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The relationship between sleep disturbances and psychiatric symptoms in patients with bipolar disorder

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Abstract
Background and Objective: Periods of manic and depressive episodes, typically accompanied by severe disturbances in sleep patterns, characterize bipolar disorder, a chronic mental illness. In addition to being prevalent in bipolar disorder, sleep problems can be a cause or an effect of mood episodes. This study set out to determine whether and how bipolar disorder patients with sleep disorders fared in terms of the intensity of their mental symptoms.
Material and Methods: This cross-sectional study encompassed 40 patients diagnosed with bipolar illness according to DSM-5 criteria, recruited from a tertiary psychiatric care institution. This research was performed in the Department of General Medicine, Madha Medical College and Research Institute, located at Kovur, Mangadu, Thandalam, Chennai, Tamil Nadu, India, from February 2016 to January 2017. The Pittsburgh Sleep Quality Index (PSQI) was utilized to evaluate sleep quality, while the Young Mania Rating Scale (YMRS) and Hamilton Depression Rating Scale (HDRS) were employed to gauge psychiatric symptom severity. Sociodemographic and clinical information was obtained via structured interviews. Statistical research was used to ascertain relationships between sleep disruptions and the severity of psychiatric symptoms.
Results: Seventy percent, or 28 out of 40 patients, had severe sleep disruptions according to the PSQI. There was a robust link between depressive symptoms and higher scores on the HDRS, suggesting a positive correlation between poor sleep quality and higher scores ($r = 0.65$, $p<0.01$). Furthermore, patients who went through manic episodes also showed changes in their sleep patterns. There was a moderate association between the PSQI and YMRS scores ($r = 0.48$, $p<0.05$). People who have experienced fast cycling in the past or who have not been consistent with taking their medication as prescribed were more likely to have sleep problems.
Conclusion: Patients with bipolar disorder are more likely to experience severe manic and depressed symptoms if they have trouble sleeping. In order to enhance clinical outcomes and prevent relapse, routine sleep monitoring and tailored therapies should be part of the comprehensive therapy of bipolar disorder.

Keywords: Bipolar disorder, sleep disturbances, psychiatric symptoms, depression, mania

Introduction
An individual's social and occupational functioning is greatly affected by bipolar disorder (BD), a severe and chronic mental disease marked by recurrent episodes of manic, hypomanic, and depressive phases. Worldwide, the lifetime prevalence of bipolar disorder is thought to be between 1% and 3%. The disease is associated with significant morbidity and mortality, mostly as a result of the increased risk of suicide and other medical complications. Sleep disturbances are a hallmark and diagnostic criterion of bipolar disorder, and they appear at various points over the course of the disease [1-3].
Changes in the duration, quality, architecture, and circadian rhythms of sleep are only a few of the many aspects of bipolar disorder that disrupt normal sleep patterns. During manic episodes, patients usually show less of a need to sleep, which means they sleep less overall but are just as active and alert. On the flip side, sleep disturbances like insomnia, hypersomnia, or disturbed sleep patterns are often linked to depressive episodes. New research reveals that disturbed sleep is more than just a symptom of bipolar illness; it may be a key factor in the onset of manic episodes and the outcome of the disease overall [4-6].
There has been a plethora of research on the symbiotic link between sleep disturbances and mood dysregulation in bipolar disorder. There is a vicious circle that makes treatment more difficult: sleep disruptions can cause mood episodes, and mood symptoms can make sleep problems worse. In bipolar patients, sleep disruptions have a deleterious effect on cognitive

function, emotional regulation, and general quality of life. In addition, irregular sleep patterns may provide a prospective intervention target by acting as a biomarker for the early detection of recurrence [7-9].

The clinical significance of sleep disruptions in bipolar disorder is typically overlooked and untreated in ordinary therapeutic treatment, despite its importance. To better create focused treatment approaches, it would be helpful to understand the correlation between particular patterns of sleep disruption and the intensity of mental symptoms. Sleep diaries, polysomnography, and standardized scales like the Pittsburgh Sleep Quality Index (PSQI) have been used in several research to shed light on the sleep patterns associated with bipolar disorder [10-12].

The purpose of this research is to use validated clinical scales to determine how often and what kind of sleep disturbances bipolar disorder patients experience, as well as to investigate whether and how these sleep disturbances correlate with the intensity of depressed and manic symptoms. This research aims to improve patient outcomes by understanding the clinical correlates of sleep disruption. It also intends to inform better-integrated management techniques that address mood symptoms and sleep quality [13, 14].

Material and Methods

This cross-sectional observational study was performed in the Department of General Medicine at Madha Medical College and Research Institute, located in Kovur, Mangadu, Thandalam, Chennai, Tamil Nadu, India, from February 2016 to January 2017. Forty patients diagnosed with bipolar disorder, as per the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), were consecutively recruited from outpatient and inpatient psychiatric facilities. Ethical approval was secured from the Institutional Ethics Committee, and all subjects submitted written informed consent before enrollment.

Data Collection

Structured interviews were used to gather sociodemographic data, which included gender, age, education, occupation, and length of sickness. Patient records and interviews were used to gather clinical history, which includes the frequency of mood episodes, medication adherence, and any co-occurring physical or mental health issues.

Statistical Analysis

We used SPSS version 25 to examine the data. A summary of the demographic and clinical features was provided by describe statistics. We used Pearson's correlation coefficient to look at how the PSQI scores related to the severity of mental symptoms (YMRS and HDRS). When necessary, t-tests or chi-square tests were used to compare groups. It was deemed statistically significant if the p-value was less than 0.05.

Inclusion Criteria

- Patients aged 18 to 60 years.
- Diagnosis of bipolar disorder confirmed by DSM-5 criteria.
- Currently in any mood phase (manic, depressive, or euthymic) or mixed state.
- Willingness to participate and provide informed consent.

Exclusion Criteria

- Presence of comorbid primary sleep disorders such as obstructive sleep apnea
- Current substance use disorder
- Significant neurological or medical illnesses affecting sleep or psychiatric status
- Cognitive impairment or inability to complete assessment scales.
- Patients on medications known to significantly affect sleep architecture other than prescribed mood stabilizers or antipsychotics.

Results

Forty people with bipolar disorder were enrolled in the research. There were 22 males (55%) and 18 females (45%) with an average age of 35.4±10.2 years. On average, people were sick for 8.6±5.3 years. When the subjects were evaluated, 25% were experiencing a manic phase, 40% were depressed, and 35% were euthymic.

Table 1: Demographic Characteristics of Study Participants

Variable	Frequency (%) or Mean ± SD
Age (years)	35.4±10.2
Gender	
Male	22 (55%)
Female	18 (45%)
Duration of illness (years)	8.6±5.3
Current Mood Phase	
Manic	10 (25%)
Depressive	16 (40%)
Euthymic	14 (35%)

There was a higher proportion of patients in the depressive phase and a somewhat balanced distribution of genders, as shown in Table 1, which summarizes the demographic and clinical characteristics of the participants.

Table 2: Sleep Quality Scores (PSQI) in Bipolar Patients

Parameter	Mean ± SD	Range
PSQI Global Score	8.2±3.4	3-16
Poor Sleep Quality (PSQI >5)	28 (70%)	

According to the slumber quality index (PSQI), 70% of patients had a bad night's sleep, as seen in Table 2.

Table 3: Psychiatric Symptom Severity Scores

Scale	Mean ± SD	Range
Young Mania Rating Scale (YMRS)	14.5±8.9	0-35
Hamilton Depression Rating Scale (HDRS)	18.3±9.6	2-36

According to Table 3, the study group had moderate symptomatology, as shown by the severity scores of manic and depressed symptoms.

Table 4: Correlation between Sleep Quality (PSQI) and Psychiatric Symptoms

Variables	Pearson Correlation (r)	p-value
PSQI & YMRS	0.48	0.003*
PSQI & HDRS	0.65	<0.001*

Poor sleep quality is positively correlated with the intensity of manic (YMRS) and depressed (HDRS) symptoms, as

seen in Table 4, with the latter showing a stronger connection.

Table 5: Sleep Disturbances According to Clinical Variables

Variable	Poor Sleep Quality (%)	Good Sleep Quality (%)	p-value
Gender			
Male (n = 22)	15 (68%)	7 (32%)	0.45
Female (n = 18)	13 (72%)	5 (28%)	
Duration of Illness (>7 years vs ≤7 years)			
>7 years (n = 20)	18 (90%)	2 (10%)	0.02*
≤7 years (n = 20)	10 (50%)	10 (50%)	
Medication Adherence			
Non-adherent (n = 12)	11 (92%)	1 (8%)	0.01*
Adherent (n = 28)	17 (61%)	11 (39%)	

Sleep disturbances by gender, length of illness, and medication adherence are compared in Table 5. Sleep quality declined considerably with the length of time someone was sick and with not following treatment plans.

Discussion

The frequency of sleep disruptions and their correlation with the intensity of psychiatric symptoms in bipolar disorder patients were the subjects of this investigation. Sleep disruptions are strongly associated with both manic and depressed symptoms, and our results suggest that 70% of individuals experience them.

This finding is in line with earlier studies that found disturbed sleep to be a hallmark of bipolar disorder in all mood states reported by the Harvey, 2011 [15]. Throughout the manic, depressive, and euthymic stages of bipolar disorder, patients regularly report sleep problems. These disturbances might include trouble starting and staying asleep, reduced total sleep time, and disruptions to their circadian rhythm given by the Jones *et al*., 2013. Insomnia is central to the pathophysiology of bipolar disorder, according to our findings, and not just an epiphenomenon [16].

According to Robillard *et al*. (2014), there is significant evidence that both insomnia and hypersomnia are important characteristics of bipolar depression [17]. This is supported by the fact that there is a greater association between depressed symptoms and bad sleep quality (r = 0.65) than between manic symptoms and poor sleep quality (r = 0.48). Alterations to neurotransmitter function, dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, and decreased emotional regulation are some of the ways in which sleep disruption may worsen depressive symptoms studied by the Walker *et al*., 2012 [18]. On the other side, sleep deprivation is a common symptom of manic episodes and may lead to mood instability (Plante & Winkelman, 2008) [19].

The chronicity and treatment problems of bipolar disorder are emphasized by the fact that individuals with longer disease duration and poor medication adherence had considerably lower sleep quality. This confirms what previous research has shown: that people with chronic illnesses who get inconsistent treatment are more likely to experience mood swings and sleep problems reported by the Perlis *et al*., 2006. These findings highlight the importance of integrating treatment strategies that target both mood symptoms and sleep hygiene in order to achieve better therapeutic results [20].

Sleep disruptions may act as a marker for and a trigger for mood episodes, given the two-way nature of the association between the two. Preventing relapses and lowering morbidity in bipolar disorder may be possible with early identification and treatment of sleep issues. Efficacious interventions for enhancing mood stability include chronotherapy, cognitive-behavioral therapy for insomnia (CBT-I), and pharmaceutical treatments that target sleep studied by the Harvey *et al*., 2015; and Salas *et al*., 2018 [21, 22].

The study's cross-sectional methodology rules out drawing causal conclusions, and the small sample size raises concerns about the data' generalizability. To better understand the intricate relationships between sleep and mental symptoms in bipolar disorder, future longitudinal research should use bigger cohorts and objective sleep measures like polysomnography. Finally, our results contribute to the mounting body of research linking the severity of mood symptoms with sleep disruptions, which are quite common in bipolar disorder. In order to effectively manage bipolar disorder, it is essential to regularly evaluate the quality of sleep and implement focused therapies to improve sleep.

Conclusion

Over 70% of bipolar illness patients had poor sleep quality, according to our study. The strong positive connections between sleep disturbances and manic and depressive symptoms show how important sleep is in bipolar disorder's clinical presentation and course. Longer disease duration and poor medication adherence were linked to poorer sleep quality, underscoring the need for continuing therapy and management. These findings emphasize the need for frequent sleep quality assessments in bipolar patients as part of comprehensive psychiatric therapy. Early detection and tailored sleep therapies may minimize psychiatric symptoms, mood episode recurrence, and general functioning and quality of life. Adding sleep-focused therapies like cognitive-behavioral therapy for insomnia and chronotherapy to established treatment protocols could improve clinical outcomes. Objective sleep metrics should be used in longitudinal study to better understand causal links and develop individualized treatment options. However, our findings support a holistic approach to bipolar illness management that recognizes sleep health as essential to mental health.

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Nil

Conflict of interest

None

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