ORIGINAL PAPER

Suicidal Ideation in Bipolar Disorder: The Relation with Clinical and Sociodemographic Variables

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Abstract

Introduction Bipolar disorder (BD) has the highest risk of suicide among all mental disorders. Thus, identifying factors related to suicidal ideation is essential for a better assessment of the risk of suicide in BD.

Objective To analyze the relationship between suicidal ideation and clinical and sociodemographic characteristics in BD patients.

Method This is a cross-sectional study that included eighty individuals with BD. Information regarding sociodemographic data and history of attempted suicide were collected, and the Hamilton Depression Scale, Young Mania Rating Scale, Positive And Negative Syndrome Scale/positive symptom subscale, Clinical Global Impressions Scale for use in bipolar illness, Insight Scale for Affective Disorders, and Barratt Impulsiveness Scale were administered. The presence and severity of suicidal ideation were assessed using the Beck Scale for Suicidal Ideation.

Results All regression models significantly predicted suicidal ideation. In the model that had the lowest AIC score and the highest cross-validity, the severity of depressive and of manic symptoms (standardized $\beta = 0.49$, $p < 0.001$; standardized $\beta = 0.42$, $p = 0.007$), the insight level (standardized $\beta = -0.38$, $p = 0.012$) and previous suicide attempt (standardized $\beta = 0.20$, $p = 0.036$) acted as predictors of suicidal ideation, while degree of impulsivity (β standardized $= 0.13$, $p = 0.229$) and educational level (standardized $\beta = -0.16$, $p = 0.108$) did not give a significant contribution.

Conclusion According to our results, more severe depression and mania symptoms, higher level of insight and a history of suicide attempt indicate the occurrence of suicidal ideation in BD.

Keywords Bipolar disorder · Suicidal ideation · Suicide · Risk factors

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Introduction

Bipolar disorder (BD) is a chronic and recurrent mental disorder, characterized by fluctuations in mood and energy, which affects more than 1% of the world population [1]. It is associated with functional, occupational, and cognitive impairments, higher unemployment rates, lower productivity, and higher mortality rates [1–3]. The increase in BD mortality is associated not only with natural causes, such as cardiovascular disease and diabetes, but mainly with the high rate of suicide [4].

It is known that people with mental disorders have an increased risk of suicide compared to the general population. Furthermore, in people with BD this situation is even more alarming, as these individuals have the highest risk of suicide compared to all other mental disorders [5, 6]. In clinical samples, 25–56% of patients with BD have had at least one suicide attempt during their lifetime, with 10–19% dying in one of these attempts [7].

Some clinical factors related to BD, when present, can further increase the risk of suicide in this population. For example, mixed and depressive episodes of BD lead to greater suicidal ideation and behavior when compared to manic and hypomanic phases [8]. Other clinical features, such as impulsiveness and insight, can also influence suicidal behavior in these individuals. Some studies suggest that people with BD have increased impulsivity compared to the general population, even during euthymic phases [9, 10], and that greater impulsivity in these patients may be related to a history of suicide attempts [11–13]. Acosta et al. [14] observed that, among BD patients, a higher level of insight about having a disease was related to a history of suicidal ideation, while Da Silva et al. [15] identified that a greater impairment of the insight in bipolar depression was related to a history of suicide attempts, although they did not find a relationship between insight and suicidal ideation.

Identifying the presence and severity of suicidal ideation is essential in clinical practice, as it leads to a better assessment of the risk of suicide. Therefore, knowing the relationship between suicidal ideation and clinical conditions in BD can lead to more precise clinical approaches in the prevention of self-destruction. Therefore, this study aims to analyze the relationship between suicidal ideation and clinical and sociodemographic characteristics in patients with BD.

Method

This is a cross-sectional study, carried out at the BD outpatient clinic of the Institute of Psychiatry of the Federal University of Rio de Janeiro (UFRJ), between March and July 2019, approved by the local Ethics Committee. Inclusion criteria were diagnosis of type I or type II BD, being 18 years of age or older and having signed the informed consent form. Patients who did not accept to participate in the research, who did not cooperate in the application of the assessment instruments or who suffered from severe non-psychiatric illness were excluded.

Identification data and information on each patient's educational level, gender, age, and suicide attempt history were collected. The diagnosis was formulated according to the criteria of the DSM-5 [16] through semi-structured interviews, the SCID-5-RV [17], and the affective state of each patient was assessed by a trained psychiatrist, also according to the criteria of the DSM-5. In each assessment, the following clinical scales were administered:

Hamilton Depression Scale (HAM-D) [18], to assess depressive symptoms; Young Mania Rating Scale (YMRS) [19], manic symptoms; Positive And Negative Syndrome Scale/ positive symptom subscale (PANSS-p) [20], presence and severity of psychotic symptoms; Clinical Global Impressions Scale for use in bipolar illness (CGI-BP) [21], the global severity of the current episode; Insight Scale for Affective Disorders (ISAD) [22], the level of insight; and Barratt Impulsiveness Scale (BIS) [23], the degree of impulsiveness.

In addition, the Beck Scale for Suicidal Ideation (BSI) [24] was used, a nineteen-item instrument that assesses the severity of suicidal thoughts and plans.

Data analysis was performed using SPSS software (version 24.0). Descriptive statistics were used to illustrate the characteristics of the sample, with groups separated according to affective state. Differences between these groups were tested with one-way ANOVAs, followed by post-hoc t tests, adjusted with Bonferroni corrections, or chi-square tests, in the case of gender and education.

Multivariate analysis was performed with the patients together, and stepwise regression models were calculated to explore the relationship of suicidal ideation with clinical variables (HAM-D, YMRS, ISAD, BIS, CGI-BP, items related to psychotic symptoms of PANSS-p and suicide attempt history) and sociodemographic characteristics (gender, age, and educational level). In all models, to avoid type II error inflation and the exclusion of predictors involved in suppressor effects, we used a backward regression method. The best models were selected based on a trade-off between the highest explained variance (R^2), the highest cross-validity (adjusted R^2) and the Akaike's Information Criterion (AIC).

Results

Sample Characteristics

A total of eighty patients with BD were evaluated. Of this total, 28 were in euthymia, 26 in depression and 26 in mania. In addition, 57 were women, 55 had no higher education, and only five had psychotic symptoms.

The characteristics of each sample separated according to the affective state, as well as the result of the comparisons between them, can be seen in Table 1. There were significant differences between the groups regarding age ($p=0.031$), with patients in mania being older than those in depression ($p=0.028$), and gender ($p=0.039$), with a more balanced distribution in euthymia compared to mania and depression, but without significant differences in educational level ($p=0.161$). As expected, there were significant differences between groups in the severity of depressive symptoms (higher HAM-D scores in depression; $p<0.001$), in the severity of manic symptoms (higher YMRS scores in mania; $p<0.001$) and for the overall severity of the episode (higher CGI-BP scores in mania and depression compared to euthymia; $p<0.001$). Significant differences were also observed regarding level of insight ($p<0.001$), with patients in mania having a lower level of insight compared to patients in euthymia and depression (higher ISAD scores in mania than in depression and euthymia; $p<0.001$), and depressed patients also having a lower level of insight than euthymic patients (higher ISAD scores in depression versus euthymia; $p<0.001$). Significant differences were also identified in the level of impulsivity ($p=0.001$), with euthymic patients exhibiting less impulsivity than mania patients (lower BIS scores in euthymia than mania patients;

Table 1 Clinical and sociodemographic characteristics of the participants

Variable	Euthymia (*n*=28) Mean (SD)/Range	Mania (*n*=26) Mean (SD)/Range	Depression (*n*=26) Mean (SD)/Range	Group differences
Age	51.2 (11.1)/33–79	54.5 (10.9)/41–75	46.0 (12.4)/23–70	M>D
Sex*	15/13	22/4	20/6	M=D>E
Educational level**	22/6	17/9	16/10	–
YMRS	1.4 (2.2)/0–7	22.6 (7.3)/13–40	2.2 (2.3)/0–7	M>E=D
HAM-D	1.0 (1.7)/0–7	3.6 (2.9)/0–10	17.1 (6.0)/8–28	D>E=M
CGI-BP global	1.2 (0.4)/1–2	4.3 (1.2)/3–6	4.1 (0.8) / 3–6	M=D>E
Psychotic symptoms***	28/0	22/4	25/1	–
BIS-11	61.4 (12.3)/40–88	71.6 (12.4)/50–95	74.2 (13.4)/54–100	D=M>E
ISAD	6.2 (3.9)/3–15	34.0 (12.7)/15–58	18.6 (5.5)/9–31	M>D>E
Suicide attempt	16/12	15/11	16/10	–
BSI-19	1.5 (4.6)/0–20	2.6 (5.7)/0–20	5.6 (8.7)/0–29	–

YMRS Young Mania Rating Scale, *HAM-D* Hamilton Depression Rating Scale, *CGI-BP* Clinical Global Impression scale–bipolar version, *ISAD* Insight Scale for Affective Disorders, *BIS* Barratt Impulsiveness Scale, *BSI* Beck Scale of Suicide Ideation

*# Female/Male; ** # without/with further education; *** # without/with psychotic symptoms

p=0.012) and depression (scores values lower in euthymia than in depression; *p*=0.001), but no differences between the latter two groups (*p*=0.999). There were no significant differences regarding the presence of psychotic symptoms (*p*=0.054), nor regarding suicidal ideation (no differences regarding the BSI score; *p*=0.068).

Regression Models

There was no evidence of collinearity in the data, with VIF and tolerance values within the recommended range [25]. All regression models significantly predicted suicidal ideation. Table 2 shows the three models with the best rates.

Table 2 Regression models with predictors for BSI total scores

Variable	Model 1		Model 2		Model 3	
	β	*p*-value	*β*	*p*-value	*β*	*p*-value
ISAD	−0.39	0.023	−0.37	0.013	−0.38	0.012
Suicide attempt	0.21	0.012	0.21	0.033	0.20	0.036
HAM-D	0.45	0.053	0.50	>0.001	0.49	>0.001
YMRS	0.36	0.100	0.40	0.011	0.42	0.007
BIS-11	0.14	0.209	0.14	0.209	0.13	0.229
Educational level	−0.16	0.103	−0.16	0.095	−0.16	0.108
Age	0.08	0.440	0.07	0.454		
CGI-BP global	0.07	0.805				
Model *p*-value	<0.001		<0.001		<0.001	
R²	,40		,40		,39	
Adjusted *R²*	,33		,34		,34	
AIC	519.1		517.1		515.8	

YMRS Young Mania Rating Scale, *HAM-D* Hamilton Depression Rating Scale, *CGI-BP* Clinical Global Impression scale–bipolar version, *ISAD* Insight Scale for Affective Disorders, *BIS* Barratt Impulsiveness Scale, *BSI* Beck Scale of Suicide Ideation

Model 3 had the best (lowest) AIC score, and greater cross-validity than model 1, and equal to model 2 (adjusted R2=0.34). According to him, the severity of depressive symptoms (standardized β=0.49, p<0.001), the severity of manic symptoms (standardized β=0.42, p=0.007), the level of insight (standardized β=−0.38, p=0.012) and previous suicide attempt (standardized β=0.20, p=0.036) acted as predictors of suicidal ideation, while the patients' degree of impulsivity (standardized β=0.13, p=0.229) and educational level (standardized β=−0.16, p=0.108) did not make a significant contribution to the model.

Discussion

This study investigated the relationship between clinical and sociodemographic characteristics and suicidal ideation in patients with BD. According to our results, individuals with a higher level of suicidal ideation had more severe depression and mania symptoms, a higher level of insight and more chances of having previously attempted suicide, while the presence of psychotic symptomatology, the degree of impulsivity, and sociodemographic data (age and education) did not act as predictors of suicidal ideation in the BD.

Our comparative analysis showed no statistically significant difference in suicidal ideation between groups when divided according to affective state. This result, however, runs counter to what has been shown in the scientific literature, which shows that suicidal ideation, and suicidal behavior, are more frequent in patients with BD in depressive states and mixed states than in patients with manic or euthymic states [26]. Possibly, this result is due to the small size of the subsamples, which have less than thirty patients with BD in each one of them. However, the fact that there was no statistically significant difference between the groups regarding suicidal ideation favored the assessment of the eighty patients together in the multivariate analysis.

In the analysis of regression models, a greater severity of depressive symptoms acted as a strong predictor of suicidal ideation in BD, which is in agreement with the main descriptions in the scientific literature [26–27]. On the other hand, a greater severity of manic symptoms also predicted suicidal ideation in these patients. This unexpected result possibly reflects the specific characteristics of our sample, in which patients with mania had relatively high rates of suicidal ideation, similar to those found in patients with a depressive episode.

So far, few articles have studied the relationship between insight and suicidal ideation in BD. Yen et al. [28] and Acosta et al. [14] evaluated 96 and 102 patients with BD, respectively, and both studies demonstrated that a higher level of insight was related to the history of suicidal ideation in these individuals. On the other hand, Da Silva et al. [15], who followed 165 patients with bipolar depression over a year, found that a greater impairment of insight in bipolar depression was related to the history of suicide attempts, but they found no relationship between insight and suicidal ideation. In the present study, higher levels of insight acted as predictors of suicidal ideation in BD patients.

In the scientific literature, suicidal ideation is already seen as one of the most important risk factors for suicide attempts and suicide deaths in BD, and, likewise, the history of suicide attempts has been identified as a risk factor for suicidal ideation in this population [29–31]. Goldberg et al. [32] analyzed a total of 100 patients with BD in dysphoric mania and showed that suicidal ideation was more common among those who had previous suicide attempts. Bottlender et al. [33], in turn, evaluated 3663 patients with unipolar depression

and 839 with bipolar depression and observed that suicidal thoughts were more frequent among patients who had already attempted suicide at least once in their lifetime. In our analysis, a history of attempted suicide acted as a significant predictor of suicidal ideation in BD patients.

To date, most studies on suicide and impulsivity in BD have only assessed the history of suicide attempts, without showing specific results on suicidal ideation [11, 34–38]. For example, Perroud et al. [36] studied impulsivity in people with BD with or without a history of a suicide attempt, and no difference was observed between groups, while Swann et al. [11] showed that impulsivity was greater in BD patients with a history of a suicide attempt than in those without such a history. Despite this, a few authors have analyzed the relationship between impulsivity and suicidal ideation. Johnson et al. [39]. investigated multiple dimensions of impulsivity in 133 individuals with BD and showed that impulsivity in response to negative emotions was associated with suicidal ideation. It is noteworthy, however, that lifelong suicidal ideation was investigated, which impairs the interpretation of results, as many years may have passed between the assessment of impulsivity and the last suicidal ideation. Umamaheswari et al. [40], on the other hand, evaluated 130 individuals with BD, separating them into two groups according to the presence or absence of suicidal ideation. Comparative analysis showed no significant difference between the groups regarding overall level of impulsivity, or any of the dimensions of impulsivity investigated. In our study, the global impulsivity index did not act as a predictor of suicidal ideation in BD.

In the present study, the educational level did not act as a predictor of suicidal ideation in people with BD, which is in line with the results found in previous articles [41–43]. Furthermore, the present study did not identify any influence of the age of the participants on the degree of suicidal ideation. The few articles that performed similar analyzes, so far, bring conflicting results. While Kohler-Forsber et al. [43] pointed out that older age is related to greater suicidal ideation in the BD, Aaltonen et al. [44] showed that younger age would be an independent predictor of suicidal ideation in these individuals.

Some limitations must be considered when interpreting the results of this study. Initially, the small sample size precluded multivariate analysis of patients divided by each affective state. It is worth remembering, however, that suicidal ideation was similar among subgroups of mania, depression and euthymia, which favored the analysis of these individuals together. Furthermore, this study has a cross-sectional design, which is a limitation to infer causality. In addition, the fact that the study was carried out at a university hospital may have led to the selection of subjects with more severe conditions.

It is important to consider that the data for this study was collected in a developing country, and that, therefore, the samples have educational heterogeneity and other demographic differences that are not found in developed nations. Future studies in different environments are important to generalize current results.

Conclusions

The results of this study indicate that symptoms of depression and severe mania, higher level of insight and suicide attempt history act as predictors of suicidal ideation in BD. In contrast, impulsivity, the presence of psychotic symptoms, age and education do not seem to be able to predict suicidal ideation in these individuals.

Availability of Data and Material The data used to support the findings of this study are included within the article.

Code Availability Not applicable.

Declarations

Conflict of Interest The authors declare no conflict of interest.

Ethics Approval All procedures performed in the study involving human participants were in accordance with the 1964 Helsinki Declaration and its later amendments. Approval was obtained from the Ethics Committee of the Institute of Psychiatry of the Federal University of Rio de Janeiro (UFRJ).

Consent to Participate All the participants involved in this study agreed to participate and signed the informed consent form.

Consent for Publication When consenting to participate, participants were informed that data from all patients would be analyzed together, with total confidentiality being maintained in relation to the specific information of their case.

References

1. Grande I, Berk M, Birmaher B, Vieta E. Bipolar disorder. Lancet. 2016;387(10027):1561–72.
2. Martinez-Aran A, Vieta E, Torrent C, Sanchez-Moreno J, Goikolea JM, Salamero M, Malhi GS, Gonzalez-Pinto A, Daban C, Alvarez-Grandi S, Fountoulakis K, Kaprinis G, Tabares-Seisdedos R, Ayuso-Mateos JL. Functional outcome in bipolar disorder: the role of clinical and cognitive factors. Bipolar Disord. 2007;9(1-2):103–13.
3. Ketter TA. Diagnostic features, prevalence, and impact of bipolar disorder. J Clin Psychiatry. 2010;71(6):e14.
4. de Abreu LN, Nery FG, Harkavy-Friedman JM, de Almeida KM, Gomes BC, Oquendo MA, Lafer B. Suicide attempts are associated with worse quality of life in patients with bipolar disorder type I. Compr Psychiatry. 2012;53(2):125–9.
5. Costa Lda S, Alencar AP, Nascimento Neto PJ, dos Santos Mdo S, da Silva CG, Pinheiro Sde F, Silveira RT, Bianco BA, Pinheiro RF Jr, de Lima MA, Reis AO, Rolim Neto ML. Risk factors for suicide in bipolar disorder: a systematic review. J Affect Disord. 2015;170:237–54.
6. Miller JN, Black DW. Bipolar Disorder and Suicide: a Review. Curr Psychiatry Rep. 2020;22(2):6.
7. Goodwin FK, Jamison KR. Manic-depressive illness. New York: Oxford University Press; 2007.
8. Lage RR, Santana CMT, Nardi AE, Cheniaux E. Mixed states and suicidal behavior: a systematic review. Trends Psychiatry Psychother. 2019;41(2):191–200.
9. Saddichha S, Schuetz C. Is impulsivity in remitted bipolar disorder a stable trait? A meta-analytic review. Compr Psychiatry. 2014;55(7):1479–84.
10. Newman AL, Meyer TD. Impulsivity: present during euthymia in bipolar disorder?—a systematic review. Int J Bipolar Disord. 2014;2:2.

11. Swann AC, Lijffijt M, Lane SD, Steinberg JL, Moeller FG. Increased trait-like impulsivity and course of illness in bipolar disorder. Bipolar Disord. 2009;11(3):280–8.
12. Kahn JP, Cohen RF, Etain B, Aubin V, Bellivier F, Belzeaux R, Bougerol T, Courtet P, Dubertret C, Gard S, Henry C, Olié E, Polosan M, Passerieux C, Leboyer M. FondaMental Advanced Centers of Expertise in Bipolar Disorders (FACE-BD) Collaborators. Reconsideration of the factorial structure of the Barratt Impulsiveness Scale (BIS-11): Assessment of impulsivity in a large population of euthymic bipolar patients. J Affect Disord. 2019;253:203–9.
13. Reich R, Gilbert A, Clari R, Burdick KE, Szeszko PR. A preliminary investigation of impulsivity, aggression and white matter in patients with bipolar disorder and a suicide attempt history. J Affect Disord. 2019;247:88–96.
14. Acosta FJ, Vega D, Torralba L, Navarro S, Ramallo-Fariña Y, Fiuza D, Hernández JL, Siris SG. Hopelessness and suicidal risk in bipolar disorder. A study in clinically nonsyndromal patients. Compr Psychiatry. 2012;53(8):1103–9.
15. de Assis da Silva R, Mograbi DC, Bifano J, Santana CM, Cheniaux E. Correlation Between Insight Level and Suicidal Behavior/Ideation in Bipolar Depression. Psychiatr Q. 2017;88(1):47–53.
16. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. ed 5. Washington: American Psychiatric Association; 2013.
17. First MB, Williams JBW, Karg RS, Spitzer RL: Structured Clinical Interview for DSM-5—Research Version (SCID-5 for DSM-5, Research Version; SCID-5-RV). Arlington, VA, American Psychiatric Association, 2015.
18. Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry. 1960;23:56–62.
19. Young RC, Biggs JT, Ziegler VE, Meyer DA. A rating scale for mania: reliability, validity and sensitivity. Br J Psychiatry. 1978;133:429–35.
20. Chaves AC, Shirakawa I. Positive And Negative Syndrome Scale—PANSS and it use in Brazil. Rev Psiq Clin. 1998;25:337–43.
21. Spearing MK, Post RM, Leverich GS, Brandt D, Nolen W. Modification of the Clinical Global Impressions (CGI) Scale for use in bipolar illness (BP): the CGI-BP. Psychiatry Res. 1997;73:159–71.
22. Olaya B, Marsà F, Ochoa S, Balanzá-Martínez V, Barbeito S, García-Portilla MP, González-Pinto A, Lobo A, López-Antón R, Usall J, Arranz B, Haro JM. Development of the insight scale for affective disorders (ISAD): Modification from the scale to assess unawareness. J Affect Disord. 2012;142:65–71.
23. Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt impulsiveness scale. J Clin Psychol. 1995;51:768–74.
24. Beck AT, Kovacs M, Weissman A. Assessment of suicidal intention: The Scale for Suicide Ideation. J Consult Clin Psychol. 1979;47(2):343–52.
25. Field A. Discovering Statistics Using IBM SPSS Statistics. 4th ed. SAGE Publications; 2013.
26. Au JS, Martinez de Andino A, Mekawi Y, Silverstein MW, Lamis DA. Latent class analysis of bipolar disorder symptoms and suicidal ideation and behaviors. Bipolar Disord. 2021;23(2):186–95.
27. Schaffer A, Isometsä ET, Azorin JM, Cassidy F, Goldstein T, Rihmer Z, Sinyor M, Tondo L, Moreno DH, Turecki G, Reis C, Kessing LV, Ha K, Weizman A, Beautrais A, Chou YH, Diazgranados N, Levitt AJ, Zarate CA Jr, Yatham L. 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. 2015;49(11):1006–20.
28. Yen CF, Cheng CP, Ko CH, Yen JY, Huang CF, Chen CS. Suicidality and its association with insight and neurocognition in taiwanese patients with bipolar I disorder in remission. J Nerv Ment Dis. 2008;196(6):462–7.
29. Ballard ED, Vande Voort JL, Luckenbaugh DA, Machado-Vieira R, Tohen M, Zarate CA. Acute risk factors for suicide attempts and death: prospective findings from the STEP-BD study. Bipolar Disord. 2016;18(4):363–72.
30. Gonda X, Pompili M, Serafini G, Montebovi F, Campi S, Dome P, Duleba T, Girardi P, Rihmer Z. Suicidal behavior in bipolar disorder: epidemiology, characteristics and major risk factors. J Affect Disord. 2012;143(1–3):16–26.
31. Miller JN, Black DW. Bipolar Disorder and Suicide: a Review. Curr Psychiatry Rep. 2020;22(2):6.
32. Goldberg JF, Garno JL, Portera L, Leon AC, Kocsis JH, Whiteside JE. Correlates of suicidal ideation in dysphoric mania. J Affect Disord. 1999;56(1):75–81.
33. Bottlender R, Jäger M, Strauss A, Möller HJ. Suicidality in bipolar compared to unipolar depressed inpatients. Eur Arch Psychiatry Clin Neurosci. 2000;250(5):257–61.
34. Harkavy-Friedman JM, Keilp JG, Grunebaum MF, Sher L, Printz D, Burke AK, Mann JJ, Oquendo M. Are BPI and BPII suicide attempters distinct neuropsychologically? J Affect Disord. 2006;94(1–3):255–9.
35. Oquendo MA, Currier D, Liu SM, Hasin DS, Grant BF, Blanco C. Increased risk for suicidal behavior in comorbid bipolar disorder and alcohol use disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). J Clin Psychiatry. 2010;71(7):902–9.

36. Perroud N, Baud P, Mouthon D, Courtet P, Malafosse A. Impulsivity, aggression and suicidal behavior in unipolar and bipolar disorders. J Affect Disord. 2011;134(1–3):112–8.
37. Swann AC, Dougherty DM, Pazzaglia PJ, Pham M, Steinberg JL, Moeller FG. Increased impulsivity associated with severity of suicide attempt history in patients with bipolar disorder. Am J Psychiatry. 2005;162(9):1680–7.
38. Swann AC, Lijffijt M, Lane SD, Kjome KL, Steinberg JL, Moeller FG. Criminal conviction, impulsivity, and course of illness in bipolar disorder. Bipolar Disord. 2011;13(2):173–81.
39. Johnson SL, Carver CS, Tharp JA. Suicidality in Bipolar Disorder: The Role of Emotion-Triggered Impulsivity. Suicide Life Threat Behav. 2017;47(2):177–92.
40. Umamaheswari V, Avasthi A, Grover S. Risk factors for suicidal ideations in patients with bipolar disorder. Bipolar Disord. 2014;16(6):642–51.
41. Olié E, Seyller M, Beziat S, Loftus J, Bellivier F, Bougerol T, Belzeaux R, Azorin JM, Gard S, Kahn JP, Passerieux C, Leboyer M, Etain B, Henry C, Courtet P. Clinical and neuropsychological characteristics of euthymic bipolar patients having a history of severe suicide attempt. Acta Psychiatr Scand. 2015;131(2):129–38.
42. Malloy-Diniz LF, Neves FS, Abrantes SS, Fuentes D, Corrêa H. Suicide behavior and neuropsychological assessment of type I bipolar patients. J Affect Disord. 2009;112(1–3):231–6.
43. Köhler-Forsberg O, Madsen T, Behrendt-Møller I, Sylvia L, Bowden CL, Gao K, Bobo WV, Trivedi MH, Calabrese JR, Thase M, Shelton RC, McInnis M, Tohen M, Ketter TA, Friedman ES, Deckersbach T, McElroy SL, Reilly-Harrington NA, Nierenberg AA. Trajectories of suicidal ideation over 6 months among 482 outpatients with bipolar disorder. J Affect Disord. 2017;223:146–52.
44. Aaltonen K, Näätänen P, Heikkinen M, Koivisto M, Baryshnikov I, Karpov B, Oksanen J, Melartin T, Suominen K, Joffe G, Paunio T, Isometsä E. Differences and similarities of risk factors for suicidal ideation and attempts among patients with depressive or bipolar disorders. J Affect Disord. 2016;193:318–30.

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