

Insight Across the Different Mood States of Bipolar Disorder

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Abstract In bipolar disorder, levels of insight vary as a function of the mood state and appear to influence pharmacology compliance, quality of life, the presence of suicidal ideations, and aggressive behavior. To establish a comparison among different mood states in bipolar with regard to level of insight. Forty-eight patients were evaluated in different affective states (i.e., euthymia, mania, depression, and mixed state). Identifying information, sociodemographic data, and clinical records were recorded. The following scales were applied: Hamilton Depression Scale, Young Mania Rating Scale, Positive and Negative Syndrome Scale positive symptoms subscale, and Global Assessment of Functioning and Clinical Global Impressions Scale for use in bipolar disorder. Insight was evaluated using items 11 and 17 of the Young Mania Rating Scale and Hamilton Depression Scale, respectively. Insight in bipolar disorder was found to be more compromised during manic phases and mixed episodes than during periods of depression or euthymia. The factors associated with lower levels of insight were the following: shorter illness duration, older

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age, and greater severity in mania; the female gender and older age in depression; and shorter illness duration and more severe depressive symptoms in mixed episodes. In the same individual, levels of insight vary as a function of the affective state over the course of bipolar disorder and appear to be influenced by several clinical variables.

Keywords Insight · Bipolar disorder · Mania · Depression · Euthymia

Introduction

Insight is of great clinical relevance in the evolution of bipolar disorder. Impairments in insight may be implicated in the lack of pharmacological treatment compliance and consequently a worse evolution of the disorder [1–4]. Poor insight is associated with an absence of being able to recognize aggressive and impulsive behavior and can lead the patient to be more exposed to risk situations [5, 6]. However, high levels of insight appear to be associated with an increase in suicidal ideation [7–9] or greater stigmatization, which may result in poorer quality of life [10].

The topic of symptom awareness has been investigated in neurological patients since the late nineteenth century. It has only been investigated in psychiatric patients more recently. Initially, many studies on insight were conducted with schizophrenia patients [11]. However, recent years have seen an increase in interest in studies on insight in bipolar patients. The high prevalence of the disease and lack of insight about the disease in bipolar disorder and schizophrenia have been reported in several studies [12–15]. Most bipolar patients who have been studied displayed deficits in their awareness of being ill or a lack of awareness of specific signs and symptoms [15].

The objective of the present study was to evaluate insight in different phases of bipolar disorder and evaluate the sociodemographic and clinical factors that may be related to possible variations in levels of insight.

Materials and Methods

Sample

The study was performed in an ambulatory research center at the Instituto de Psiquiatria, Universidade Federal do Rio de Janeiro, between November 2003 and November 2011. Not all of the patients participated in the study at the same time, and they were not necessarily evaluated during the entire period of 8 years.

The inclusion criteria were the following: diagnosis of type 1 or type 2 bipolar disorder, age ≥ 18 years, signed informed consent form, and the occurrence of four different affective states (i.e., euthymia, mixed episode, mania, and depression) during the study period. The local ethics committee approved the study.

Clinical Evaluation

Identifying information, sociodemographic data, and clinical variables were recorded for each patient. The psychiatric diagnosis was based on the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, text revision (DSM-IV-TR), using the semi-structured Structured Clinical Interview for DSM (SCID) [16]. The clinical and

sociodemographic data included gender, age, education level, age at disease onset, time to diagnosis of bipolar disorder, illness duration, number of hospitalizations, number of manic episodes, number of depressive episodes, polarity of the first affective episode, history of psychotic symptoms, and number of suicide attempts.

At each consultation, the affective state of each patient was evaluated using the DSM-IV-TR criteria for a manic episode, depressive episode, and mixed episode. The following scales were applied: Hamilton Depression Scale (HAM-D) [17], Young Mania Rating Scale (YMRS) [18], Positive and Negative Syndrome Scale positive symptoms subscale (PANSS-p) [19], Global Assessment of Functioning (GAF) [20], and Clinical Global Impressions Scale for use in bipolar illness (CGI-BP) [21]. The HAM-D is composed of 17 items that assess depressive symptoms. The YMRS is composed of 11 items that assess manic symptoms. The PANSS-p evaluates the presence and intensity of psychotic symptoms and other positive symptoms. In the present study, we considered an affective episode as psychotic when there was at least one delirium or hallucination of any nature. The CGI-BP presents a global score relative to the severity of the affective episode. The GAF evaluates overall social, occupational, and mental functioning.

All of the patients were evaluated at least once in each affective state of bipolar disorder (i.e., euthymia, mania, depression, and mixed episode). Because the patients could present the same type of affective episode more than once, we considered for such a case the evaluation relative to the most severe episode, which was the one with the highest global score on the CGI-BP. In case of a tie in this criterion, the total scores on the YMRS and HAM-D for manic and depressive episodes, respectively, determined which one was the most severe. In the case of mixed episodes with the same score on the CGI-BP, the tiebreaker was the scores on the YMRS and HAM-D. Finally, when more than one episode of euthymia occurred, we considered the first episode. This chronological criterion could also be used for affective episodes for which tied scores were still occurring after the second tiebreaker criterion.

Insight

In the absence of a specific questionnaire to measure insight, a derived score was calculated considering questions from the HAM-D and YMRS. Specifically, the insight score was calculated by adding the scores of item 17 of the HAM-D (critic/consequence of the disease) and item 11 of the YMRS (insight/discernment). Considering that the item from the YMRS ranged from 0 to 4 while the item from the HAM-D ranged from 0 to 2, scores from the YMRS item were divided by 2 to avoid biasing the scale towards insight about manic symptoms. This led to a single score measuring loss of insight about both depressive and manic symptoms, ranging from 0 to 4, with higher scores indicating poorer insight.

Statistical Analysis

We performed a comparison among the different affective states in bipolar disorder—mania, mixed episode, depression, and euthymia—with regard to the level of insight. Additionally, correlations among the different levels of insight and sociodemographic data and clinical variables were determined.

Data analysis was carried out using SPSS software (version 20.0). Descriptive statistics were used to illustrate the sample characteristics. Changes in clinical characteristics according to mood state were tested with repeated measures ANOVAs, followed by pairwise comparisons; for non-parametric variables Cochran's *Q* test was used as an

alternative, with McNemar tests for pairwise comparisons. Stepwise regression models were calculated separately for each mood state to explore the relationship between loss of insight and demographic (educational level, gender and age) and clinical variables (illness duration, number of hospital admissions, presence of psychotic symptoms, HAM-D and YMRS scores; the last three variables were measured in each mood state). To power the regression models, number of suicide attempts was excluded due to missing data. To avoid inflation of type II error and exclusion of predictors involved in suppressor effects, we used a backward regression method. Best models were selected on the basis of explained variance (R^2), cross-validity (adjusted R^2) and Akaike's information criterion (AIC).

Results

Participants and Setting

The initial sample was composed of 165 patients with a diagnosis of bipolar disorder. Among them, 48 patients were evaluated in all four affective phases—euthymia, mania, depression, and mixed state—and constituted the final sample.

Sample Characteristics

Sociodemographic and clinical characteristics of participants are described in Table 1. Most participants were middle-aged men with low to medium levels of educational achievement. The patients became ill in an average of approximately two decades and presented a history of several affective episodes, despite a low number of hospitalizations.

Clinical evaluations related to each mood state are described in Table 2. There were significant differences in CGI-BP global scores [$F(3, 141) = 147.55, p < .001$], with higher scores in all mood states in comparison with euthymia ($p < .001$ in all cases), but no differences between depression and mania ($p = .065$) or mixed state ($p = .999$), and higher scores in depression in relation to mixed state ($p = .044$). There were also significant differences in YMRS scores [$F(3, 141) = 103.11, p < .001$], with higher scores in mania and mixed state in relation to euthymia and depression ($p < .001$ in all cases), and also significant differences between mania and mixed state ($p = .011$) and euthymia and depression

Table 1 Sociodemographic and clinical characteristics of participants

Variable	Bipolar patients (n = 48) Mean (SD), range
Age (mv = 0)	44.0 (12.2), 24–76
Education (mv = 0)	11.7 (3.6), 4–18
Gender ^a (mv = 0)	12/36
Illness duration (in years) (mv = 0)	18.9 (12.8), 0–48
# of hospital admissions (mv = 0)	2.17 (3.3), 0–17
# of manic episodes (mv = 1)	12.4 (16.7), 1–100
# of depressive episodes (mv = 0)	13.1 (22.2), 1–100
# of suicide attempts (mv = 8)	0.72 (1.3), 0–6

mv missing values

^a # Female/male

Table 2 Clinical evaluations related to each mood state

Variable	Euthymia mean (SD)	Mania mean (SD)	Depression mean (SD)	Mixed state mean (SD)
CGI-BP global (mv = 0)	1.2 (0.4)	4.3 (1.3)	4.7 (0.9)	4.3 (0.8)
YMRS (mv = 0)	2.4 (3.0)	20.1 (8.1)	5.2 (4.7)	16.3 (7.0)
HAM-D (mv = 0)	4.1 (3.1)	6.8 (5.1)	17.7 (6.5)	12.7 (5.8)
Presence of psychotic symptoms (mv = 0) ^a	46/2	34/14	40/8	31/17
Loss of insight (mv = 0)	0.10 (0.30)	0.58 (0.72)	0.03 (0.16)	0.46 (0.83)

mv missing values

^a No/yes

($p = .001$). Analysis of HAM-D scores revealed differences between mood states [$F(3, 141) = 75.61, p < .001$], with significantly higher scores in depression and mixed state in relation to euthymia and mania ($p < .001$ in all cases), higher scores in depression in comparison with mixed state ($p < .001$), and in mania in relation to euthymia ($p = .001$).

Results of Cochran's Q test suggested a significant variation in presence of psychotic symptoms across mood states [$Q(3) = 19.19, p < .001$]. Follow-up McNemar tests indicated lower frequency of psychotic symptoms in euthymia in comparison to mania ($p = .002$), depression ($p = .031$) and mixed state ($p < .001$), and higher frequency in mixed state in relation to depression ($p = .035$); there were no significant differences between mania and depression ($p = .180$) or mixed state ($p = .629$). Finally, insight also changed significantly across mood states [$F(3, 141) = 11.60, p = .003$], with poorer insight in mania and mixed state in relation to euthymia (respectively, $p < .001$ and $p = .007$) and depression (respectively, $p < .001$ and $p = .001$). There were no significant differences between mania and mixed state ($p = .360$), or between euthymia and depression ($p = .164$).

Regression Models

Mania

All regression models significantly predicted loss of insight during mania (p values ranging from .016 to .001). Considering the highest explained variance (R^2) and highest cross-validity (adjusted R^2), the best model included gender, age, illness duration, presence of psychotic symptoms, CGI, HAM-D and YMRS scores. Upon inspection of predictors, only age, illness duration and YMRS gave a significant contribution to the model (Model 1, Table 3). Thus, older age, a shorter illness duration, and higher scores on the YMRS were associated with poor insight. Adjusted R^2 and R^2 values dropped slightly after exclusion of non-significant predictors in the remaining models, but AIC scores improved in these more parsimonious models (Models 2 and 3, Table 3). There was no evidence of collinearity in the data, with VIF and tolerance values within the recommended range [22].

Depression

Three regression models significantly predicted loss of insight in the depressive phase (p values from .030 to .014). The model with the best trade-off between explained variance (R^2) and cross-validity (adjusted R^2) included CGI, number of hospital admissions, age and

Table 3 Regression models with predictors for loss of insight in mania

Variable	Model 1		Model 2		Model 3	
	β	p value	β	p values	β	p values
YMRS	.66	.013	.60	.020	.43	.004
Illness duration	−.63	.001	−.67	>.001	−.64	.001
Age	.41	.023	.41	.021	.39	.026
Psychotic symptoms	.24	.114	.23	.080	.22	.107
Gender	.14	.272	.16	.205	.17	.172
CGI-BP	−.24	.318	−.19	.408		
HAM-D	−.14	.321				
Model p values	.004		.003		.002	
R^2	.39		.37		.36	
Adjusted R^2	.28		.28		.28	

Table 4 Regression models with predictors for loss of insight in depression

Variable	Model 1		Model 2		Model 3	
	β	p values	β	p values	β	p values
Gender	.35	.015	.33	.017	.33	.014
Age	.29	.049	.30	.042	.23	.019
CGI-BP	−.16	.281	−.19	.189		
# of admissions	.11	.418				
Model p values	.030		.017		.014	
R^2	.22		.20		.17	
Adjusted R^2	.14		.15		.13	

gender, but with only the latter two being significant predictors (Model 1, Table 4). The model with the best AIC score included only age and gender (Model 3, Table 4). Thus, older age and the female gender were associated with poor insight. There was no evidence of collinearity in the data.

Mixed State

All regression models significantly predicted loss of insight in the mixed state (p values ranging from .042 to .002). Two models (Models 1 and 2, Table 5) showed high explained variance (R^2) and cross-validity (adjusted R^2) and included YMRS scores, HAM-D scores, illness duration, age, number of hospital admissions and educational level; the latter variable was excluded in the second model, which lead to better cross-validity and AIC. In both models, only illness duration and HAM-D scores were significant predictors, with a trend for the effect of YMRS scores. Thus, a shorter illness duration and higher scores on the HAM-D were associated with poorer insight. Additionally, to a lesser extent, higher total scores on the YMRS were associated with poorer insight. There was no evidence of collinearity in the data.

Table 5 Regression models with predictors for loss of insight in mixed state

Variable	Model 1		Model 2	
	β	p values	β	p values
Illness duration	−.37	.036	−.39	.024
HAM-D	−.36	.008	−.35	.008
YMRS	.25	.061	.25	.055
Age	.20	.244	.21	.220
# of admissions	.18	.194	.20	.117
Education level	−.06	.696		
Model p values	.007		.003	
R^2	.34		.34	
Adjusted R^2	.24		.26	

Discussion

In the present study, insight in bipolar patients was found to be more impaired in mania and mixed episodes than in depression and euthymia. No difference in the levels of insight was found between the depressive and euthymic phases. Consistent with these results, our previous studies [23, 24] found that bipolar individuals in the manic phase evaluated their affective state similarly to when they were in euthymia. However, the same patients evaluated their affective states during depression differently from when they were in euthymia or mania. Therefore, we conclude that lower insight can interfere with self-assessment in bipolar patients in mania. The advantages of the present study are the fact that insight was evaluated as a specific variable and that each patient was evaluated in all four distinct affective states: mania, mixed episode, depression, and euthymia. This allowed us to consider the patient as his/her own control.

Studies that have compared insight in different affective phases of bipolar disorder have unanimously reported that patients in the manic phase present greater impairment in insight compared with patients in the depressive phase [13, 25–29] or euthymic phase [25, 26]. One study found that insight in patients in the depressive phase was similar to patients in euthymia [26]. An association between depressed mood and the preservation of insight is observed in several clinical groups [12], but the direction of causality is unclear. If an increase in insight leads to recognition of the problem, which causes sadness, then depressed patients may be more realistic and better able to apprise the consequences of their problems or report more difficulties in function associated with the mood state [23].

We did not find significant differences in insight between patients in mania and mixed episodes. However, in some studies [25, 28–31], patients in mania presented poorer insight than patients in mixed episodes. Perhaps in the manic state the presence of depressive symptoms may be associated with better levels of insight [32].

In the present study, we observed that a longer illness duration was associated with better levels of insight in patients in manic and mixed states, corroborating previous studies [32, 33] that used scales that are specific to the evaluation of insight. In the study by Yen et al. [33], bipolar patients were in remission, whereas in the study by Van der Werf-Eldering et al. [32], the patients were either in remission or in a depressive state. In contrast, Bressi et al. [27] reported that a longer illness duration was associated with less insight into treatment.

The present results indicated that older age is associated with poorer insight in the manic and depressive phases, which is consistent with previous studies [34, 35]. However, Güçlü et al. [36] and Cassidy [25] did not find a correlation between insight and age.

The present study demonstrated that females have poorer insight during the depressive phase but not during periods of mania, a mixed state, or euthymia. Güçlü et al. [36] reported similar results. However, Güçlü et al. [36] utilized a sample of bipolar patients in mania or a mixed state. The study by Yen et al. [33] assessed bipolar patients in remission and found an opposite result: male bipolar patients in remission presented poorer insight.

Another finding of the present study was that greater symptom severity, based on the YMRS, was associated with poorer insight during a manic episode. With regard to mixed episodes, we observed a trend toward an association between higher scores on the YMRS and poorer insight. Previous studies indicated that a greater severity of the affective episode was associated with lower insight about treatment [37], the disorder [27], and the social consequences [27]. In the present study, we also found that higher scores on the HAM-D during mixed episodes were predictive of poorer insight.

The present study did not find an association between the presence of psychotic symptoms and levels of insight in mania. However, Güçlü et al. [36] and Yen et al. [38] reported that the presence of psychotic symptoms was associated with lower insight about treatment.

The present study has some limitations. We only considered one assessment of each affective state, the one in which the symptoms were most intense. However, one cannot affirm that the most severe episode is indeed representative of the set of episodes of the same affective polarity. Additionally, in a minority of cases, the PANSS-p and GAF were not applied during the evaluation of some affective episodes or periods of euthymia, which limited the comparisons. For a more precise evaluation of insight in bipolar disorder, using a specific and multidimensional scale rather than a single item of the YMRS and HAM-D would be important. Currently, our research group is translating and adapting to Brazilian Portuguese a scale that is specific for the evaluation of insight in mood disorders [39], the Insight Scale for affective disorders (ISAD), which will allow us to a more comprehensively study insight in bipolar disorder. However, the present study has the advantage of evaluating the same patient in all four affective states, which allowed the same patient to serve as his/her own control.

Conclusion

The present study found that insight in bipolar disorder is more compromised during the phases of mania and mixed episodes than during depression and periods of euthymia. The following factors appear to be associated with lower levels of insight in bipolar disorder: a shorter illness duration, older age, and greater severity of the episode in mania; the female gender and older age in depression; and a shorter illness duration and severe depressive symptoms in mixed episodes.

Conflict of interest The authors declare no conflict of interest.

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