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Risk Factors for Rehospitalization among Bipolar Patients

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ABSTRACT

Background: Bipolar disorder (BP) is one of the main causes of disability and morbidity globally. It has been linked to medical and mental comorbidity, premature death, functional impairment, and poor quality of life.

Objective: Recognizing predictors of psychiatric readmission among bipolar patients who were admitted to hospital within six months since last admission.

Subjects and Procedures: One hundred bipolar patients who had been admitted to Abbassyia Mental Hospital were included in this cross-sectional study. They were asked to fill out a questionnaire designed specifically for study, which cover number of presumed risk factors.

Results: About one-third of patients with BP relapse into depression or mania even with treatment. Our study revealed risk factors significantly differed between the two groups, such that patients who were rehospitalized within less than 3 months were significantly more likely to be unemployed, living in highly crowded places, socially isolated, experiencing stressful life events, having neither fixed income nor supportive families. Thus, insufficient psychoeducation, smoking, relapse during postpartum period and readmission with manic episode were highly significant at this group. Regarding sociodemographic status, child abuse, using long-acting medications or ECT, compliance, number of admissions, last admission duration, presence of insurance, all showed statistically non-significant differences between the two groups.

Conclusion: It is estimated that around one-third of people with BP illness may have a recurrence of depressive or manic symptoms despite therapy. Across all time periods, people with bipolar disorder were more likely to be readmitted when they had certain risk indicators.

Keywords: Risk factors, Rehospitalization, Bipolar patients.

INTRODUCTION

Additional study is required to identify risk factors and key time periods for readmission for individuals with bipolar disorder (BD), since BD has been linked to high inpatient hospital usage and healthcare expenditures. The purpose of policies and community mental health care planning is to reduce rehospitalization rates, therefore understanding what variables contribute to early psychiatric readmission is important [(1)].

Whether caused by positive or negative experiences, mood swings are a typical part of everyday living. Extreme and prolonged changes in mood that cause emotional and behavioural discomfort may, however, be indicative of an underlying affective illness. Depression is one form of affective diseases, while bipolar I and II are two others on the spectrum [(2)]. All three types of bipolar disorder (BD I, BD II, and cyclothymic disorders) are included together under the umbrella term "bipolar and associated disorders" in the DSM-5. The "other specified and bipolar associated condition" covers atypical manifestations of bipolar illness that do not map well into the standard classifications [(3)].

Recently published ICD-11 has a chapter on BD as well. Types I and II of BD impact around 2% of the global population, and Bipolar Affective Disorder is the sixth greatest cause of disability globally, according to the World Health Organization (WHO) [(4)]. BD commonly manifests itself in people after the age of twenty. Depression illness has a worse prognosis, longer treatment delays, more severe depressive episodes, and greater prevalences of concomitant anxiety and drug use disorders when it presents at a younger age. Most people with BD I or II have a depressed episode initially, and throughout the duration of their disease, depressive episodes tend to persist longer than manic or hypomanic ones [(5)]. About a third of patients who get therapy nevertheless have a recurrence of depressive or manic symptoms within a year. Moreover, therapeutic action and disease management depend on a complete comprehension of the bipolar disorder illness course [(6)].

Being uninsured, having three or more mental hospitalizations, and having a poorer Global Assessment of Functioning score were all substantially linked in the multivariate models with a higher risk of readmission across all time periods studied. Homelessness was another factor that increased the likelihood of psychiatric readmission within 30 or 90 days after release. Within the one-year time frame, however, male patients were more likely to be readmitted than their female counterparts regardless of race/ethnicity, BD type, or the presence or absence of a current manic episode [(7)].

THE OBJECTIVE OF THE STUDY

The goal of this research was to identify predictors of psychiatric readmission among individuals with bipolar illness who were admitted to a hospital less than six months after their last hospitalisation.

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SUBJECTS AND METHODS

Clinical Practice and Research Strategies

Abbassia Mental Hospital served as the site for this descriptive cross-sectional investigation. Those with bipolar illness who have been recently hospitalised (within the last six months) and are now in the re-hospitalization process.

One hundred patients were making up the study's sample size. Male and female patients aged 18-60 were considered for inclusion.

Inclusion criteria: Patients with a DSM-IV-diagnosed Bipolar I or II (manic, depressive, or mixed) condition. Patients with bipolar disorder who were being readmitted to the hospital within six months after their last hospitalisation. Those whose mental health issues have been exacerbated by drug abuse.

Exclusion criteria: Patients who refuse to sign a permission form. Individuals with bipolar disorder who have been out of the hospital for more than six months and are now readmitted. Patients with co-occurring psychiatric disorders, and patients with neurological and medical conditions.

Ethical consent:

The Study Ethics Board at Benha University and Abbassia Mental Hospital has given its approval. Participants were informed of the risks and benefits of participating in the study, given the opportunity to provide written permission for their participation, and given the opportunity to withdraw from the study at any time without adverse effects on their treatment plan or privacy. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Two licenced psychiatrists were conduct an in-depth interview to conduct a clinical evaluation using the Mental State Examination and confirm a diagnosis of BD using the Structured Clinical Interview for DSM-IV Disorders (SCID I). After then, participants, informants, and psychiatrists were all fill out a brand-new questionnaire created by the researchers just for the study.

The study's methods included a semi-structured interview to collect demographic information (age, sex, marital status, clinical condition.... etc.), a psychiatric, medical, and neurological evaluation, a drug screen, information on any co-occurring substance uses disorders, and information on the types and amounts of medications the participants are taking. The SCID I (validated English Version) scale is a diagnostic test used to diagnose DSM-IV Axis I disorders for the purpose of doing assessments; we used (Arabic Validated Version) to acquire accurate findings by excellent comprehension questions by the patients. Participants, informants, and psychiatrists would all submit to a urine drug test utilising a "Multi Drug Dipstick Screen," and a customised questionnaire was developed for the research to account for all of the potential confounding factors.

Based on statistical analysis, the outcomes were broken down as follows: Statistics descriptive of the most curious risk variables in patients diagnosed with bipolar disorder and readmitted to a hospital within six months of their previous hospital stay, using a questionnaire developed specifically for this research. Statistical comparisons and descriptions of the risk factors between the two subsets of rehospitalized bipolar patients, defined by the time since their previous hospitalisation: those readmitted within one day to three months six of their last hospital stay, and those readmitted between three months six and the present. States comparing and describing people with bipolar disorder who have been hospitalised for either a manic or depressive episode, separated by the kind of current episode that led to admission.

Statistical analysis

The collected data were coded, processed and analyzed using the SPSS (Statistical Package for Social Sciences) version 22 for Windows® (IBM SPSS Inc, Chicago, IL, USA). Data were tested for normal distribution using the Shapiro Walk test. Qualitative data were represented as frequencies and relative percentages. Chi square test (χ^2) to calculate difference between two or more groups of qualitative variables. Quantitative data were expressed as mean ± SD (Standard deviation). Independent samples t-test was used to compare between two independent groups of normally distributed variables (parametric data). P value ≤ 0.05 was considered significant.

RESULTS

Regarding occupation, age at diagnosis and age at first admission there was statistically significant difference between the two groups sample patients who readmitted within less than 3 months and within 3 to 6 months. On the other hand, there was no statistically significant difference between the two groups sample patients who readmitted within less than 3 months and 3 to 6 months regarding socio-demographic data except occupation which showed that 20.4% of patients were unemployed, 12.2% of patients were house wife and 14.3% of patients had professional jobs among less than 3 months. But among from 3 to 6 months, 5.9% patients were house wife and 23.5% patients was employee. Smoking was significantly higher (P=0.001) in group who were readmitted within less than 3 months than the group who were readmitted within 3 to 6 months. Findings showed that smoking was in 28.6% of patients who were readmitted within less than 3 months and 66.7% in patients who were readmitted within 3 to 6 months (Table 1).

Table (1): Socio-demographic data and smoking among two groups who were readmitted within less than 3 months and 3 to 6 months

		Period before current admission (month) gr					
		Less than 3 months (No.=49)		From 3 to 6 months (No.=51)		Chi square test	
		No	%	No	%	x^2	p value
Sex	Male	25	51.0%	38	74.5%	5.915	0.055
	Female	24	49.0%	13	25.5%		
Address	Urban	39	79.6%	43	84.3%	0.377	0.539
	Rural	10	20.4%	8	15.7%		
Marital status	Single	22	44.9%	23	45.1%	4.894	0.180
	Married	17	34.7%	20	39.2%		
	Divorced	10	20.4%	5	9.8%		
	Widowed	0	0.0%	3	5.9%		
Education	Illiterate	3	6.1%	0	0.0%	11.736	0.068
	Primary	1	2.0%	2	3.9%		
	Preparatory	7	14.3%	4	7.8%		
	Secondary	14	28.6%	9	17.6%		
	Technical	6	12.2%	15	29.4%		
	technical	16	32.7%	21	41.2%		
	University	2	4.1%	0	0.0%		
	Postgraduate	16	32.7%	21	41.2%		
Occupation	Unemployed	10	20.4%	4	7.8%	14.198	0.027**
	Retired	12	24.5%	25	49.0%		
	Housewife	6	12.2%	3	5.9%		
	Worker	7	14.3%	2	3.9%		
	Employee	7	14.3%	12	23.5%		
	Professional job	7	14.3%	5	9.8%		
Smoking	Not smoker	35	71.4%	17	33.3%	14.530	0.001**
	Smoker	14	28.6%	34	66.7%		
Number of Cigarettes	Mean ± SD	25.36	6.64	30.29	10.58	-1.614	0.113*
Age at diagnosis	Mean± SD	20.98	4.85	23.82	4.91	-2.913	0.004**
Age at 1st admission	Mean ± SD	22.14	4.97	26.63	7.24	-3.597	0.001**

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

Presence of recent stressor in group who were readmitted within 3 months was very significantly higher (P=0.044) than in patients' group who were readmitted 3 to 6 months. Traumatic events among patients who were readmitted within less than 3 months showed that 24.5% of patients experienced traumatic events and 75.5% of patients experienced no traumatic events. Regarding recent stressors, they were positive in 12.2% among patients who were admitted within less than 3 months and were positive in only 2% among patient who were readmitted within 3 to 6 months. As regards postpartum admission, it was highly statically significance (P=0.007) in group who were readmitted within less than 3 months than in who were readmitted within 3 to 6 months. Findings showed that admission after labour was 75% of patients who were readmitted within 3 to 6 months (Table 2).

Table (2): Traumatic events, recent stressor and postpartum admission in in two groups sample patients who were readmitted within less than 3 months and 3 to 6 months

		Period before current admission (month) gr					
		Less than 3 months (No.=49)		From 3 to 6 months (No.=51)		Chi square test	
		No	%	No	%	x^2	p value
Traumatic events	Experienced traumatic events	12	24.5%	7	13.7%	1.881	0. 170*
	Experienced no traumatic events	37	75.5%	44	86.3%		
Recants stressor	Stressor	6	12.2%	1	2.0%	4.06	0.044**
	No stressor	43	87.8%	50	98.0%		
Admission after labour	No admission	7	100.0%	1	25.0%	7.219	0.007**
	One time	0	0.0%	3	75.0%		
No of laubors	Mean± SD	2.00	1.00	3.25	1.50	-1.676	0.128*

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

Absence of fixed income was highly statistically significant (P=0.045) in who were readmitted within less 3 months, but presence of fixed salary was significantly higher in who were readmitted within 3 to 6 months. Regarding income, patients who were readmitted within less than 3 months showed that 24.5% of patients had salary and 16.3% of patients had retirement salary, but patients who were readmitted within 3 to 6 months showed that 43.1% of patients had fixed salary and 13.7% patients had retirement salary. History of social isolation was very statically significant higher (P=0.001) in group who were readmitted within less than 3 months. Findings showed that 32.7% of patients who readmitted within less than 3 months were socially isolated, but 27.5% of patients who were readmitted within 3 to 6 months were socially isolated. regarding family support, presence of supportive family was very highly significance in group who were readmitted within 3 months. Results showed that 53.1% of patients who were readmitted within less than 3 months had supportive families and 84.3% of patients who were readmitted within 3 to 6 months had supportive families (Table 3).

Table (3): Income and social suppot among two groups who were readmitted within less than 3 months and 3 to 6 months

		Period before current admission (month) gr					
		Less than 3 months (No.=49)		From 3 to 6 months (No.=51)		Chi square test	
		No	%	No	%	x^2	p value
Income	No fixed income	29	59.2%	19	37.3%	8.054	0.045**
	Salary	12	24.5%	22	43.1%		
	Retirement salary	8	16.3%	7	13.7%		
	Financial support from family	0	0.0%	3	5.9%		
Social isolation	Positive	16	32.7%	14	27.5%	11.411	0.001**
	Negative	33	67.3%	37	72.5%		
Care giver	Has care giver	46	93.9%	51	100.0%	2.027	0.155*
	Has no care giver	3	6.1%	0	0.0%		
Supportive family	Supportive	26	53.1%	43	84.3%	11.411	0.001**
	Not supportive	23	46.9%	8	15.7%		

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

Psychoeducation was very significantly higher (P=0.001) in patients who were readmitted within 3 to 6 months than in who were readmitted within 3 months. This table showed that only 30.6% of patients who were readmitted within less than 3 months had psychoeducation about illness. Patients who presented with manic episode were higher in group who were readmitted within less than 3 months than in group who were readmitted within 3 to 6 months. In the other hand, group who were readmitted within 3 to 6 months showed presence with depressive episode with psychotic symptoms higher than in group that were readmitted within less than 3 months. Also, the type of current episode was major depressive episode in 28.6% patients, presence with major depressive episode with psychotic features in 10.2% patients among group who were readmitted within less than 3 months before current admission and presence with manic episode with psychotic features in 35.3% patients that were readmitted within 3 to 6 months before current admission (Table 4).

Table (4): Regarding type of disorder, Type current episode and psychoeducation two groups sample patients who were readmitted within less than 3 months and within 3 to 6 months

		Period before current admission (month) gr					
		Less than 3 months (No.=49)		From 3 to 6 months (No.=51)		Chi square test	
		No	%	No	%	x^2	p value
Type of disorder	BAD I	49	100.0%	51	100.0%	NA	NA
Psychoeducation	Psych Educated	15	30.6%	35	68.6%	14.446	0.001**
	Not	34	69.4%	16	31.4%		
Type current episode	Major depressive episode	14	28.6%	7	13.7%	12.204	0.032**
	Major depressive episode with psychotic features	5	10.2%	18	35.3%		
	Manic episode	10	20.4%	7	13.7%		
	Manic episode with psychotic features	17	34.7%	18	35.3%		
	Mixed episode with psychotic features	1	2.0%	1	2.0%		
	Other cause	2	4.1%	0	0.0%		

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

This table showed that males with manic episode were significantly higher than females and females with major depressive episode were significantly higher than males (p =0.002). Married patients with manic episodes were significantly higher than married patients with major depressive disorders and divorced patients with major depressive disorders were significantly higher than divorced patients with manic episode (p =0.007). There was no significant difference in type of episode in single and widowed patients. Unemployed patients with major depressive episode were significantly higher than unemployed patients with manic episode, patients who had professional jobs with manic episode were significantly higher than those with major depressive episode (p =0.001). There was no significant difference in type of episode in retired, housewives, workers, and employees. There was no significant difference in education, residence, age and age at diagnosis between patients with major depressive episode and patients with manic episodes (Table 5).

Table (5): Sociodemographic data and type of current episode that cause rehospitalization within 6 months since last admission

		Type of current episode					
		Major depressive episode (n =44)		Manic episode (n =52)		Chi square test	
		No.	%	No.	%	x^2	p value
Gender	Male	20	45.5%	40	76.9%	10.07	**0.002***
	Female	24	54.5%	12	23.1%		
Residence	Urban	39	88.6%	39	75%	2.9	0.088
	Rural	5	11.4%	13	25%		
Marital status	Single	19	43.2%	22	42.3%	11.98	**0.007***
	Married	11	25%	26	50%		
	Divorced	11	25%	4	7.7%		
	Widowed	3	6.8%	0	0%		
Education	Illiterate	1	2.3%	2	3.8%	7.07	0.314
	Preparatory	0	0%	3	5.8%		
	Secondary	7	15.9%	3	5.8%		
	Technical	11	25%	11	21.2%		
	technical	10	22.7%	11	21.2%		
	University	15	34.1%	20	38.5%		
	Postgraduate	0	0%	2	3.8%		
Occupation	Unemployed	12	27.3%	0	0%	26.5	**<0.001***
	Retired	14	31.8%	21	40.4%		
	Housewife	4	9.1%	5	9.6%		
	Worker	3	6.8%	6	11.5%		
	Employee	11	25%	8	15.4%		
	Professional job	0	0%	10	19.5%		
Age	Mean± SD	35.07 ± 12.81		39.83 ± 11.09		-1.95	0.054
Age at diagnosis	Mean± SD	22.34±5.05		22.44±4.94		-0.099	0.921
Age at 1st admission	Mean ± SD	24.82±7.82		24±5.32		0.607	0.546

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

Patients who had crowding index less than 1 (average crowdedness) with major depressive episode were significantly higher than those with manic episode, but patients who had crowding index from 1 to 1.5 (crowded) with manic episode were significantly higher than those with major depressive episode (p =0.002). There was no significant difference in type of current episode in patients with crowding index more than 1.5 (severely crowded). Patients who had rent house with major depressive episode were significantly higher than those with manic episode and patients who had owned house with manic episode were significantly higher than those with major depressive episode (p =0.022). Patients who lived with children with manic episode were significantly higher than those with major depressive episode, and patients who did not live with children with major depressive episode were significantly higher than those with manic episode (p =0.038). Patients who had no fixed income with major depressive episode were significantly higher than those with manic episode and patients who had retirement salary with manic episode were significantly higher than those with major depressive episode (p =0.006). There was no significant difference in type of current episode in patients with salary and financial support from family (Table 6).

Table (6): Housing condition, income and type of current episode that cause rehospitalization within 6 months since last admission

		Type of current episode					
		Major depressive episode (n =44)		Manic episode (n =52)		Chi square test	
		No	%	No	%	x^2	p value
Crowding index	Less than 1 (average)	16	36.4%	8	15.4%	12.81	**0.002***
	1 -1.5 (crowded)	12	27.3%	33	63.5%		
	More than 1.5 (severely crowded)	16	36.4%	11	21.2%		
Has home	Has home	44	100%	52	100%	-	-
	Homeless	0	0%	0	0%		
Home ownership	Rented	14	31.8%	6	11.5%	5.94	**0.022***
	Owned	30	68.2%	46	88.5%		
Living with children	lives	13	29.5%	28	53.8%	6.53	**0.038***
	no	31	70.5%	24	46.2%		
Fixed income	No fixed income	28	63.6%	18	34.6%	11.11	**0.006***
	Salary	13	29.5%	19	36.5%		
	Retirement salary	3	6.8%	12	23.1%		
	Financial support from family	0	0%	3	5.8%		

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

The patients who received ECT with manic episode were significantly higher than those with major depressive episode (p =0.02). Regarding medication used at discharge, patients with major depressive disorders who were on antidepressants were significantly higher than manic patients who were on antidepressant (p <0.001), but patients with manic episode on mood stabilizers and antipsychotics were significantly higher than those with major depressive disorders on mood stabilizers and antipsychotics (p =0.008, 0.045 respectively). There was no significant difference in use of long-acting medications, compliance between patients with current major depressive episode or manic episode (Table 7).

Table (7): Cause of discharge, management plan and type of current episode that cause rehospitalization within 6 months since last admission

		Type of current episode					
		Major depressive episode (n =44)		Manic episode (n =52)		Chi square test	
		No	%	No	%	x^2	p value
ECT	Received	26	59.1%	42	80.8%	5.42	**0.02***
	Not	18	40.9%	10	19.2%		
Cause of discharge	Improvement	41	93.2%	52	100%	3.45	0.102
	Against medical advice	3	6.8%	0	0%		
Medication at discharge	Antidepressant	28	63.63%	3	5.77%	36.51	**<0.001***
	Mood stabilizers	38	86.36%	52	100%	7.56	**0.008***
	Antipsychotics	38	86.36%	51	98.07%	4.84	**0.045***
	Others	13	29.54%	18	34.61%	0.28	0.665
Long-acting antipsychotics	Prescribed	14	31.8%	17	32.7%	0.008	0.927
	Not	30	68.2%	35	67.3%		
Compliance	Compliant	26	59.1%	23	44.2%	2.106	0.147
	Not	18	40.9%	29	55.8%		

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

Patients with social isolation who had major depressive episode were significantly higher than those with manic episode (p =0.002). There was no significant difference in type of episode between patients with or without care giver, and patients who had or did not have supportive family. Patients with suicidal thoughts were significantly higher in patients with major depressive episode than those with manic episode (p <0.001). Functioning patients were significantly higher in patients with major depressive episode than those with manic episode (p =0.001) (Table 8).

Table (8): Social support, suicidal thoughts, functioning and type of current episode that cause rehospitalization within 6 months since last admission

		Type of current episode					
		Major depressive episode (n =44)		Manic episode (n =52)		Chi square test	
		No	%	No	%	x^2	p value
Social isolation	Present	20	45.5%	8	15.4%	10.43	**0.002***
	Not	24	54.5%	44	84.6%		
Care giver	Has care giver	44	100%	49	94.2%	2.62	0.247
	Has no care giver	0	0%	3	5.8%		
Supportive family	Supportive	31	70.5%	35	67.3%	0.110	0.827
	Not supportive	13	29.5%	17	32.7%		
Suicidal thoughts	Had	9	22%	0	0%	12.64	**<0.001***
	No	32	78%	52	100%		
Functioning	Functioning	18	43.9%	40	76.9%	10.65	**0.001***
	Not	23	56.1%	12	23.1%		

*P > 0.05: Non significant (NS); **P < 0.05: Significant (S); ***P < 0.01: Highly significant (HS)

DISCUSSION

Affective diseases describe mood disorders including unipolar and bipolar depression and mania. Bipolar disorder (BD), formerly known as manic-depressive illness, is a severe mood disorder characterised by alternating periods of mania, hypomania, and depression with subsyndromal symptoms in between [(8)]. In terms of global disability and mortality, BD ranks high. It's often linked to other health problems and mental health issues that may make daily living difficult. Bipolar disorder (BD) is further classified as BD I and BD II [(9)]. About a third of individuals will have a recurrence of depression or mania after receiving therapy for it within a year [(6)]. There have only been a few of studies that have looked at readmission risk factors specifically for patients with BD [(10)].

The purpose of this research was to identify predictors of psychiatric readmission in patients with bipolar illness within six months of their last hospitalisation.

One hundred bipolar patients (the study sample group) were observed in a descriptive cross-sectional study at Abbassyia Mental Hospital. Patients were given a questionnaire designed specifically for the study, which covered a number of presumptive risk factors and was filled out by participants, informants, and psychiatrists. Because of the small number of patients in our sample who were classified as having a mixed episode, we did not include them in the comparison.

Patients' demographics prior to admission were as follows according to the current study: 25 men and 24 females in the less-than-3-month group, and 38 males and 13 females in the 3-to-6-month group. While **Baldessarini *et al.*** [(11)] discovered that BPD subjects were 52.3% females and 47.7% males, with a median age of 15-25 years old and this research revealed that the average age of its participants was 35.8 years old, and that 22 patients were unmarried and 10 patients were divorced during the last three months [(11)]. **Aguglia and coworkers** [(12)] observed that during the course of their 24-month trial, 730 participants with a mean age of 43.46 (13.9%) were included. More over half of the patients (55.6%), or 311 people, were females and 33.6% of the population was gainfully employed. Average onset age was 28.561.3 years when considering clinical features.

Three patients did not have no formal education, one patient had completed only elementary school, seven patients had completed high school, and six patients had completed college. All within the time frame of the current study, ten patients were unemployed, six patients were housewives, seven patients had professional jobs within the time frame of the present study. Also, within the time frame of the present study, three patients were housewives, and twelve patients were employees. Thus, there was a statistically significant change in employment between the time before this admission and the time before this admission, but there was no statistically significant variation in any other demographic variables.

Patients in the group with a shorter time to hospitalisation were more likely to be unmarried compared to those in the group with a longer time to admission, but this difference was not statistically significant, according to research conducted by **Shim and colleagues** [(13)]. Patients in the group with a shorter time to hospitalisation had a considerably higher unemployment rate than those in the group with a longer time to hospitalisation. There were no statistically significant variations in age and sex. Our study is matched with the comparative study on the effect of occupational status on time to readmission,

but the effect of marital status was not, possibly due to the lower marriage rate and incidence in our culture compared to the West or the belief that marriage is an effective treatment for mental illness.

Multiple biological processes (hypothalamic-pituitary-adrenal (HPA) axis, neurotransmission, immuno-inflammation, or neuroplasticity) have been hypothesised to be affected by childhood maltreatment, although the related biological disruptions are still poorly defined. Increased cortisol and HPA axis dysregulation have both been linked to BD, according to a meta-analysis of 41 research that focused on these factors. Childhood abuse and other environmental risk factors have been proposed as possible explanations for this [(14)].

Wharam and coworkers [(15)] discovered that among BP members with high-Deductible Insurance, there was an 11% decrease in trips to non-psychiatrist mental health providers but no change in visits to psychiatrists, emergency rooms, or hospitals. When it comes to health treatment for bipolar illness, high-deductible insurance plans don't seem to have a "blunt instrument" impact; rather, patients may make concessions in order to keep essential coverage. There may be a discrepancy between this finding and ours and the availability of reasonably priced mental health serveries in Egypt.

There was a statistically significant difference between the time before this hospitalisation and the time after delivery, the research revealed. Findings are consistent with those of **Harlow *et al.*** [(16)]**,** who found that only 0.04% and 0.01% of first-time mothers who had never been hospitalised for mental illness were admitted after giving birth due to postpartum bipolar episodes, while the corresponding figures for mothers who had been hospitalised for mental illness before giving birth were 9.24% and 4.48%. The likelihood of experiencing a psychotic or manic episode after giving birth rose dramatically depending on how recently the mother had been hospitalised before to pregnancy, how many times she had been hospitalised previously, and how long her most recent stay was. Over forty percent of women who were hospitalised during pregnancy for bipolar or psychotic conditions were readmitted within 30 days of giving birth. It has been estimated that 90 percent of postpartum psychosis and bipolar episodes occurred in the first four weeks following birth [(16)]. This conclusion may be explained by the fact that a woman's susceptibility to developing mental health issues or requiring psychiatric hospitalisation is greatest during pregnancy and the postpartum period. Indeed, this is particularly true for bipolar females. Up to 70% of pregnant women may have an acute mood episode, according to prospective research documenting bipolar episodes in pregnancy [(17)].

The current research indicated that there was a statistically significant difference between the time before the current admittance and the income level. **Hakulinen and coworkers** [(18)] discovered that people with severe mental problems had very low employment rates even before and particularly after receiving a diagnosis. Schizophrenia patients in particular had a disproportionate share of their overall income come from government handouts. After receiving a diagnosis of a major mental condition, more than half of people reported having no work earnings [(18)].

Patients with bipolar disorder who had moderate and infrequent episodes were able to commit to their jobs and keep their incomes stable, whereas those who suffered severe and frequent episodes and were not cooperative with treatment were unable to work at all.

There was a statistically significant difference in social isolation, psychoeducation, age at diagnosis, and age at first hospitalisation among our patients prior to their current stay. These findings corroborate those of **Fortuna *et al.*** [(19)]**,** who discovered that an increased frequency of psychiatric hospitalizations for bipolar disorder in the preceding six months was related with an elevated risk of social isolation. This may be viewed as evidence that patient and family psychoeducation, as well as a lack of social isolation, is beneficial in ensuring that patients take their medicines as prescribed, go to their follow-up appointments, and recognise the early warning symptoms of a relapse.

Statistically significant differences were found between the time since the previous admission, the kind of the most recent episode, and the time since the most recent admission. Patients with bipolar illness who have more than 10 episodes had a more severe result and higher admission rate according to research by **Di Marzo *et al.*** [(20)] The highly-recurrent group, which had a preponderance of depressed polarity, had much lower levels of education and employment. This variation may be attributed to the fact that families of people with bipolar disorder are more likely to readmit them during a manic phase, despite the fact that they think they are equipped to handle them during a depression period. No significant differences were detected between the time period preceding this admission and the reasons for discharge, suicidal ideation, or functioning, or between the drug screen and daily dosage, or between abstinence and substance use or addiction, length of sobriety, and treatment centre.

After following up with their patients, **Hansson and coworkers** [(21)] found that 90 people with bipolar illness (55 males and 35 women) had committed themselves (between 1 and 10 years). Suicide risk variables included male sex, living alone, a history of suicidal ideation or behaviour, a coexisting mental health problem, a recent episode of depression or other affective disorder, a criminal record, psychiatric inpatient treatment, and involuntary commitment [(21)].

The World Health Organization (WHO) identified the lowest suicide rate in the Eastern Mediterranean region, which is made up mostly of Arabic nations, however this researcher believes that this is due to the underestimate of suicide cases in this area. Rates of suicide are now lower in the Eastern Mediterranean Region (EMR) than they are in the European Union, the Pacific Rim, or East Asia [(22)].

In this study, researchers discovered a substantial correlation between smoking and the time leading up to hospitalisation. **Li *et al.*** [(23)] discovered that although there was no difference between manic-depressive disorder and bipolar disorder or schizophrenia, the rates of smoking in those conditions were much higher than in MDD. For the mind, smokers fared better than non-smokers. Smoking was substantially linked with male gender, living alone, greater income, later age of onset, health insurance coverage, and earlier age of first episode in at least one diagnostic category. Smoking seems to increase the prevalence of bipolar illness and its associated hospitalisation [(23)]. One possible explanation for this finding is the correlation between the intensity of manic symptoms and tobacco use, as described in research that also identified a link between smoking and manic symptoms [(24)].

The current study found that both the group of patients who obtained their substance of choice from family members less than three months prior to admission and the group of patients who obtained their substance of choice from their place of employment three to six months prior to admission had significantly higher rates of relapse. According to research conducted by **Chatterton** [(25)]**,** households where at least one person suffers from bipolar illness are substantially more likely to spend money on emergency room visits, hospitalizations, and medication. Bipolar families had yearly health care expenses that were more than three times as high as control households. Findings like these show that bipolar illness has a considerable economic effect on families beyond the affected person. This finding makes sense given that patients who were readmitted during the first three months after their last hospital admission (early relapse) were financially reliant on their relatives.

Based on our research, we know that during mania guys were found to be substantially higher than females, however females were found to be significantly higher than males when it came to depressive episodes. About twice as many women as males experience depression each year. However, it is often believed that the stated equal prevalence of illness in men and women with bipolar disorder does not represent any significant gender differences. While the incidence of bipolar disorder is reported to be about the same in men and women, women seem to be at a higher risk for developing the condition and experiencing bouts of hypomania, fast cycling, and mixed mania/depression. Co-morbidity patterns also show significant differences between the sexes. Several factors related to depression, such as episode rates, age at beginning, polarity of symptoms, symptoms' intensity, illness's response to therapy, and suicidal ideation, have not been observed to vary consistently by gender [(26)]. This discrepancy may be explained by the cultural belief that families can manage manic characteristics like impulsivity and violence in females, whereas the greater rates of depression in women may be the result of biological differences.

The results of this research showed that married people had a greater rate of manic episodes than divorced people had of severe depressive illness. In terms of episode classification, there was no discernible difference between patients who were single and those who had lost a spouse. While 90% of marriages with a spouse with bipolar illness end in divorce, just 7% of residents in nursing homes were divorced in 2004, according to a national survey. However, 79% of people were "lonely" (i.e., they were widowed, divorced, separated, never married, or single). Divorce rates were greatest in areas with a large concentration of people who suffered from bipolar disorder, paranoid schizophrenia, and schizoaffective disorder. Persons diagnosed with schizophrenia, bipolar disorder, or paranoid personality disorder also had the greatest rates of loneliness. People with schizophrenia, OCD, and bipolar disorder were more likely to have never married than the general population [(27)]. An explanation for this might be that the stress of marriage in our society is higher than in comparable societies.

Patients without employment who had a severe depressive episode were much more common than those without jobs who experienced a manic episode, and vice versa for patients with professional occupations who experienced a manic episode. Concerning the employed, the retired, the housewives, and the workers, there was no statistically significant variation in the frequency of any given episode type. Another research indicated that depressive people with borderline personality disorder were more likely to be chronically jobless than sad people without borderline personality disorder. Patients with bipolar depression did not vary from those with major depressive disorder who did not also have borderline personality disorder [(28)]. It's common knowledge that being unemployed raises one's chances of feeling down.

The present study identified no statistically significant differences between patients with severe depressive episodes and patients with manic episodes in terms of education, residence, age, or body mass index. Patients with bipolar illness were more likely to have sadness as their initial episode than mania, according to research by **Wang *et al.*** [(29)]**.** Mania patients were diagnosed with bipolar disorder at an older age than those with depression did. They also

had lower levels of education and had longer delays between their first episode of mental symptoms and their diagnosis. Both males and those without psychotic symptoms were overrepresented in the mania group. More women than men were represented in the depression group, and more patients reported a trigger event before their first bout of depression than in the mania group. The mania group showed greater relapses at 12, 18, and 24 months as compared to the depression group. A possible explanation for the discrepancy in findings is that Egyptians are more likely to ascribe their feelings of despair to spiritual causes, delaying the diagnosis of bipolar illness.

In addition, the current study found no statistically significant differences between patients with major depressive episodes and patients with manic episodes with respect to child abuse, traumatic events, recent stressors, insurance, type of current episode, crowding index more than 1.5 as a risk factor for readmission, admission after labour, number of labour and type of current episode, or crowding index. Patients who had an admission in their family tree were not significantly different from those who did not in terms of the nature of their present episode. The patients' psychoeducation, number of hospitalizations, age at diagnosis, and age at initial admission did not vary significantly across the types of episodes, and neither did the patients' presence or absence of a care provider or the presence or absence of a family that provided emotional support. Studies conducted by **Leelahanaj and coworkers** [(30)] revealed that over 50% of relapses were serious depressive episodes. A depressed episode took longer to be readmitted than a manic one did. Individuals with severe depressive episodes and social isolation were found to be substantially more common than patients with manic episodes and social isolation. Isolation and a lack of felt or received emotional support were shown to have the strongest and most consistent links to all depressive outcomes, as was previously established by **Barger *et al.*** [(31)] loneliness and unmet support were shown to be the only independent predictors of a full-blown depressive episode, although all other social connection categories except married status were related with depressed symptoms. Significantly more patients with a history of drug use were also readmitted with a manic episode than with a severe depressive episode, and patients who rented their home were more likely to be readmitted than those who owned their home. Previous research has shown that the prevalence of co-occurring drug use disorders does not vary significantly by socioeconomic position (SES). This suggests that poorer socioeconomic status among teenagers with BD may be related to legal troubles regardless of substance use disorder. Acute manic/depressive episodes were also connected with the higher risk of delinquency in adults with BD [(31)]. This finding may be explained by the correlation between patients' poor socioeconomic position and housing stress, which in turn contributes to relapses in their depressive episodes. Manic individuals' tendency for impulsive actions may be taken as evidence of their prior drug abuse. Patients who do not live with children are more likely to be readmitted owing to a severe depressive episode, whereas patients who do live with children are more likely to be readmitted due to a manic episode, as shown in this research.

After accounting for demographics and considering other strong indicators, social connectedness remained an insignificant predictor of early psychiatric readmission (EPR). Although our findings are inconsistent with those of the prior literature [(32)]. More investigation into the processes through which community support influences treatment, recovery, and EPR is warranted [(1)].

The rate of suicide ideation among readmitted patients with a severe depressive episode was considerably greater than that of those readmitted with mania. Factors such as earlier illness beginning, female gender, initial episode polarity (depressive), frequency of depressed episodes, depressive polarity of the current or most recent mood episode, and associated anxiety disorders may account for this finding. Suicide is a leading cause of death among people with mood disorders treated in psychiatric hospitals, and those with BDs may have a little greater risk of suicide than those with major depressive disorder. Studies of patients who died by suicide recently had a significant depressive episode or a mixed disease episode, suggesting that these conditions were causal. When compared to those who experience euthymia, the number of those who attempt suicide increases by a factor of 20-40 [(33)].

There was a statistically significant difference between the groups of patients readmitted with major depressive episode and patients readmitted with mania in terms of the number of patients who had regular outpatients' follow-up and were functional. **Hakulinen and coworkers** [(18)] discovered that people with severe mental problems had very low employment rates even before and particularly after receiving a diagnosis. Schizophrenia patients in particular had a disproportionate share of their overall income come from government handouts. After receiving a diagnosis of a major mental condition, more than half of people reported having no work earnings [(18)]. This conclusion may be explained by the fact that people in our community tend to assist those with depression in maintaining their employment, whereas they tend to discourage those with manic depression from doing so, due to the impulsive and violent character of those with manic depression.

Patients who were taking antidepressants at the time of their last discharge were more likely to be readmitted with a major depressive episode, while patients who were taking mood stabilisers and antipsychotics at the time of their last discharge were more likely to be readmitted due to a manic episode, as

shown by this study. An antidepressant should be used with care as a first-line therapy in bipolar depression, always in conjunction with quetiapine or an antimanic, or to add lamotrigine; if psychotic characteristics are present, an antipsychotic such olanzapine, quetiapine, or risperidone should be added. Electroconvulsive therapy (ECT) is regarded by many clinicians as the most effective treatment for treatment-resistant bipolar depression, but no randomised controlled trials have been conducted, to the authors' knowledge. This result disagrees with another study, which showed that receiving ECT at last discharge was significantly higher in patients who were readmitted due to manic episodes than who were readmitted due to depressive episode. In patients with treatment-resistant bipolar depression, they looked at how ECT stacked up against algorithm-based pharmaceutical therapy [(35)].

The number of patients whose manic episodes lasted longer than a month on average during each hospitalisation was substantially greater than the number of patients whose severe depressive episodes lasted longer than a month on average during each admission. Patients admitted at various times did not vary significantly in the nature of their most recent episode.

There was no significant difference between patients with a current major depressive episode and those with a manic episode in terms of the use of long-acting medications, compliance, side effect complains, side effects cause discontinuation, smoking, longest abstinence, or source of money to get substances. Patients experiencing a manic episode had much greater urine retention than those experiencing a severe depressive episode. Overall, around a third of individuals have another episode of depression or mania despite receiving therapy. Across all time periods, people with bipolar disorder were more likely to be readmitted when they had certain risk indicators. Therefore, it may be ideal to avoid psychiatric readmissions for patients with BD by creating and executing novel transitional care efforts that address the problems of frequent mental hospitalizations, housing instability, lack of insurance, and functional impairment.

CONCLUSION

It is estimated that around one-third of people with BP illness may have a recurrence of depressive or manic symptoms despite therapy. Across all time periods, people with bipolar disorder were more likely to be readmitted when they had certain risk indicators. Innovative transitional care programmes that address the challenges of frequent psychiatric hospitalizations, housing instability, insurance coverage, and functional impairment may be the best way to reduce psychiatric readmissions for patients with BD.

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REFERENCES

1. **Zhao Y, Castellanos F (2016):** Annual research review: discovery science strategies in studies of the pathophysiology of child and adolescent psychiatric disorders - pro- mises and limitations. J Child Psychol Psychiatry, 57: 421–439.
2. **Vieta E, Salagre E, Grande I *et al.* (2018):** Early Intervention in Bipolar Disorder. Am J Psychiatry, 175: 411–26.
3. **American Psychiatric Association (2013):** Diagnostic and statistical manual of mental disorders (5th ed.). Washington.https://doi.org/10.1176/appi.books.9780890425596
4. **Merikangas K, Akiskal H, Angst J *et al.* (2007):** Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication. Archives of General Psychiatry, 64: 543–552.
5. **Carvalho A, Fernandes A, Martins R *et al.* (2020):** Laser induced graphene piezoresistive sensors synthesized directly on cork insoles for gait analysis. Advanced Materials Technologies, 5 (12): 2000630. https://doi.org/10.1002/admt.202000630
6. **Crump C, Sundquist K, Winkleby M *et al.* (2013):** Comorbidities and mortality in bipolar disorder: A Swedish national cohort study. Journal of the American Medical Association Psychiatry, 70: 931–939.
7. **Hamilton J, Rhoades H, Galvez J *et al.* (2015):** Factors differentially associated with early readmission at a university teaching psychiatric hospital. Journal of Evaluation in Clinical Practice, 21: 572–578.
8. **Jain A, Mitra P (2022):** Bipolar Affective Disorder. In: StatPearls. Treasure Island (FL): StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK558998/
9. **Blanco C, Compton W, Saha T *et al.* (2017):** Epidemiology of DSM-5 bipolar I disorder: Results from the National Epidemiologic Survey on Alcohol and Related Conditions - III. J Psychiatr Res., 84: 310-317.
10. **Woo Y, Bahk W, Jung Y *et al.* (2014):** One-year rehospitalization rates of patients with first-episode bipolar mania receiving lithium or valproate and adjunctive atypical antipsychotics. Psychiatry and Clinical Neurosciences, 68: 418–424.
11. **Baldessarini R, Tondo L, Vazquez G *et al.* (2012):** Age at onset versus family history and clinical outcomes in 1,665 international bipolar-I disorder patients. World Psychiatry, 11 (1): 40-6.
12. **Aguglia A, Borsotti A, Maina G (2018):** Bipolar disorders: is there an influence of seasonality or photoperiod? Revista Brasileira de Psiquiatria, 40: 6–11.
13. **Shim I, Woo Y, Wang H *et al.* (2017):** Predictors of a Shorter Time to Hospitalization in Patients with Bipolar Disorder: Medication during the Acute and Maintenance Phases and Other Clinical Factors. Clin Psychopharmacol Neurosci., 15 (3): 248-255.
14. **Murri B, Davide P, Martino M *et al.* (2016):** The HPA Axis in bipolar disorder: systematic review and meta-analysis. Psychoneuroendocrinology, 63: 327–342.

15. **Wharam J, Busch A, Madden J *et al.* (2020):** Effect of High-Deductible Insurance on Health Care Use in Bipolar Disorder. The American Journal of Managed Care, 26 (6): 248-55.
16. **Harlow B, Vitonis A, Sparen P *et al.* (2007):** Incidence of Hospitalization for Postpartum Psychotic and Bipolar Episodes in Women with and Without Prior Prepregnancy or Prenatal Psychiatric Hospitalizations. Arch Gen Psychiatry, 64 (1): 42-48.
17. **Norhayati M, Hazlina N, Asrenee A *et al.* (2015):** Magnitude and risk factors of postpartum symptoms: a literature review. J Affect Disord., 175: 34–52.
18. **Hakulinen C, Elovainio M, Arffman M *et al.* (2020)** Employment Status and Personal Income Before and After Onset of a Severe Mental Disorder: A Case-Control Study. Psychiatric Services, 71: 3-7.
19. **Fortuna K, Brusilovskiy E, Snethen G *et al.* (2020):** Loneliness and its association with physical health conditions and psychiatric hospitalizations in people with serious mental illness. Soc Work Ment Health, 18 (5): 571-585.
20. **Di Marzo S, Giordano A, Pacchiarotti I *et al.* (2006):** The impact of the number of episodes on the outcome of bipolar disorder. The European Journal of Psychiatry, 20 (1): 21-28.
21. **Hansson C, Joas E, Pålsson E *et al.* (2018):** Risk factors for suicide in bipolar disorder: a cohort study of 12 850 patients. Acta Psychiatr Scand., 138 (5): 456-463.
22. **Rezaeian M (2007):** Age and sex suicide rates in the Eastern Mediterranean region based on global burden of disease estimate for 2000. East Mediterr Health J., 13 (4): 953–60.
23. **Li M, Chang H, Xiao X (2016):** BDNF Val66Met polymorphism and bipolar disorder in European populations: A risk association in case-control, family-based and GWAS studies. Neurosci Biobehav Rev., 68: 218–233.
24. **Dodd S, Berk M (2004):** The pharmacology of bipolar disorder during pregnancy and breastfeeding. Expert Opinion on Drug Safety, 3: 221–229.
25. **Chatterton M, Lewis B, Lazarus A *et al.* (2008):** Rajagopalan KImpact of bipolar disorder on the family: Utilization and cost of health care resources. https://www.mendeley.com/catalogue/dbab0b88-064a-37b0-b778-7c1e3e7f88a7
26. **Diflorio A, Jones I (2010):** Is sex important? Gender differences in bipolar disorder. International Review of Psychiatry, 22 (5): 437-52.
27. **Walid M, Zaytseva N (2011):** Which Neuropsychiatric Disorder Is More Associated with Divorce? Journal of Divorce & Remarriage, 52 (4): 220-224.
28. **Zimmerman M, Young D, Martinez J *et al.* (2012):** Sustained unemployment in psychiatric outpatients with bipolar depression compared to major depressive disorder with comorbid borderline personality disorder. Bipolar Disorders, 14 (8): 856-62.
29. **Wang Z, Cao Y, Zhu Y *et al.* (2021):** Differences in Demographic and Clinical Characteristics of Patients with Depressive vs. Manic First Episode of Bipolar Disorder. Frontiers in Psychiatry, 12: 616415. doi: 10.3389/fpsyt.2021.616415
30. **Leelahanaj T, Kongsakon R, Choovanichvong S *et al.* (2013):** Time to relapse and remission of bipolar disorder: findings from a 1-year prospective study in Thailand. Neuropsychiatr Dis Treat., 9: 1249-56.
31. **McCabe P, Christopher P, Pinals D *et al.* (2013):** Predictors of criminal justice involvement in severe mania. J Affect Disord., 149: 367–74.
32. **Bromley E, Gabrielian S, Brekke B *et al.* (2013):** Experiencing community: Perspectives of individuals diagnosed as having serious mental illness. Psychiatr Serv., 6: 672–679.
33. **Schaffer A, Isometsä E, Azorin J *et al.* (2015):** A review of factors associated with greater likelihood of suicide attempts and suicide deaths in bipolar disorder: Part II of a report of the International Society for Bipolar Disorders Task Force on Suicide in Bipolar Disorder. Aust N Z J Psychiatry, 49 (11): 1006-20.
34. **National Collaborating Centre for Mental Health (UK) (2006):** bipolar disorder: The Management of Bipolar Disorder in Adults, Children and Adolescents, in Primary and Secondary Care. https://pubmed.ncbi.nlm.nih.gov/21796830/
35. **Schoeyen H, Kessler U, Andreassen O *et al.* (2015):** Treatment-resistant bipolar depression: a randomized controlled trial of electroconvulsive therapy versus algorithm-based pharmacological treatment. Am J Psychiatry, 172: 41–51.