

Metabolic Abnormalities in Bipolar Disorder: A Clinical and Biochemical Analysis

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Received: 01-01-2026 / Revised: 15-02-2026 / Accepted: 21-03-2026

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Conflict of interest: Nil

Abstract

Background: Bipolar disorder is associated with an increased risk of metabolic abnormalities, contributing to significant morbidity and premature mortality.**Aim:** To evaluate metabolic abnormalities and their clinical correlates in patients with bipolar disorder.**Methods:** This cross-sectional study included 61 drug-free patients diagnosed with bipolar disorder as per ICD-10 criteria at a tertiary care center in Bihar, India. Anthropometric parameters, blood pressure, fasting blood glucose, and lipid profile were assessed. Clinical variables were evaluated using the Young Mania Rating Scale (YMRS) and Hamilton Depression Rating Scale (HAM-D).**Results:** Metabolic syndrome was identified in 39.3% of participants. Patients with metabolic abnormalities had significantly higher waist circumference, blood pressure, fasting blood glucose, triglyceride levels, and low-density lipoprotein cholesterol, along with lower high-density lipoprotein cholesterol ($p < 0.05$). A significant association was observed between metabolic abnormalities and the number of lifetime manic episodes.**Conclusion:** Metabolic abnormalities are highly prevalent in bipolar disorder and are associated with illness severity. Routine metabolic screening should be incorporated into standard psychiatric care.**Keywords:** Bipolar Disorder, Metabolic Syndrome, Dyslipidemia, Cardiometabolic Risk, India.**DOI:** 10.25258/ijcpr.18.4.15

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Introduction

Bipolar disorder is defined as a chronic and severe psychiatric illness characterized by recurrent episodes of mania and depression, often resulting in marked functional impairment and reduced quality of life [10]. Increasing evidence shows that individuals with bipolar disorder also experience a substantial burden of physical comorbidities, mainly metabolic abnormalities. Patients with bipolar disorder are more likely to develop central obesity, impaired glucose metabolism, hypertension, and dyslipidemia [1,2]. The coexistence of these abnormalities, commonly termed metabolic syndrome, significantly increases the risk of cardiovascular disease and contributes to premature mortality [3,4].

The association between the bipolar disorder and metabolic abnormalities is a multifactorial. Lifestyle-related factors like physical inactivity and poor dietary habits contribute, along with biological mechanisms including neuroendocrine dysregulation, inflammatory processes, and genetic susceptibility [5].

Although psychotropic medications are known to influence metabolic parameters, evidence suggests that these abnormalities may also occur in untreated individuals, indicating a potential intrinsic link [8]. Despite growing international evidence, data from Indian populations remain limited, especially among drug-free patients. Therefore, the present study aimed to evaluate metabolic abnormalities and their clinical correlates in patients with bipolar disorder.

Materials and Methods

Study Design and Setting: This cross-sectional study was conducted in the Department of Psychiatry at tertiary care centre, Bihar, India.**Participants:** A total of 61 patients aged 18–50 years diagnosed with bipolar disorder according to ICD-10 criteria were included.

Inclusion Criteria

1. Drug-free for at least 3 months
2. Provided written informed consent

Exclusion Criteria

1. Pregnancy or postpartum state
2. Severe medical illness
3. Substance dependence (except nicotine)

Assessments: Sociodemographic and clinical data were recorded using a semi-structured proforma. Psychometric assessments included the Young Mania Rating Scale (YMRS) and Hamilton Depression Rating Scale (HAM-D).

Metabolic Assessment: Anthropometric measurements, blood pressure, fasting blood

glucose, and lipid profile were assessed using standard procedures.

Metabolic syndrome was defined according to the National Cholesterol Education Program Adult Treatment Panel III criteria [9].

Statistical Analysis: Data were analyzed using SPSS version 20. Independent t-test and chi-square test were applied. A p-value < 0.05 was considered statistically significant.

Results

Table 1: Sociodemographic and Clinical Characteristics (N = 61)

Variable	Value
Age (years), mean ± SD	36.7 ± 8.5
Gender (Male/Female)	32 (52.5%) / 29 (47.5%)
Marital Status (Married)	44 (72.1%)
Residence (Rural)	38 (62.3%)
Education (≥ Secondary)	35 (57.4%)
Employment Status (Employed)	27 (44.3%)
Duration of Illness (years), mean ± SD	7.2 ± 3.6
Number of Manic Episodes	3.8 ± 1.9
Number of Depressive Episodes	2.6 ± 1.5
YMRS Score	18.4 ± 6.2
HAM-D Score	14.1 ± 5.8

MetS = Metabolic Syndrome; YMRS = Young Mania Rating Scale; HAM-D = Hamilton Depression Rating Scale; SD = Standard Deviation

Metabolic syndrome was present in 39.3% of participants.

Table 2: Comparison of Metabolic Parameters

Variable	MetS Present (n=24)	MetS Absent (n=37)	p-value
Body Weight (kg)	72.5 ± 8.2	61.3 ± 7.5	<0.001
Waist Circumference (cm)	98.4 ± 6.5	84.2 ± 5.8	<0.001
Systolic BP (mmHg)	138.6 ± 10.4	122.3 ± 9.1	<0.001
Diastolic BP (mmHg)	88.2 ± 7.3	78.5 ± 6.8	<0.001
Fasting Blood Glucose (mg/dL)	112.4 ± 14.6	92.8 ± 10.2	<0.001
Triglycerides (mg/dL)	186.5 ± 32.4	132.7 ± 25.6	<0.001
LDL (mg/dL)	132.8 ± 21.5	104.3 ± 18.7	<0.001
HDL (mg/dL)	38.6 ± 5.2	47.9 ± 6.1	<0.001

MetS = Metabolic Syndrome; BP = Blood Pressure; HDL = High-density lipoprotein; LDL = Low-density lipoprotein; SD = Standard Deviation.

Patients with metabolic abnormalities had significantly more lifetime manic episodes (p < 0.05).

Discussion

The present study found a high prevalence of metabolic abnormalities among patients with bipolar disorder, with nearly 40% meeting criteria for metabolic syndrome. This finding is consistent with previous studies reporting elevated cardiometabolic risk in this population [1,2].

The association between metabolic abnormalities and the number of manic episodes suggests that illness severity may contribute to metabolic risk. Similar findings have been reported in earlier studies

examining medical comorbidity in bipolar disorder [3,6].

The observed differences in metabolic parameters further emphasize the increased cardiovascular risk. These findings align with existing literature highlighting metabolic dysregulation in psychiatric populations [1,5].

The inclusion of drug-free patients strengthens the study by reducing medication-related confounding, supporting the possibility of an intrinsic association between bipolar disorder and metabolic abnormalities [8].

Clinically, these findings highlight the need for routine metabolic screening and integrated care

approaches to reduce long-term morbidity and mortality [4,10].

Limitations: Cross-sectional design, small sample size, and single-center setting.

Conclusion

Metabolic abnormalities are common in bipolar disorder and are associated with illness severity. Early identification and integrated management are essential to improve long-term outcomes.

Declarations

Ethical Approval: The study was approved by the Institutional Ethics Committee of tertiary care centre, Bihar.

Informed Consent: Written informed consent was obtained from all participants.

Author Contributions: All authors contributed to the study design, data collection, analysis, and manuscript preparation.

Acknowledgment: The authors thank all participants and the Department of Psychiatry for their support.

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