforms to the provisions of the declaration of Helsinki on human researches. All data were considered confidentially anonymous. Patients had already signed an informed consent about application of their clinical data on records upon admission in the hospital, and the records of those who had denied signing the consent were not used in this study.

The patients who were diagnosed with mood disorders in the first hospitalization based on the diagnostic and statistical manual of mental disorders- 4th Ed-text revision (DSM IV-TR) (21) by a clinical interview at admission by expert psychiatrists (who were faculty members of the Iran University of Medical Sciences) were enrolled in the study. In the mentioned hospital, the diagnoses were based on DSM-IV-TR (diagnostic and statistical manual of mental disorders criteria) using a nonstructural or semi-structured interview. If the mood disorders were diagnosed to be secondary to substance abuse and dependency or any other conditions (i.e. general medical conditions or induced by medications) according to DSM-IV-TR, subjects were excluded from the study.

We gathered the demographic, clinical, and treatment attributes of 3147 patients, including age, gender, date and place of birth, home address, marital status, number of children, occupational status, educational status, insurance status, age of first episode, age of first hospitalization, type of first episode, number of hospitalizations, duration of each hospitalization, psychiatric diagnosis during each hospitalization, type of treatments (pharmacotherapy, ECT) during each hospitalization, and history of alcohol and substance use.

3.1. Statistical Analysis

Data analysis were performed with SPSS 21.0 (IBM Inc.) and differences between diagnostic categories were tested with analysis of variance (ANOVA) test and if there were global differences between categories, we used Tukey's HSD post hoc test to compare each pair of categories, and we also used Chi square test to compare categorical variables in diagnostic groups of subjects. Statistical significance level was set at $P < 0.05$.

4. Results

This study included 3147 patients initially admitted to a university affiliated psychiatry hospital with diagnosis of mood disorders; 66% of subjects were male and 34% were female. In the first admission, most of the subjects fulfilled the DSM-IV criteria for bipolar I disorder (BID) (87.8%), 3.5% met the criteria for major depressive disorder (MDD), 2.6% were diagnosed as bipolar II disorder (BIID) and 6.2% fulfilled DSM-IV criteria for bipolar disorder-not otherwise specified (NOS).

However, on later admissions, because of change of the clinical picture, some of the diagnoses were changed and finally 95.3% of subjects received the diagnosis of BID, 2.5% were diagnosed as BIID and 1.3% and 0.9% met the criteria for MDD and bipolar disorder-NOS, respectively. Diagnosis changes are shown in Table 1. Diagnosis stability for all the subjects was 92.1%; for subjects with first diagnosis of BID, BIID, MDD and NOS diagnosis stability was 100%, 81.5%, 37.3% and 14.4%, respectively (Table 1).

Age of onset of inpatients with BID (27.9±0.19 years old) was earlier than patients with BIID and MDD (34.8 ± 1.5 and 32.2 ± 0.96 years old, respectively; $P < 0.001$). In addition, age of their first hospitalization was significantly younger in BIID compared to BID ($P < 0.001$, Table 2). More males (65.4 - 66.1%) than females (33.9 - 34.6%) with BID and BIID were admitted to the hospital compared to MDD, in which more females (68.3%) with MDD had been admitted to the hospital. Less than half of inpatients with BID/BIID were married compared to all of the MDD inpatients (Table 2). Educational level and health insurance coverage was lower in patients with BID compared to other groups while patients with MDD showed the highest unemployment rate among mood disorder groups in the study (Table 2).

Table 1. Change in Diagnosis Between First Admission and Final Diagnosis[a]

Diagnosis at 1st Hospitalization	Final Diagnosis				Total
	BID	MDD	BIID	Other	
BID	2762 (100%)	0 (0%)	0 (0%)	0 (0%)	2762
MDD	69 (62.7%)	41 (37.3%)	0 (0%)	0 (0%)	110
BIID	15 (18.5%)	0 (0%)	66 (81.5%)	0 (0%)	82
Other	154 (79.4%)	0 (0%)	12 (6.2%)	28 (14.4%)	194
Total	3000	41	78	28	

[a] Chi Square P value <0.01.

Indices related to admissions such as number of admissions, mean duration of each admission, and number of electro-convulsive therapy (ECT) treatments were significantly higher in patients with BID than BIID, MDD and other mood disorders (P < 0.001, Table 2).

About two-third (65.1%) of the subjects finally diagnosed with BID, had their index episode as mania/hypomania episode and depressive and mixed episodes were seen during the first episode of the disorder in 30.3% and 2.7% of patients with BID (Table 2).

5. Discussion

Patients with BID were the most prevalent group among hospitalized psychiatry patients in our study during a period of five years that along with possible referral bias to the hospital of study may indicate a greater need for inpatient care for the disorder.

The course and characteristics of mood disorders showed differences in our study. Recently, many studies have compared mood disorder subtypes, such as BID, BIID, MDD and bipolar disorder-NOS. Studies reported a number of differences in clinical and demographic characteristics of patients with bipolar or major depressive disorders, which are consistent with the results of our study. Bipolar I disorder can be distinguished from MDD and BIID by having an earlier age at onset, an earlier first lifetime hospitalization, more episodes, higher number of hospitalizations, higher rates of psychiatric comorbidities, higher rates of divorce, separation or being single and higher likelihood of unemployment and poor socio-economic status (26, 27), while some authors reported less severe symptoms along with more chronic course and frequent episodes in BIID than in BID, (28, 29) as well as more comorbidities (30, 31) and more unstable interpersonal relationships and social adjustment (32) in BIID compared to BID. Considering all these findings it could be reasonable to propose characteristics such as higher number of hospitalizations, longer duration in each admission, and higher number of ECT treatments in patients with BID as the indicator of severity of BID course, in comparison to other mood disorders.

In this study the educational level of bipolar-one patients was also lower than patients with other mood disorders and considering early age of onset of the disorder in mind, this could be related to the disruptive nature of the disorder in mental functioning needed to develop routine educational needs. Considering the wide range of data on cognitive impairments in patients with mood disorders including bipolar disorders, this also may highlight the need for more attention in screening and management of early onset mood disorders and consideration of children with these disorders as those with special needs in education to help them acquire developmental and educational requirements to achieve better function as part of the society in the future (33-35).

The reason that the majority of our patients were male may have been due to the fact that the number of beds in Iranian hospitals is twice for males than those for females. However, in accordance with other studies, the number of female patients with MDD is still twice that of male MDD patients. Therefore, considering the different gender ratio in BID/BIID and MDD, we can assume that aside from selection bias due to inequality of gender ratio in beds, there maybe more males with BID/BIID as more women with MDD need inpatient care (3, 7, 25, 36).

Altogether, considering the severe course in BID and lower education levels achieved by patients with BID compared to BIID/MDD it seems that the chance and potentials for social development indicated by having relationships, marital status and employment is poor in patients with mood disorders, especially BID. In comparison with other studies, Iranian patients tend to have lower rate of divorce and education and higher rate of unemployment, health insurance and bachelor's degree (25, 37-39). The lower rate of divorce and employment in the general population of Iran compared to reference countries of afore-

Table 2. Comparison of Demographic Characteristics and Clinical Features of Mood Disorders

	BID	BIID	MDD	Other	P Value
No. (%)	3000 (95.3)	78 (2.5)	41 (1.3)	28 (0.9)	
Age at onset, y, mean ± SE	27.9 ± 0.19	34.8 ± 1.5	32.2 ± 0.96	29.5 ± 0.1	< 0.001[a]
Age at first admission; y, mean ± SE	32.5 ± 0.2	36.1 ± 1.2	32.2 ± 0.96	37.0 ± 1.2	0.006[b]
Gender, No. (%)					< 0.001
Male	1984 (66.1)	51 (65.4)	13 (31.7)	28 (100)	
Female	1016 (33.9)	27 (34.6)	27 (68.3)	0 (0)	
Marital Status, No. (%)					< 0.001
Married	1414 (47.1)	39 (50)	41 (100)	14 (50)	
Single	1258 (41.9)	39 (50)	0 (0)	14 (50)	
Divorced	328 (10.9)	0 (0)	0 (0)	0 (0)	
Education level, No. (%)					< 0.001
Illiterate	173 (5.8)	0 (0)	0 (0)	0 (0)	
Under diploma	1747 (58.2)	25 (32)	27 (65.9)	0 (0)	
Diploma	828 (27.6)	40 (51.3)	14 (34.1)	28 (100)	
College	252 (8.4)	13 (16.7)	0 (0)	0 (0)	
Health insurance, No. (%)	2778 (92.6)	78 (100)	41 (100)	14 (50)	< 0.001
Occupation status, No. (%)					< 0.001
Clerk	139 (4.6)	14 (17.9)	0 (0)	14 (50)	
Worker	346 (11.5)	12 (15.4)	0 (0)	0 (0)	
Self employed	361 (12)	0 (0)	0 (0)	0 (0)	
Retired	67 (2.2)	13 (16.7)	0 (0)	0 (0)	
Unemployed	1433 (47.6)	13 (16.7)	28 (68.3)	0 (0)	
Housewife	654 (21.8)	13 (16.7)	28 (68.3)	0 (0)	
Admission No, mean ± SE	2.39 ± 0.04	1.97 ± 0.13	1.3 ± 0.07	1 ± 0	< 0.001[c]
Mean duration at admission, d, Mean ± SE	32.1 ± 0.21	22.8 ± 1.2	28.7 ± 2.0	18.5 ± 2.8	< 0.001[c]
Number of admission with ECT, mean ± SE	0.39 ± 0.01	0.17 ± 0.04	0 ± 0	0 ± 0	< 0.001[c]
Index episode, No. (%)					< 0.001
Mania/hypomania	1953 (65.1)	17 (21.8)	0 (0)	28 (100)	
Depressive	910 (30.3)	61 (78.2)	41 (100)	0 (0)	
Mixed	81 (2.7)	0 (0)	0 (0)	0 (0)	
Other, NI	56 (1.9)	0 (0)	0 (0)	0 (0)	

Abbreviations: SE: Standard Error, NI: Not Identified.
[a] Post Hoc test showed the differences only between with BID group with BIID and MDD not with others.
[b] Post Hoc test showed the differences only between with BID group with BIID not with MDD and others.
[c] Post Hoc test showed the differences only between with BID group with other groups while the other groups showed no significant differences in subgroup analyses.

mentioned studies may be somewhat consistent with cultural differences (40-42). Furthermore, Iran hospital is located in a low socioeconomic region, outside of Tehran and the economic and educational properties of the patients of this study couldn't be generalized to all the psychiatric inpatients of the country. Having higher rate of insurance could be related to social welfare programs in Iran during the recent years.

In our study, age at onset and age of the first admission for BID was also higher than other studies (25, 37, 38). One must note that in our study the difference between age at onset and age at first admission for patients with BID,

BIID and other mood disorders were 4.6, 1.3 and 7.5 years, respectively, and MDD patients are assumed to be admitted at the age of onset. So for most of the patients the age at onset in our study was close to age of first admission. We in our study estimated the age at onset based on the history report at first or subsequent admission and this of course is not an accurate estimation. Age of onset for BID in large scale studies in clinical and general population were earlier than our study patients (43, 44). Overlooking the symptoms of mania, lack of insight into manic symptoms and recall bias could be the reason for greater age at onset of the disorder in our study. In addition, misdiagnoses and the stigma of having mental disorders as a barrier to punctual hospitalization may be the causes of greater age of first admission.

Consistent with the data of previous Iranian studies on bipolar patients and in contrast to studies from other countries, the disorder begins in most of the patients with a manic phase and it is highly recommended to design numerous studies with the aim of investigation of probable etiologies such as genetics (20, 45, 46). Some questions about greater acceptability and tolerability of depressive symptoms and episodes, rather than behaviorally disruptive manic episodes, and mental health system professionals' attitude toward outpatient/inpatient management of depressive/manic episodes should be the subject of further investigations.

Rate of health insurance shows better medical insurance coverage in Iran compared to other countries (25, 37, 38).

Recurrent hospitalization of 62.7%, 18.5% and 79.4% of patients with the diagnosis of MDD, bipolar NOS and BIID, respectively, fulfilled the criteria of BID, which seems unexpectedly high. Over a prospective observation, carried out by Akiskal et al. (32) on 559 patients with MDD during a period of up to 11 years, the diagnosis of eight patients was changed to BIID (8.6%) and the diagnosis of 22 patients changed to bipolar I (BPI) (3.9%) (47). In that study, severity and psychotic features were the predictors of change in diagnosis. If hospitalization could be considered as the severity, the high rate of changing the diagnosis in this study could be justified. Long-term follow-up studies of patients with mood disorders could result in more reliable data on diagnosis constancy during the course of illness and the ongoing study of bipolar disorder patients follow-up (BDPF) in Iran by Shabani et al. could answer this issue more reliably in the near future (48).

In conclusion our findings revealed that there are some substantial demographic differences in patients with mood disorders in Iran and studies from other countries are needed to further investigate factors leading to this finding. In addition, high rate of diagnosis switch between MDD and other mood disorders in first admissions to BID in further admissions along with stability of BIID diagnosis should be alarming for clinicians to be more alert about the possibility of differential bipolar diagnoses.

Our study was conducted based on data from medical records of 3147 patients from a referral psychiatry hospital that lacked appropriate assurance of quality and consistency, however considering that the hospital was a university affiliated residency training center where routine standards of diagnosis based on DSM-IV-TR criteria for mental disorders were used, the authors assumed acceptable requirements for using the findings.

As other record-based cross-sectional studies there were limitations in quality control and testing homogeneity of data in this study that can affect the results, while long-term follow up of the patients could partially overcome these limitations by obtaining more information on diagnosis and characteristics of the subjects in recurrent admissions. We were unable to follow the outcome of patients, who were lost to follow up and who were not readmitted to our hospital after their last admissions thus readmission and recurrence rate should be considered as the lowest estimate. Further ongoing investigations especially cohort of the subject with mood disorders could result in better and more accountable findings.

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