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## Psychiatry Research

journal homepage: [www.elsevier.com/locate/psychres](http://www.elsevier.com/locate/psychres)

# Assessing the contribution of borderline personality disorder and features to suicide risk in psychiatric inpatients with bipolar disorder, major depression and schizoaffective disorder



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## ARTICLE INFO

## Article history:

Received 26 July 2014

Received in revised form

13 January 2015

Accepted 19 January 2015

Available online 28 January 2015

## Keywords:

Borderline personality disorder

Suicide

Bipolar

Depression

Schizoaffective

Psychosis

## ABSTRACT

Suicidal behavior often accompanies both borderline personality disorder (BPD) and severe mood disorders, and comorbidity between the two appears to further increase suicide risk. The current study aims to quantify the risk of suicidality conferred by comorbid BPD diagnosis or features in three affective disorders: major depressive disorder (MDD), bipolar disorder (BP) and schizoaffective disorder. One hundred forty-nine (149) psychiatric inpatients were assessed by SCID I and II, and the Columbia Suicide Severity Rating Scale. Logistic regression analyses investigated the associations between previous suicide attempt and BPD diagnosis or features in patients with MDD, BP, and schizoaffective disorder, as well as a history of manic or major depressive episodes, and psychotic symptoms. Comorbid BPD diagnosis significantly increased suicide risk in the whole sample, and in those with MDD, BP, and history of depressive episode or psychotic symptoms. Each additional borderline feature also increased risk of past suicide attempt in these same groups (excepting BP) and in those with a previous manic episode. Of the BPD criteria, only unstable relationships and impulsivity independently predicted past suicide attempt. Overall, among patients with severe mood disorders, the presence of comorbid BPD features or disorder appears to substantially increase the risk of suicide attempts.

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## 1. Introduction

Suicidal behavior, including attempted and completed suicide, remains a prominent public health concern in the United States. According to the National Institute of Mental Health (NIMH), it was the tenth leading cause of death, at approximately 11.3 suicide deaths per 100,000 people in a single year in 2007, with 11 attempted suicides per death (NIMH, 2007). In the first few months following hospital discharge, and even within the first week, inpatients are drastically more likely to re-attempt suicide (Pirkola et al., 2005; Yaseen et al., 2014). In fact, the adjusted risk ratio for completed suicide within the first week following inpatient discharge is staggering: a 102-fold and 246-fold increase for men and women, respectively, compared to those who have never been hospitalized (Qin and Nordentoft, 2005). This underscores the importance of adequately identifying those patients in an inpatient population who may be at greatest risk for suicidal behavior post-discharge.

Risk factors for suicide attempts include prior attempts, substance use, and mood and personality disorders (Angst et al., 2005; Bolton et al., 2010; Rihmer, 2007). In particular, comorbidity of borderline personality disorder (BPD) with mood disorders in adults and adolescents seems to confer greater risk for increased suicidal behavior, including self-harm and attempted suicide (Bolton et al., 2010; Moor et al., 2012). The combined influence of BPD and a major depressive episode (MDE) has also been associated with a greater number of suicide attempts and serious objective planning (Soloff et al., 2000). Further, adult outpatients with MDD and comorbid BPD had a higher number of previous suicide attempts compared to patients with MDD alone (Galione and Zimmerman, 2010). In addition, depressed bipolar patients with comorbid BPD demonstrated more mood lability and irritability, as well as increased history of suicide attempts (Perugi et al., 2013).

In general, BPD appears to increase suicidal risk in those with MDD and bipolar disorder, though none of the above mentioned studies consider the impact of BPD on other severe mental illnesses, such as schizoaffective disorder or schizophrenia. There is some evidence that comorbid BPD in inpatients with schizophrenia has a negative impact on course and outcome of illness compared to either diagnosis alone (Bahorik and Eack, 2010). Moreover, while the combined effect

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of BPD and a depressive episode (across various psychiatric diagnoses) may increase suicidality (Soloff et al., 2000), there is considerably less research on how a BPD diagnosis affects those who are not predominantly depressed, but who are also manic or psychotic.

Therefore, the current study aims to determine the differential influences of BPD on suicide risk across multiple mood disorders, including those characterized by mania or psychosis. By assessing BPD's effect on suicide risk across several mood and psychotic disorder diagnoses within the same sample, the current study can provide a more thorough and nuanced understanding of suicide risk in patients with comorbid mood disorder and personality pathology. We also examine patients based on transdiagnostic syndromes (i.e., those with a history of depressive episodes, manic episodes, or psychotic symptoms), in order to gain a clearer picture of how borderline pathology affects suicidal behavior differentially depending on mood and psychotic symptoms that may cut across discrete DSM-IV diagnoses.

Further, it is important to consider the effects of BPD dimensionally rather than categorically (i.e., whether or not one meets criteria for the full diagnosis), given that severity of comorbid Cluster B features might be predictive of suicidal behavior even in subthreshold cases (Corbitt et al., 1996). Thus, in the current study we consider not only the effect on suicide risk of comorbid BPD diagnosis but also of borderline features (i.e., each borderline diagnostic criterion endorsed, independent of BPD diagnosis) in patients with diagnoses of MDD, bipolar disorder, and schizoaffective disorder as well as current or previous syndromes of major depressive episodes, manic episodes, and psychosis. Though schizoaffective disorder is classified as a psychotic disorder, it is characterized by major mood episodes and for the sake of simplicity, will be heretofore referred to as a mood disorder along with MDD and bipolar disorder. We hypothesized that the presence of comorbid BPD diagnosis or features would confer a significant additional risk of past suicide attempts in psychiatric inpatients with severe mood disorders, as well as a lifetime history of depressive, manic, or psychotic symptoms.

## 2. Methods

### 2.1. Subjects

One hundred forty-nine (149) participants presenting with mood or psychotic disorders were recruited from two psychiatric inpatient units in a large, urban hospital. The study was approved by Mount Sinai Beth Israel's Institutional Review Board (IRB) for Human Subjects Research. All participants were between the ages of 18 and 65, English speaking, able to understand and sign an IRB-approved informed consent, and compensated for completing a 5 hour test battery. Patients met criteria for schizophrenia, schizoaffective disorder, bipolar disorder (I, II, NOS), major depressive disorder, or non-psychotic and non-bipolar mood or anxiety disorder. Patients were excluded if they were experiencing acute psychosis, mania, and/or agitation severe enough to preclude informed consent or task performance, and if they had severe cognitive deficits (DSM-5 intellectual disabilities or neurocognitive disorders).

### 2.2. Measures

#### 2.2.1. Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Patient Version With Psychotic Screen (SCID-I/P)

The SCID-I/P is a widely used, semi-structured interview for determining the major Axis I DSM-IV-TR diagnoses (First et al., 2002). A trained clinician administered modules assessing for manic episodes (past or present), major depressive episodes (past or present), and psychotic symptoms (i.e., delusions, hallucinations, disorganized speech and behavior, negative symptoms), in order to make a diagnosis of schizophrenia, schizoaffective disorder, bipolar I and II disorders, major depressive disorder, or substance induced mood disorder. Interviewers were doctoral students in clinical psychology or psychiatric residents, and were trained by the study Principal Investigator (LJC) in groups of two. Raters administered two practice interviews before conducting assessments with subjects, and final ratings were determined by consensus in the research team using interview responses and any available current and past chart data. For the sake of contrast with the SCID II, this instrument will herein be referred to as the SCID-I.

#### 2.2.2. Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II)

The SCID-II is a well-established, semi-structured interview used for the assessment of DSM-IV Axis II personality disorder diagnoses (First et al., 1997). The SCID-II includes an initial self-report consisting of 119 yes or no questions. Using standardized follow-up probes, trained interviewers determined whether the patient met the personality disorder criterion associated with the items to which they answered yes. Raters kept thorough notes detailing subjects' responses to interview probes. The number of criteria met for the disorder was documented as a dimensional measure of pathology: for the current study, each criterion for a BPD diagnosis that was endorsed represented a borderline feature. A diagnosis of a disorder was made if subjects met or exceeded the required number of criteria for each disorder. SCID II interviewers were doctoral level trainees in psychology and psychiatry, or bachelors and masters level research assistants. Assessment of inter-rater reliability across all 10 SCID II diagnoses with the PI (LJC) on 20 SCID II's with 6 different raters yielded a Cohen's kappa of 0.856 for items and 0.825 for diagnoses. SCID I and SCID II interviews were administered by different research staff for each subject in order to reduce rater bias.

#### 2.2.3. Columbia Suicide-Severity Rating Scale (C-SSRS)

Interviewers administered the C-SSRS to assess for past and present suicidal ideation and behavior. The C-SSRS was developed to quantify the severity of suicidal ideation and behavior. It has demonstrated good convergent and divergent validity with other multi-informant scales measuring suicidal ideation and behavior in several multisite studies of adolescent suicide attempters and adults presenting at a psychiatric emergency department (Posner et al., 2011). The C-SSRS also demonstrates good sensitivity to change over time (Posner et al., 2011). The present study used the history of suicide attempt as a key variable. An actual suicide attempt according to the C-SSRS is a potentially self-injurious act committed with at least some wish to die as a direct result of that act. If any intent or desire to die is associated with the act, then it meets criteria for a suicide attempt. It is not necessary for any injury or harm to have occurred so long as there was the potential for harm. Although a patient may deny their intent to die, intent can be inferred clinically based on behavior or circumstances, such as when someone engages in behavior knowing that the action could be lethal (e.g., jumping from a window of a tall building) (Posner et al., 2011).

### 2.3. Statistical analysis

As an initial step, demographic and clinical variables were analyzed to characterize the sample. The proportion of patients within each major mood disorder (diagnosis based on SCID-I) who also met criteria for a BPD diagnosis (based on SCID-II) was determined as well as the proportion of patients with each major syndrome (mania, depression, and psychosis) who also met criteria for a BPD diagnosis.

Next, logistic regression analyses were conducted on the whole sample and then within each of the major mood disorders (MDD, bipolar, and schizoaffective). All analyses were set at an alpha level of 0.05. We first calculated the odds ratio for having a history of suicide attempt when a comorbid BPD diagnosis was present, in the sample as a whole and within each of the major mood diagnoses. Then, we calculated odds ratios for having a history of suicide attempt with each additional BPD criterion met, within the whole sample and then within each of the major mood disorders.

Furthermore, given the benefits of examining psychopathology based on transdiagnostic syndromes, rooted in symptom presentation rather than discrete diagnostic categories, we conducted logistic regression analyses to determine the odds ratio for having a previous suicide attempt when a BPD diagnosis was present, in patients with a history of a major depressive episode, manic episode, and psychotic symptoms. Further, in order to examine the impact of borderline pathology dimensionally, the odds ratio for a history of suicide attempt within each syndrome when each additional borderline criterion was met was also calculated. Finally, in order to determine which individual borderline criteria were independently predictive of a history of suicide attempt, we entered eight BPD criteria (excluding criterion 5, repeated suicidal behavior) into a multiple logistic regression analysis using the whole sample.

## 3. Results

### 3.1. Demographic and clinical characteristics

In total, 149 subjects were included in the analyses. The average age of subjects was 36.7 ( $\pm$  13.39) years. The sample was 67.1% female and 30.2% identified as of Hispanic ethnicity. With regard to race, 44.6% of the sample identified as Caucasian, 22.8% African American, 12.8% Asian, 4.7% American Indian or Alaskan Native, and 14.8% Other. The average level of education was 14.18 ( $\pm$  3.39) years, and 16.8% of the sample was employed full time.

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