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ANALYSIS OF PATIENT CHARACTERISTICS AND DRUG UTILIZATION IN BIPOLAR DISORDER AT DR. SARDJITO GENERAL HOSPITAL - YOGYAKARTA

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RESEARCH **OPEN ACCESS**

ABSTRACT

Introduction: Bipolar disorder is a chronic psychiatric disorder characterized by alternating episodes of mania/hypomania and depression. These episodes significantly compromise patients' quality of life. Understanding patients' sociodemographic characteristics, clinical profile, and drug utilization patterns is critical for ensuring therapy effectiveness and preventing relapse. This study aims to analyze characteristics of patients with bipolar disorder, relationships between sociodemographic factors and types of mood episodes, as well as drug utilization patterns among inpatients at Dr. Sardjito General Hospital, Yogyakarta.
Methods: Data from 72 inpatients diagnosed with bipolar disorder according to ICD-10 (codes F31.0–F31.7) and admitted between January 2021 and December 2023 were included in this analytical cross-sectional study. Data were extracted from patients' electronic medical records and analyzed using the Fisher-Freeman-Halton test.
Results: A total of 52.8% patients were diagnosed with severe depressive episode with psychotic symptoms (F31.5), thereby making it the top diagnosis. Results also demonstrate a correlation between types of mood episodes and all sociodemographic characteristics of respondents, including age (p=0.011), sex (p=0.029), marital status (p=0.025), educational background (p=0.030), and occupation (p=0.017). Quetiapine was the most used antipsychotic drug (56.8%), whereas Fluoxetine was the most common antidepressant (64.9%). Diazepam (42.2%) and Divalproex (74.3%) were the most frequently prescribed sedative and mood stabilizer, respectively.
Discuss: Frequent use of antidepressants, particularly fluoxetine, in patients with bipolar disorder. Because antidepressants cannot be used as monotherapy in bipolar disorder due to the risk of switching into mania or rapid cycling, their presence in the medication profile should be interpreted as adjunctive therapy within combination regimens rather than stand-alone treatment.
Conclusion: Sociodemographic characteristics of patients are associated with types of mood episodes associated with bipolar disorder. These findings highlight the need for personalized therapies that take patient characteristics into account to improve the effectiveness of bipolar treatment.

Keywords: bipolar, characteristic, treatment.

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INTRODUCTION

Bipolar disorder is a mental disorder characterized by extreme mood shifts. The mood episodes are similar to two opposite poles and are referred to as depression and mania. During manic episodes, patients with bipolar disorder feel euphoric and experience an extreme surge of energy, while some may present hyperactivity and/or high-risk behaviors. In contrast, depressive episodes are indicated by extreme sadness, helplessness, and hopelessness, which in severe conditions can lead to suicidal thoughts. Without optimal treatment, these symptoms not only impose a burden on patients but also put them at high risk of social dysfunction and disease progression.[1] Prevalence of bipolar disorder is approximately 1 percent of the population, with people of working age predominating.[2] Bipolar disorder is a multifactorial condition, involving the interaction of genetic predisposition and environmental influences. Family history of bipolar disorder

increases one's likelihood of developing the illness, while psychosocial stressors and comorbidity with other psychiatric disorders contribute to the course of the illness. Bipolar disorder is more prevalent among divorced individuals and people living alone compared to married people; it is likewise more frequently found among people with low levels of education and unemployed individuals.[3]

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Identifying risk factors associated with bipolar episodes can enhance understanding of the course of the disorder. For instance, manic episodes are more prevalent in men and those with abnormal sleeping patterns and severe stress, whereas depressive and mixed episodes occur more frequently in women, and are associated with genetic conditions and other mood disorders. This understanding can provide a foundation for more personal and timely therapeutic intervention and help prevent relapse.[4]

In general, treatment for bipolar disorder combines pharmacology and psychotherapy. Mood stabilizer, antipsychotic medications, and antidepressants are the key components in pharmacological intervention.[5,6] However, the effectiveness of pharmacological therapy varies between patients. Non-modifiable factors, such as age, sex, and the onset of the disorder, may affect patients' responses to medication, underscoring the need for a personalized approach.[7] Evaluating drug use is essential to enhance the effectiveness of therapy, minimize side effects, and lower relapse risks.[1]

This study aims to review demographic and clinical characteristics of patients, risk factors associated with manic and depressive mood episodes, as well as drug utilization patterns in patients with bipolar disorder. Understanding the relationship between patients' characteristics and types of mood episodes is expected to enable more effective and personalized therapeutic intervention, thereby improving patients' overall quality of life.

METHOD

This analytical cross-sectional study utilized medical record data from Dr. Sardjito General Hospital for the period January 2021 through December 2023. Only inpatients admitted to the psychiatric unit of Dr. Sardjito General Hospital and diagnosed with Bipolar Affective Disorder according to ICD-10 (codes F31.0, F31.1, F31.2, F31.3, F31.4, F31.5, F31.6, F31.7) were included. Patients with organic mental disorders and incomplete medical records were excluded.

Subsequently, data were analyzed using SPSS 27.0. Categorical variables were summarized as frequencies and percentages, and the *Fisher-Freeman-Halton* test was used to compare them in small samples. Ethical approval was obtained from the Research Ethics Committee, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada (approval letter no. KE/FK/1118/EC/2024).

RESULT

Subject Characteristics

This study included 72 inpatients at Dr. Sardjito General Hospital, and their characteristics are presented in Table 1. The majority of subjects were 20–30 years old (62.5%), female (91.7%), and unmarried (77.8%). With respect to occupation, most patients (47.2%) were university students, and in terms of education, the majority (68.1%) had senior or vocational high school or equivalent. Most diagnoses (52.8%) were F31.5, or bipolar disorder current episode severe depression with psychotic symptoms. Overall, the demographic data indicate that the inpatient population was predominantly young adult, female, unmarried, and currently pursuing or having recently completed secondary education.

Analysis of Patient Characteristics by Diagnosis

As shown in Table 2, most patients with bipolar (62.5%) were in the 20–30 year age group, and the predominant diagnosis was F31.5 (60.0%), with a statistically significant relationship (p=0.011). According to sex, the majority of patients were female (91.7%), with most diagnosed with severe depression with psychotic symptoms (F31.5) (56.1%). Male patients, on the other hand, showed a higher proportion of manic episodes without psychotic symptoms (F31.1) and severe depressive episodes without psychotic symptoms (F31.4). There was a statistically significant association between sex and episode types (p=0.029).

Patients were predominantly unmarried (77.8%), and the majority (57.1%) of subjects in this category experienced a severe depressive episode with psychotic symptoms (F31.5). Marital status showed a statistically significant difference across types of bipolar episodes (p=0.025). Additionally, nearly half (47.2%) of the patients were university students, and 61.8% of them were diagnosed with severe depressive episode with psychotic symptoms (F31.5). A significant difference was found between occupation and types of episodes in bipolar disorder (p=0.017).

Regarding education, the largest proportion (68.1%) of patients had senior/vocational high school or equivalent education, and 57.1% of them experienced a severe depressive episode with psychotic symptoms (F31.5). There was also a statistically significant difference between education levels and types of episodes in bipolar disorder (p=0.030), suggesting that sociodemographic factors may influence the clinical course of illness.

Drug Utilization Profile

Table 3 illustrates the distributions of drugs across bipolar disorder diagnoses. Quetiapine was the most frequently prescribed (58.3%) antipsychotic, followed by aripiprazole (51.4%) and clozapine (31.9%). Olanzapine (22.2%) and risperidone (25.0%) were also prescribed, albeit in lower proportions. Fluoxetine was the most commonly used (66.7%) antidepressant, at a much greater proportion than amitriptyline (11.1%) and sertraline (8.3%). Because antidepressants cannot be used as monotherapy in bipolar disorder due to the risk of inducing mania or rapid cycling, their presence in this dataset

reflects their use as adjunctive therapy within combination regimens, not standalone treatment.

Diazepam was the most frequently used sedative (44.4%), followed by alprazolam (37.5%). Both lorazepam and clobazam were each prescribed to 23.6% of patients, whereas clonazepam and zolpidem were rarely prescribed (1.4% each). Divalproex was the predominant mood stabilizer (76.4%), followed by frimania (13.9%) and carbamazepine (1.4%). The relatively high use of alprazolam may reflect the presence of anxiety, agitation, or panic-related symptoms frequently co-occurring with bipolar episodes; however, this interpretation remains descriptive, as the cross-sectional design cannot determine causality.

In general, treatment of bipolar disorder in the majority of patients across various types of mood episodes commonly involves combinations of quetiapine, fluoxetine, divalproex, and sedatives such as diazepam or alprazolam. Antipsychotics such as quetiapine and aripiprazole were often prescribed to treat patients who experienced severe depressive and mixed bipolar episodes, whereas olanzapine, quetiapine, and chlorpromazine were commonly prescribed to patients experiencing manic episodes. Fluoxetine and divalproex were the leading antidepressant and mood stabilizer, respectively, for all bipolar diagnoses. Sedatives, particularly diazepam and alprazolam, were also frequently prescribed, primarily to patients experiencing either severe depressive episodes with psychotic symptoms or mixed episodes.

Table 1. Subject Characteristics

Characteristics	Total	
	n	%
Age		
- <20	14	19.4%
- 20-30	45	62.5%
- 30-40	7	9.7%
- >40	6	8.3%
Sex		
- Female	66	91.7%
- Male	6	8.3%
Marital status		
- Unmarried	56	77.8%
- Married	16	22.2%
Occupation		
- Teacher/ lecturer	2	2.8%
- Homemaker	10	13.9%
- University student	34	47.2%
- Civil servant	1	1.4%
- Private employee	7	9.7%
- Laborer/ freelancer	1	1.4%
- Student	11	15.3%
- Farmer	1	1.4%
- Unemployed	1	1.4%
- Entrepreneur	4	5.6%
Education		
- No formal education	4	5.6%
- Primary school or equivalent	1	1.4%
- Junior high school or equivalent	3	4.2%
- Senior/vocational high school or equivalent	49	68.1%
- Associate degree	3	4.2%
- Applied bachelor's degree	1	1.4%
- Bachelor's degree	11	15.3%
Diagnosis		
- F31.1 Bipolar disorder current episode mania without psychotic symptoms	7	9.7%
- F31.2 Bipolar disorder current episode mania with psychotic symptoms	9	12.5%
- F31.4 Bipolar disorder current episode severe depression without psychotic symptoms	8	11.1%
- F31.5 Bipolar disorder current episode severe depression with psychotic symptoms	38	52.8%
- F31.6 Bipolar disorder current mixed episode	10	13.9%

Table 2. Patient Characteristics by Diagnosis

Variables	Total		Diagnosis										*p-value*
			F31.1		F31.2		F31.4		F31.5		F31.6		
	n	%	n	%	n	%	n	%	n	%	n	%	
Age													0.011[a]
<20	14	19.4%	0	0.0%	1	7.1%	2	14.3%	8	57.1%	3	21.4%	
20-30	45	62.5%	2	4.4%	4	8.9%	6	13.3%	27	60.0%	6	13.3%	
30-40	7	9.7%	4	57.1%	2	28.6%	0	0.0%	1	14.3%	0	0.0%	
>40	6	8.3%	1	16.7%	2	33.3%	0	0.0%	2	33.3%	1	16.7%	
Sex													0.029[a]
Female	66	91.7%	5	7.6%	8	12.1%	6	9.1%	37	56.1%	10	15.2%	
Male	6	8.3%	2	33.3%	1	16.7%	2	33.3%	1	16.7%	0	0.0%	
Marital Status													0.025[a]
Unmarried	56	77.8%	4	7.1%	4	7.1%	8	14.3%	32	57.1%	8	14.3%	
Married	16	22.2%	3	18.8%	5	31.3%	0	0.0%	6	37.5%	2	12.5%	
Occupation													0.017[a]
Teacher/Lecturer	2	2.8%	0	0.0%	1	50.0%	0	0.0%	0	0.0%	1	50.0%	
Homemaker	10	13.9%	3	30.0%	1	10.0%	0	0.0%	5	50.0%	1	10.0%	
University student	34	47.2%	2	5.9%	1	2.9%	4	11.8%	21	61.8%	6	17.6%	
Civil servant	1	1.4%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	
Private employee	7	9.7%	0	0.0%	3	42.9%	1	14.3%	3	42.9%	0	0.0%	
Laborer/freelancer	1	1.4%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	
Student	11	15.3%	0	0.0%	2	18.2%	2	18.2%	7	63.6%	0	0.0%	
Farmer	1	1.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	
Unemployed	1	1.4%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Entrepreneur	4	5.6%	1	25.0%	0	0.0%	1	25.0%	1	25.0%	1	25.0%	
Education													0.030[a]
No formal education	4	5.6%	1	25.0%	2	50.0%	0	0.0%	1	25.0%	0	0.0%	
Primary school or equivalent	1	1.4%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	
Junior high school or equivalent	3	4.2%	0	0.0%	1	33.3%	0	0.0%	1	33.3%	1	33.3%	
Senior/vocational high school or equivalent	49	68.1%	3	6.1%	2	4.1%	8	16.3%	28	57.1%	8	16.3%	
Associate degree	3	4.2%	2	66.7%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	
Applied bachelor's degree	1	1.4%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	
Bachelor's degree	11	15.3%	1	9.1%	3	27.3%	0	0.0%	6	54.5%	1	9.1%	

Note: a. The *Fisher-Freeman-Halton* Test (nominal data)

Table 3. Drug Utilization Profile

Drug	Diagnosis										Total	
	F31.1		F31.2		F31.4		F31.5		F31.6			
	n	%	n	%	n	%	n	%	n	%	n	%
Antipsychotics												
Olanzapine	5	31.3%	1	6.3%	1	6.3%	8	50.0%	1	6.3%	16	22.2%
Quetiapine	3	7.1%	5	11.9%	4	9.5%	25	59.5%	5	11.9%	42	58.3%
Risperidone	2	11.1%	3	16.7%	0	0.0%	12	66.7%	1	5.6%	18	25.0%
Aripiprazole	3	8.1%	0	0.0%	4	10.8%	24	64.9%	6	16.2%	37	51.4%
Clozapine	4	17.4%	3	13.0%	2	8.7%	12	52.2%	2	8.7%	23	31.9%
Chlorpromazine	4	33.3%	4	33.3%	0	0.0%	3	25.0%	1	8.3%	12	16.7%
Haloperidol	1	12.5%	3	37.5%	0	0.0%	4	50.0%	0	0.0%	8	11.1%
Trifluoperazine	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	1.4%
Antidepressant												
Fluoxetine	3	6.3%	2	4.2%	5	10.4%	31	64.6%	7	14.6%	48	66.7%
Amitriptyline	0	0.0%	0	0.0%	0	0.0%	8	100.0%	0	0.0%	8	11.1%
Sertraline	0	0.0%	0	0.0%	1	16.7%	5	83.3%	0	0.0%	6	8.3%
Sedatives												
Diazepam	3	9.4%	0	0.0%	2	6.3%	23	71.9%	4	12.5%	32	44.4%
Alprazolam	2	7.4%	1	3.7%	2	7.4%	19	70.4%	3	11.1%	27	37.5%
Lorazepam	2	11.8%	0	0.0%	1	5.9%	10	58.8%	4	23.5%	17	23.6%
Clonazepam	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	1	1.4%
Clobazam	1	5.9%	1	5.9%	1	5.9%	11	64.7%	3	17.6%	17	23.6%
Zolpidem	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	1.4%
Mood Stabilizer												
Divalproex	5	9.1%	7	12.7%	7	12.7%	26	47.3%	10	18.2%	55	76.4%
Frimania	1	10.0%	0	0.0%	1	10.0%	7	70.0%	1	10.0%	10	13.9%
Carbamazepine	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	1.4%

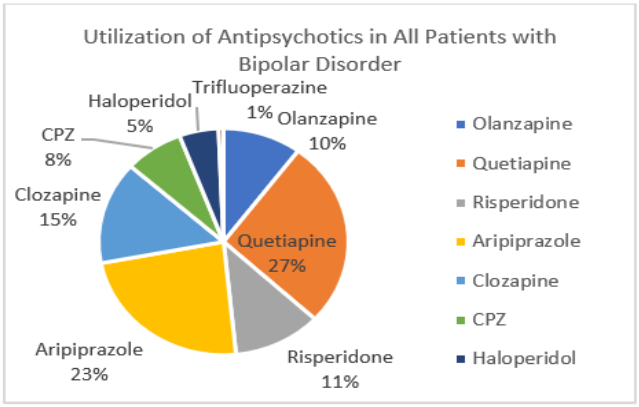

Figure 1. Antipsychotic Use among All Patients with Bipolar

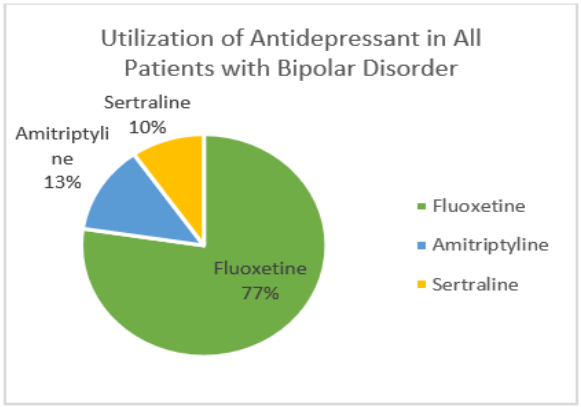

Figure 2. Antidepressant Use among All Patients with Bipolar

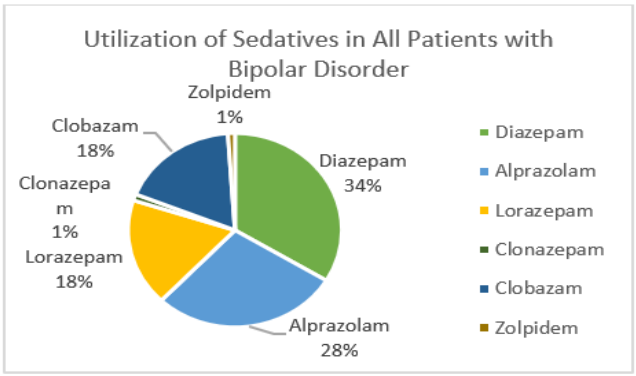

Figure 3. Sedative Use among All Patients with Bipolar

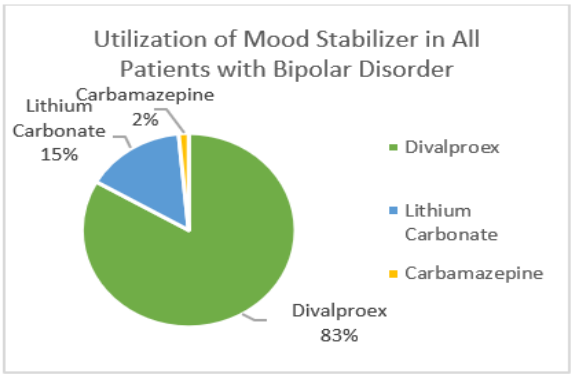

Figure 4. Mood Stabilizer Use among All Patients with Bipolar

DISCUSS

This study examined the differences in bipolar episodes across patient characteristics and drug utilization patterns. It was found that the most frequent diagnosis among patients was bipolar disorder, current episode severe depression with psychotic symptoms (F31.5), which accounted for 52.8% of the sample. This finding suggests that severe depressive episodes with psychotic symptoms were one of the predominant clinical presentations in this population. There was also a statistically significant association between bipolar episode types and sociodemographic characteristics, including age (p=0.011), sex (p=0.029), marital status (p=0.025), education (p=0.030), and occupation (p=0.017). These findings are consistent with previous studies suggesting that severe depressive episodes with psychotic symptoms tend to require more intensive clinical care compared to other types of episodes.[2] However, these observations reflect differences in distribution and do not imply directionality or causation.

The finding that younger, unmarried individuals were more frequently diagnosed with F31.5 aligns with earlier reports describing the vulnerability of this population to stress-related triggers.[3,9,10] Nevertheless, the current study design does not allow inference about risk factors or predictive relationships, and the results should be interpreted only as descriptive differences across diagnostic categories.

This study also found that most patients suffering severe depressive episodes were female. Previous studies have reported that depressive episodes tend to occur more frequently among women, while manic episodes are more frequently documented among men.[10] In the present study, these findings appear as significant differences in proportional distribution rather than tendencies or causal associations. Other studies similarly reported that unmarried female patients aged 26–35 years with a senior high school education often represented the largest proportion in hospital-based bipolar samples.[11–14]Regarding pharmacotherapy, first-line therapy for bipolar depression includes quetiapine and lurasidone, potentially combined with mood stabilizers. Lithium, quetiapine, and divalproex are recommended for bipolar mania.[6] Earlier research also reported a high rate of polytherapy, with divalproex frequently used as a mood stabilizer, often in combination with antipsychotics.[15] The present study reflects similar prescribing patterns, with most patients receiving multiple agents rather than monotherapy.

A notable finding in this study is the frequent use of antidepressants, particularly fluoxetine, in patients with bipolar disorder. Because antidepressants cannot be used as monotherapy in bipolar disorder due to the risk of switching into mania or rapid cycling, their presence in the medication profile should be interpreted as adjunctive therapy within combination regimens rather than stand-alone treatment. This is consistent with guideline recommendations, which caution that antidepressants in bipolar disorder must be combined with antipsychotics or mood stabilizers.

Sedatives, especially alprazolam and diazepam, were prescribed at high proportions. The relatively frequent use of alprazolam may reflect the presence of clinically significant anxiety, agitation, or panic-related symptoms commonly observed during bipolar depressive or mixed episodes. However, this interpretation remains speculative, as the cross-sectional dataset captures only prescription frequency, not symptom-based indications. Benzodiazepine use in bipolar disorder is often associated with the need for short-term management of agitation or insomnia during acute episodes, although long-term use requires caution.[1]

Lithium is recommended as a first-line mood stabilizer, especially for manic episodes, long-term maintenance, and suicide prevention. In this study, divalproex appeared more frequently than lithium; however, the dataset does not provide information on clinical reasoning, side-effect profiles, or monitoring considerations that may influence medication choice. Therefore, the observed prescribing pattern represents distribution differences rather than treatment preference or guideline deviation. Previous studies have similarly shown that many patients with bipolar disorder receive combinations of two or three drugs, including valproate and antipsychotics.[15]

The implications of this study are essential for describing patient characteristics and evaluating therapeutic patterns in bipolar disorder. However, given the study's cross-sectional design, the results cannot establish causality, identify risk factors, or establish predictive relationships among sociodemographic factors, clinical presentation, and drug selection. In addition, the limited sample size and single-center setting restrict the generalizability of findings.

Future studies with larger, more representative samples are needed to identify consistent patterns in bipolar clinical presentation and treatment. Longitudinal research is also required to evaluate treatment effectiveness, medication response, relapse prevention, and long-term outcomes. Further qualitative or mixed-method studies may also help explore clinical reasoning behind medication choices, particularly regarding benzodiazepine use and combination therapy strategies.

CONCLUSION

This study demonstrates that types of bipolar episodes were associated with differences in patients' sociodemographic characteristics, such as age, sex, marital status, education, and occupation. Patients frequently received combinations of antipsychotics, antidepressants, and mood stabilizers. Quetiapine was the most frequently used antipsychotic across most bipolar episodes, whereas fluoxetine and divalproex were the most commonly prescribed antidepressant and mood stabilizer, respectively. Sedatives were also relatively common, particularly diazepam and alprazolam.

These findings describe significant differences in prescribing patterns and episode distributions but do not indicate causality or predictive relationships. Awareness of these patterns may help support clinical decision-making, although further longitudinal and multi-center research is required to better understand treatment effectiveness and clinical outcomes in bipolar disorder.

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