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# PREDICTORS OF SHORT AND LONG TERM RECURRENCE OF SUICIDAL BEHAVIOR IN BORDERLINE PERSONALITY DISORDER

Running head: PREDICTORS FOR RECURRENCE SUICIDAL BEHAVIOR IN BPD

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## **Abstract**

**Objective:** To evaluate the incidence of suicidal outcomes and risk factors for short and long term recurrence of suicidal behavior (SB) among high-risk borderline personality disorder (BPD) patients during a 24 month prospective follow-up period.

**Methods:** A multicenter prospective cohort study was designed to compare data obtained from 136 patients admitted to the emergency department for current suicidal ideation (SI) or a recent suicide attempt (SA). Subjects were clinically evaluated and monitored for a new SA or suicide.

**Results:** The incidence of a new SA was 25.63 events/100 persons-year and one patient died by suicide. Child sexual abuse (CSA) was the only significant predictor throughout the complete follow-up period. The absence of prior psychiatric treatment predicts the recurrence of SB in the first 6 months of follow-up. Patient age, poor psychosocial functioning before hospitalization, age at first SA, and having multiple suicide attempts increased risk of SB recurrence at the long term period (24th month). In addition, there was an interaction between CSA and poor social functioning that increased risk of SB.

**Conclusion:** The risk of recurrence was higher during the first 6 months. Risk factors at 6 and 24 months vary. These findings are important for implementing suicide strategies.

**Keywords:** Risk Factors - Suicide - Personality Disorder

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### **Significant Outcomes (take-home messages)**

1. Almost 33 % of patients with BPD experienced a SB recurrence by 24 months of follow-up
2. Some risk factors for SB recurrence vary with time while other maintain stable during the entire 24 month follow-up period
3. There was an interaction between history of child sexual abuse and poor social functioning that increased risk among BPD patients

### **Limitations**

1. Patients were hospitalized for active SI or SA, and findings may not generalize to healthier clinical samples.
2. The sample contains a high percentage of women
3. Although several key factors were measured via validated instruments, some predictors were measured via a semi-structured retrospective interview

### **Data availability statement**

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### **Predictors of short and long term recurrence of suicidal behavior in borderline personality disorder**

Borderline personality disorder (BPD) is the most diagnosed (1, 2) and studied personality disorder among clinical population. It is also the most diagnosable personality disorder among hospitalized patients (3). Specifically, 1.7% of the general population, up to 10% of the psychiatric outpatients, and 28% of inpatients are diagnosed with BPD (4-6). Repeated suicide threats, gestures, and suicide attempts, a defining diagnostic criterion for BPD, are prevalent among patients with BPD (7, 8). The lifetime risk of suicide among patients with BPD is up to 10% (9, 10), a suicide mortality rate 50 times higher than the general population (11-14). Over 70% of patients with BPD have a history of suicidal behavior (SB) (15-17).

Given the high rate of SB (18) and potential lethality of suicide behavior (SB) among BPD patients (8), it is highly relevant to identify risk factors with prospective longitudinal studies using multidimensional assessments and systematic follow up. Nonetheless, only a handful of prospective cohort studies among BPD patients have been published. To date, all work has been completed with patient populations from North America (8, 19-21).

When conceptualizing SB, there are static risk factors (non-modifiable) which mark a chronic baseline risk of suicide (22-24) and dynamic risk factors (potentially modifiable) (25). Dynamic risk factors vary in intensity or presence across time (25). Efforts to understand and predict SB begin with the study of potential risk factors (26), given suicide rates may be reduced by systematic identification and treatment of modifiable risk factors (27). Suicide-specific interventions should be conceptualized according to how risk factors vary across time; however, the literature in this area is scarce (19).

In cross-sectional studies, some conditions such as comorbid major depressive disorder (MDD) (28), substance use disorders (29), younger age (30) and childhood sexual abuse (CSA) (31) are correlated with SB among patients with BPD. Longitudinal prospective studies evidence MDD, poor psychosocial functioning, CSA, absence of previous psychiatric treatment and number of previous suicide attempts as predictors of SB among BPD patients (19). The change of these risk factors over time and the interaction between them has been poorly studied. Understanding how these risk factors change across time and how they interact could help inform suicide prevention strategies among patients with BPD and recurrent SB.

### *Aims of the Study*

The aims of the present study were as follows, 1) determine the incidence of SB (suicide reattempts and death by suicide) among high risk BPD patients, 2) identify predictors for short and long term recurrence of SB, and 3) measure change of predictors across time and interactions that increase SB risk.

## **Material and Methods**

### **Study design**

The present study used data obtained from patients enrolled in a multicenter prospective cohort study conducted in Buenos Aires, Argentina. The cohort was recruited from three different hospitals: 1) the “Braulio A. Moyano” Neuropsychiatric Hospital, 2) the “José Tiburcio Borda” Hospital, and 3) the “Hospital de Clínicas José de San Martín”, in the city of Buenos Aires. All hospitals in the current study serve a large urban catchment area in Buenos Aires and predominantly treat low-income, uninsured patients. The cohort study began in 2012 with the collection of baseline data finishing in December 2016. The current study utilized data obtained at the following time points, 1) at baseline, 2) at 6 months, and 3) 24 months of follow-up. The Institutional Review Board at each participating hospital approved the study protocol.

### **Patients**

Participants were patients who were admitted to the emergency department of one of the three hospitals for current suicidal ideation (SI) or a recent suicide attempt (SA). SI was defined as any current self-reported thought of engaging in suicide-related behavior (32), and SA was defined as a potentially self-injurious behavior with a nonfatal outcome, for which there was evidence (either explicit or implicit) that the person intended at some (non-zero)

level to kill him or herself (33, 34). Participants were patients who presented with active suicidal ideation or who had a SA in the last 72 hours prior to admission.

Eligible participants were (1) aged 18–65 years, (2) hospitalized for SI or a SA within the last 72 hours, (3) sufficiently alert and able to respond with fluency in Spanish, and (4) could provide written informed consent to participate. Participants were excluded if they were (1) unable to respond autonomously (ie, due to sedative effects of medication or language limitations) or (2) were transferred to another institution.

All participants gave written informed consent to participate in the study. Participants were included in the study if all relevant measures were completed at the baseline assessment. After discharge, subjects who were recruited as inpatients received treatment as usual in the community.

## **Measures**

### **Baseline data**

At baseline evaluation, each participant underwent a semi-structured interview conducted by one of three psychiatrists in the emergency departments. All psychiatrists on the research team had at least 5 years of clinical experience and were trained in the semi-structured interviews and data-gathering procedures of the study. The semi-structured interview included questions specific to clinical and demographic variables. The Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II) (35) was used to determine the diagnosis of BPD and The Mini International Neuropsychiatric Interview (MINI) (36) was used to determine other psychiatric diagnoses. Participant history of childhood sexual abuse (CSA), history of SA, age of first SA, hospitalizations due to SA, family history of SB, and psychiatric illness was assessed a semi-structured interview. The Columbia-Suicide Severity

Rating Scale (C-SSRS) (37, 38) was used to obtain further details regarding a participant's lifetime and most recent SB. Impulsivity was measured by the Barratt Impulsiveness Scale (BIS-11) (39). The Buss-Durkee Hostility Scale (BDHS) was used to evaluate the different aspects of hostility (40). The Beck Hopelessness Scale (BHS) was used to assess aspects of hopelessness (41). Recent stressors were assessed with the Brugha Stressful Life Events Scale (List of Threatening Experiences) (LTE) (42). Social adjustment were assessed with the Social Adaptation Self-evaluation Scale (SASS) (43).

The following variables, 1) number of stressful events, 2) impact of stressful events, 3) hopelessness, 4) hostility, 5) impulsiveness and 6) psychosocial functioning were classified as high or low according to the median value of the 136 patients (i.e., low if the value was less than the median, high otherwise).

The number of previous suicide attempts was categorized into three groups: 1) no attempt, 2) 1 or 2 attempts and 3) 3 or more attempts (44, 45). The suicide attempt lethality and the highest lifetime suicide lethality were measured with the C-SSRS (37, 38). Scores of 0, 1 and 2 in the C-SSRS was considered low lethality and scores of 3 or 4 points were considered high lethality. In addition, cases of admission due to SI were considered as very low lethality.

### **Follow-up data**

Two trained psychiatrists performed the telephone follow-ups. Participants were contacted by telephone every 6th month during a 2-year follow-up period following their baseline assessment in order to detect if an unfavorable event (suicide or a suicide attempt) occurred during any time of the evaluated follow-up period. If participants could not be reached calls were made on alternate hours and days for one week. If contact was still not achieved, interviewers contacted two reference numbers that were provided upon enrollment. If contact was still not possible, an e-mail was sent. If contact was not established during the

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follow-up assessment points, the medical record of each participant was reviewed at the three hospitals in search of an unfavorable event. If information was not in these records the participant was declared as “loss to follow-up.”

Interviewers contacted the participants or the reference person to primarily assess whether participants experienced a new SA or suicide during the follow-up period. According to previous work, the predictive factors of recurrence found during the first 6 months of follow-up were considered predictive factors of short-term recurrence and those found at 24 months were considered long-term predictive factors (8, 19, 24, 46-50).

### **Statistical analysis**

Patients who had data at least for one follow-up period after study entry were included in the present analysis. Suicide attempt or suicide was considered the event of interest. Participants without a SA or suicide throughout the follow-up period were censored, either by the end of the study or by death due to causes not related to the event of interest. The number of days elapsed between entering the study (date of hospitalization) and the event or censorship was calculated.

The mean and standard deviation (mean +/- sd) were used to describe the quantitative variables. The absolute and percentage frequencies corresponding to each category of the qualitative variables were calculated.

Relative risk and their respective 95% confidence intervals (CI95%) were calculated to compare baseline qualitative variables for patient sociodemographic and clinical characteristics according to whether or not they completed at least one follow-up after hospitalization. For the quantitative variables, the differences of the means of each group and



their respective CI95% was calculated. The same procedures were used to compare the characteristics of the patients with follow-up data according to whether or not they experienced a recurrence of SB.

To analyze the time elapsed until the event of interest, survival curve was estimated using the Kaplan-Meier method. Subsequently, a Cox model was adjusted to analyze the possible relation between the baseline characteristics of the patients and their survival time at 6 and 24 months after the event that resulted in their entry to the study. A backward algorithm was used until finding the best fit model, considering a significance level  $p < 0.05$  for each variable. For the adjustment of the models, only information of patients with complete data corresponding to all the variables included were considered.

The Hazard ratios (HR) and their respective 95% confidence intervals (CI) were estimated for all the variables that were statistically significant. Appropriate diagnostics were carried out to test goodness of fit, collinearity and atypical observations in each model. Assumptions in the model by means of exploration of residual behavior were verified for all cases. The threshold for statistical significance was  $p < 0.05$ .

In order to analyze the time elapsed until the event of interest of patients with or without CSA and low psychosocial functioning, survival curve was estimated using the Kaplan-Meier method. The sample was divided into 4 groups: [1] subjects who reported both CSA and Poor psychosocial functioning ( $n=27$ ), [2] subjects who reported CSA and have high psychosocial functioning ( $n=33$ ), [3] subjects who have low psychosocial functioning but denied CSA ( $n=29$ ), and [4] subjects who have neither risk factors ( $n=29$ ). The stratification of the sample was selected a priori. Statistical analysis was carried out using SAS University Edition software.

## Results

One hundred and thirty-six participants ( $M_{age} = 33.16 \pm 9.79$  years) met inclusion criteria and provided informed consent to participate. All participants met diagnostic criteria for BPD, 119 were female (87.50%), approximately 50% reported a history of CSA, and 80% reported at least one prior SA when entering the study. Fourteen percent of the patients had a comorbid bipolar disorder. Other clinical and demographic characteristics of the sample are shown in Table 1.

A total of 123 (90.44%) participants completed at least one follow-up assessment after the date of study entry. Participants who completed a follow-up assessment did not differ in any of the clinical or demographic variables as compared to participants lost during the follow-up period (Table 1).

The survival curve (Figure 1) shows that most of the suicidal behavior recurrence occurred during the sixth month follow up period (23 patients; 18.70 %). At the end of the follow up period (24 month), 39 patients had a new SA (31.71%), and one patient died by suicide (0.81%). Participants who did not report a SA or suicide by the date of the last follow-up were censored ( $n= 83$ , 67.48%). The incidence of a new SA during the follow-up period was 25.63 events / 100 000 persons-year and one patient died by suicide. The participant who committed suicide was a 44-year-old woman with diagnosis of recurrent MDD and comorbid substance abuse disorder, no history of CSA, and no history of prior psychiatric treatment; at the time of entering the study she had no previous suicide attempts.

Table 2 shows the comparison of baseline variables among patients with reattempters ( $n=40$ ) and non-reattempters ( $n=83$ ) (Table 2). The reattempters had a greater number of previous suicide attempts ( $p=0.03$ ) and a higher prevalence of a history of CSA ( $p=0.04$ ). There were no other significant differences for the clinical and demographic variables.

The analyses of the predictors that significantly explained the time to recurrence at six months and 24 months are shown in Table 3. The final model of data at 6 months of follow-up was adjusted with information from 123 patients and those corresponding to 24 months with 114 patients. After six months of follow-up, there was an association between the time to the event of interest and the history of previous psychiatric treatment and history of CSA. The patients without a history of prior psychiatric treatment in last month have about 2.5 fold higher risk of recurrence than patients with such history (HR: 2.42, 95% CI: 1.06-5.54). The patients with a history of CSA showed about three fold higher risk than those without history of CSA (HR: 2.86, 95% CI: 1.16-7.04).

At the end of the follow-up (24 months), the relation between time to SA recurrence and CSA remained significant. At 24 months of follow-up, new predictors appeared: 1) psychosocial functioning, 2) number of previous attempts, 3) age at admission, and 4) age at the first attempt (Table 3). Patients with low psychosocial functioning evidenced about two fold higher risk for suicidal recurrence than individuals with high psychosocial functioning (HR: 2.17, 95% CI: 1.12-4.24). Patients with 3 previous or more suicide attempts (i.e., *multiple attempters*) had almost six fold higher risk of recurrence than those with no history of SA (HR: 5.97, 95% CI: 1.31-27.27). Comparisons between those who had 1 or 2 previous attempts versus the other groups did not significantly differ. For each year of increase in patient age, a 5% reduction of the HR for SA recurrence was observed (HR: 0.95, 95% CI: 0.91-0.99). Regarding age at the first SA, for each year of increase there was an increase of 5% in the Hazard of reattempt (HR: 1.05, 95% CI: 1.01-1.10).

The interaction between history of CSA and psychosocial functioning is shown in Figure 2. Among the group of patients with no history of CSA, no significant difference was found in the HR of recurrence when comparing those with low psychosocial functioning versus those with high psychosocial functioning (HR: 0.995, 95% CI: 0.35-2.83). However, within

the group of patients with a history of CSA, those with low psychosocial functioning at baseline presented about three fold higher risk than those with high psychosocial functioning (HR: 2.58, 95% CI: 1.15-5.75).

## **Discussion**

The present study is the first prospective cohort study of high-risk patients diagnosed with BPD reported outside of North America. Almost 30% of the sample reported SB reoccurrence during the 24 month follow-up period. Results indicated that the first six months was the period of highest risk for SA reoccurrence. The incidence of a new SA was 25630 events / 100 000 persons-year and one patient died by suicide. Child sexual abuse was the only predictor of a new SA that remained significant throughout the entire observation period. The absence of prior psychiatry treatment was a short-term risk factor for SB suggesting that the first six months after hospitalization is a high-risk period for newly diagnosed or treated BPD patients. In the long term period (24 month), patient age, poor psychosocial functioning before hospitalization, age at first SA and having more than three previous suicide attempts (multiple attempters) increased risk of SB recurrence. An interaction between CSA and psychosocial functioning was observed. Specifically, patients with a history of CSA and poor psychosocial functioning represented the group with the highest risk of recurrence.

The suicide rate of 0.81% during 2 years of follow-up observed in the present study is within the range of values described in the literature. A previous cohort studies in BPD did not report any suicide during the first 2 years of follow-up (19), which could be explained because the cohort included only out-patients, representing a sample with lower psychopathological severity than the one in the present study. Other cohort study with 252 BPD patients reported 8 death, one of them by suicide (20), which represents a rate slightly lower than the rate we reported. On the other hand, two cohort studies reported rates of suicide near 4 % (8)(51), however, this studies have larger follow-up periods (5 years or

more) in which a greater number of suicides are expected. Finally, a recently published systematic review reported a suicide rate in BPD between 2% – 5% in cohorts with at least 5 years of follow-up (52)

The 33% rate of SB recurrence during the 24 month period of follow up are similar to the 35% rate of recurrence described by Weding et al. after a similar follow up period (8). The recurrence rate in our study is higher as compared to the 25% rate of recurrence reported by Soloff & Chiappetta (20, 21). More than half of the sample in the study by Soloff & Chiappetta were outpatients, which is likely representative of a less severe population as compared to our inpatient cohort. Dissimilar to previous work, one suicide was reported in our patient cohort.

In our cohort, 18.70% ( $n = 23$ ) of the patients reported a SA reattempt within the first 6 months. After 24 months of the study follow-up period, 32.52% of the patients ( $n = 40$ ) reported a SA reattempt. Two thirds of patients with a suicide reattempt, had the SA within the first six months of follow-up. These findings highlight the importance of identifying predictors of short term recurrence of SB.

History of CSA was the only predictor that remained significant throughout the observation period. Childhood adverse events are reported by many patients with BPD (53, 54). In fact, CSA is the most frequent adverse event, reported by 40-85% of inpatients with BPD (51, 55-58). The severity of BDP psychopathology has also been linked to severity of CSA (59). History of CSA is a well recognized risk factor for SB (60-63), Weding et al., found CSA as a risk factor for suicide, which increased risk for SA 2 times fold during a two-year follow-up (OR: 2.27, 95% CI: 1.69-3.05). However, they did not study the short-term impact of CSA (8). Our work not only shows CSA as an important risk factor for SB recurrence in BPD, but CSA is also documented as a predictor of short term (HR: 2.86, CI95% = 1.16-7.04) and long term (HR: 1.96, CI95% = 1.01- 3.85) recurrence of SB. Taking

into account that CSA was a predictor of short term SB recurrence, it may be an important risk factor to assess for and treat via evidence-based treatments for PTSD (64, 65).

Regarding psychosocial functioning among BPD patients, contradictory data were found throughout the literature. Links et al. found poor social adjustment was not a significant risk factor for SB among patients diagnosed with BPD (19). This difference observed in our study may in part be explained by the severity of inpatient participants as compared to outpatient participants. On the other hand, Soloff and Chiappetta found that poor social adjustment significantly elevated the risk for SA among patients with BPD in the short term and at two and six years of follow-up (20, 21). In our cohort, poor social functioning was not identified as a risk factor for short-term SA recurrence. However, patients with poor social functioning have an increased risk of SB at long-term follow-up. Fifty percent of patients with BPD reach recovery and present with psychosocial functioning, which highlights the importance of this construct (66). Dialectical behavioral therapy is a promising treatment for addressing psychosocial functioning among patients with BPD (67). Improvements in psychosocial functioning will likely reduce risk for long term SA recurrence.

Zanarini et al. found that childhood abuse was significantly related to the overall severity of psychosocial impairment, and hypothesized that childhood abuse contributes to the psychosocial impairment characteristic of BPD (59). Soloff and Chiappetta suggested that child abuse and psychosocial impairment are characteristics of a poor prognosis subtype of BPD (20, 21). In our study, we analyzed the interaction of both with survival curves by grouping patients according to the presence or absence of these two risk factors for SB among patients with BPD. There was no significant difference in SA recurrence between low psychosocial functioning and high psychosocial functioning among patients with no history of CSA. However, among patients with a history of CSA, low psychosocial functioning increased risk for suicide reattempts by 2.58 times as compared to those with high

psychosocial functioning. Psychosocial functioning likely fluctuates across time and should be evaluated during the course of BPD (59). Poor social functioning may impact one's ability to engage in treatment. In fact, both psychosocial functioning and CSA reflect greater psychopathological severity and worse prognosis.

Our results also showed that the absence of prior psychiatric treatment in the last month increased risk for a SA during a short term interval (6 month) by three times. These results suggested that the next 6 months after first hospitalization could be a high-risk period among patients with newly-diagnosed BPD or engagement in treatment. Soloff et al. found patients with BPD that received outpatient psychiatric treatment prior to the SA showed a reduced risk for suicide attempts by 30% in short intervals -12 months- (20, 21, 50). The absence of outpatient treatment was not identified as a risk factor at two years of follow-up, which was similar to our findings. Nonetheless, previous work evidenced three times increased risk for suicide at six years of follow up (20, 21). It is possible risk factors change across time, leading to different impact on SB in longer follow-up periods.

In our study, multiple attempters (3 or more suicide attempts) were almost 6 times more likely to make a suicide reattempt as compared to patients with one or two suicide attempts. This is in accordance with the large body of evidence that indicates the best predictors of a future SA is the history of previous SA (68). Multiple suicide attempts could also be the expression of a determinant suicidal phenotype (19, 45). This is not only clinically relevant for patients diagnosed with BPD (44). According to Forman et al., patients with three or more suicide attempts, despite psychiatric diagnosis, likely have higher levels of hopelessness, depression and a more accepting attitude towards their suicide attempts (44).

In our study cohort, patient age was identified as a risk factor for long-term SB recurrence. Specifically, as patient age decreased by a year there was an increased risk of 5%. Only one longitudinal study has found the same results regarding age (8). Finally, although some studies have proposed prior hospitalization and family history of suicide as factors that increase risk for future suicide attempts (19-21), our study failed to reproduce such results. Moreover, some traits such as impulsivity, hopelessness or hostility, were not related to SB recurrence in the current study. This is likely a result of a ceiling effect, given the severity of the patients enrolled in the current study.

The prospective longitudinal design is a strength of the current study as it allows for exploring predictors of short and long term SB among patients with BPD. The attrition rate was low in the current study, with less than 10% of enrolled patients lost during the follow-up. Patients lost to follow-up did not significantly differ in terms of clinical or demographic variables as compared to those who completed the cohort study. Despite these strengths, some limitations should be considered when interpreting our study results. First, the current study is limited to patients hospitalized for severe SI or SA and who met criteria for BPD, which limits our ability to generalize findings. Second, our sample contains a high percentage of women (87.5%). As such, variables of interest may be skewed towards women. Nonetheless, BDP is more commonly diagnosed among women as compared to men (6). Third, CSA history was measured via a semi-structured retrospective interview, which may be more vulnerable to bias as compared to a validated scale. However, previous studies have demonstrated high agreement between a series of similar semi-structured screening questions and validated scales for CSA (69).



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**Table 1. General characteristics of the BPD included in the study.**

	(1) All patients included in the study	(2) Patients that complete at least one follow-up	(3) Patients lost during the follow-up	Difference or relative risk (CI95%)
No. of participants	136	123	13	
Age (yrs.), mean $\pm$ SD	33.16 $\pm$ 9.79	33.28 $\pm$ 10.02	32.08 $\pm$ 7.47	1.19 (-4.46 – 6.86)
Education (yrs.), mean $\pm$ SD	11.25 $\pm$ 2.95	11.31 $\pm$ 2.94	10.69 $\pm$ 3.15	0.62 (-1.09 – 2.32)
Women (%)	119 (87.50)	108 (87.80)	11 (84.62)	1.27 (0.31 – 5.26)
<i>Family history (%)</i>				
Any psychiatric illness	115 (85.19)	106 (86.18)	9 (75.00)	1.92 (0.57 – 6.47)
Suicide or SA	75 (55.15)	71 (57.72)	4 (30.77)	2.77 (0.89 – 8.55)
<i>Suicide history</i>				
Attempted previously (%)				
Single attempters	26 (19.12)	21 (17.07)	5 (38.46)	-
1 or 2 attempts	49 (36.03)	46 (37.40)	3 (23.08)	3.65 (0.79 – 16.72)
3 or more attempts	61 (44.85)	56 (45.53)	5 (38.46)	2.67 (0.70 – 10.16)
Age at first attempt (yrs.), mean $\pm$ SD	24.07 $\pm$ 10.77	24.21 $\pm$ 10.94	22.67 $\pm$ 9.17	1.54 (-4.93 – 8.02)
Lethality index (%)				
Very low	37 (27.21)	36 (29.27)	1 (7.69)	-
Low	78 (57.35)	69 (56.10)	9 (69.23)	0.21 (0.03 – 1.75)
High	21 (15.44)	18 (14.63)	3 (23.08)	0.17 (0.02 – 1.72)
Highest lifetime lethality (%)				
Very low	5 (3.88)	4 (3.42)	1 (8.33)	-
Low	65 (50.39)	59 (50.43)	6 (50.00)	2.46 (0.24 – 25.70)
High	59 (45.74)	54 (46.15)	5 (41.68)	2.70 (0.25 – 29.04)
<i>Rating scale scores (Y/N; %)</i>				
High Impulsivity (BIS)	68 (52.31)	59 (50.00)	9 (75.00)	1.00 (0.89 – 1.12)
High Hopelessness (BHS)	74 (56.49)	67 (56.30)	7 (58.33)	0.99 (0.89 – 1.11)
High Hostility (BDHI)	68 (52.31)	59 (50.00)	9 (75.00)	0.91 (0.82 – 1.02)
High Number of recent stressors (SLE)	76 (58.91)	68 (58.12)	8 (66.67)	0.72 (0.23 – 2.26)
High Impact of Recent stressors (SLE)	66 (50.77)	59 (50.00)	7 (58.33)	0.74 (0.24 – 2.20)
History of Child Sexual abuse (%)	68 (50.37)	61 (49.59)	7 (58.33)	0.72 (0.24 – 2.17)
Poor psychosocial functioning (SASS) (%)	60 (46.15)	56 (47.46)	4 (33.33)	1.71 (0.54 – 5.41)
Any previous psychiatry treatment (%)	83 (61.03)	77 (62.60)	6 (46.15)	1.83 (0.65 – 5.14)
Bipolar disorder (%)	19 (14.07)	18 (14.75)	1 (7.69)	1.97 (0.27 – 14.26)
Comorbid substance abuse disorder (%)	11 (8.15)	9 (7.38)	2 (15.38)	0.48 (0.12-1.99)

Rating scales: BIS = Barratt Impulsiveness Scale; BHS = Beck Hopelessness Scale;

BDHI = Buss-Durkee Hostility Inventory; SLE = Stressful Life Events Scale,

SASS = Social Adaptation Self-evaluation Scale. CI = Confidence interval.

**Table 2. Comparison of baseline variables among reattempters and non-attempters.**

Variables	Non- reattempters	Reattempters	Comparison	Difference or relative risk (CI95%)
No. of study participants	83	40		
Age (yrs.), mean $\pm$ SD	34.06 $\pm$ 10.17	31.65 $\pm$ 9.62	Non-attempters - Reattempters	2.41 (-1.40 – 6.22)
Sex (%)				
Women	71 (85.54)	37 (92.50)	Reattempters vs. Non-attempters	1.72 (0.60 – 4.76)
<i>Family history (%)</i>				
Any psychiatric illness	70 (84.34)	36 (90.00)	Reattempters vs. Non-attempters	1.45 (0.59 – 3.57)
Suicide or SA	47 (56.65)	24 (60.00)		1.10 (0.65 – 1.85)
<i>Suicide history</i>				
Attempted previously (%)				
None attempts	19 (22.89)	2 (5.00)	Reattempters vs. Non-attempters	-
1 or 2 attempts	31 (37.35)	15 (37.50)		4.55 (0.94 – 20.00)
3 or more attempts	33 (39.76)	23 (57.50)		6.67 (1.41 – 33.33)
Age at first attempt (yrs.), mean $\pm$ SD	24.43 $\pm$ 11.25	23.78 $\pm$ 10.45	Non-attempters – Reattempters	0.65 (-3.57 – 4.88)
Lethality index SA (%)			Non-attempters vs. Reattempters	
Very low	24 (29.92)	12 (30.00)		-
Low	46 (55.42)	23 (57.50)		1.00 (0.43 – 2.35)
High	13 (15.66)	5 (12.50)		1.30 (0.38 – 4.50)
Highest lifetime SA lethality (%)			Non-attempters vs. Reattempters	
Very low	3 (3.80)	1 (2.63)		-
Low	45 (56.96)	14 (36.84)		1.07 (0.10 – 11.14)
High	31 (39.24)	23 (60.53)		0.45 (0.04 – 4.60)
<i>Rating scale scores (N; %)</i>				
High Impulsivity (BIS)	40 (50.00)	19 (50.00)	Non-attempters vs. Reattempters	1.00 (0.78 – 2.16)
High Hopelessness (BHS)	42 (52.50)	25 (64.10)	Reattempters vs. Non-attempters	1.16 (0.91 – 1.49)
High Hostility (BDHI)	36 (43.37)	23 (57.50)	Reattempters vs. Non-attempters	1.19 (0.93 – 1.54)

High Number of recent stressors (SLE)	46 (58.23)	22 (57.89)	Non-reattempters vs. Reattempters	1.01 (0.59 – 1.71)
	40 (50.63)	19 (48.72)	Non-reattempters vs. Reattempters	1.05 (0.63 – 1.76)
High Impact of Recent stressors (SLE)				
History of Child Sexual Abuse (%)	36 (43.37)	25 (62.50)	Reattempters vs. Non-reattempters	1.69 (1.01 – 2.86)
Poor psychosocial functioning (%)	34 (43.04)	22 (56.41)	Reattempters vs. Non-reattempters	1.43 (0.85 – 2.38)
Any previous psychiatry treatment (%)	52 (62.65)	25 (62.50)	Non-reattempters - Reattempters	1.00 (0.59 – 1.70)
Bipolar disorder (%)	11 (13.41)	7 (17.50)	Reattempters vs. Non-reattempters	1.72 (0.60 – 4.76)

Rating scales: BIS = Barratt Impulsiveness Scale; BHS = Beck Hopelessness Scale;

BDHI = Buss-Durkee Hostility Inventory; SLE = Stressful Life Events Scale;

SASS = Social Adaptation Self-evaluation Scale. CI = Confidence interval.

**Table 3: Significant baseline characteristics according to time of evaluation of the survival function.**

Period	Significant Variables	Comparison	Hazard Ratio (CI95%)
<b>6 months</b> (n=123)	Previous psychiatry treatment	Without vs. with	2.42 (1.06 - 5.54)
	History of Sexual abuse	With vs. without	2.86 (1.16 - 7.04)
<b>24 months</b> (n=114)	History of Sexual abuse	With vs. without	1.96 (1.01 - 3.85)
	Psychosocial functioning	Low vs. high	2.17 (1.12 - 4.24)
	Previous attempts	1 or 2 vs. 3 or more	0.56 (0.28 - 1.13)
		1 or 2 vs. None	3.36 (0.74 - 15.19)
		3 or more vs. none	5.97 (1.31 - 27.27)
	Age	One year of increase.	0.95 (0.91 - 0.99)
Age at first attempt	One year of increase.	1.05 (1.01 - 1.10)	

CI = Confidence interval.

Figure 1. Survival curve of patients with BPD.

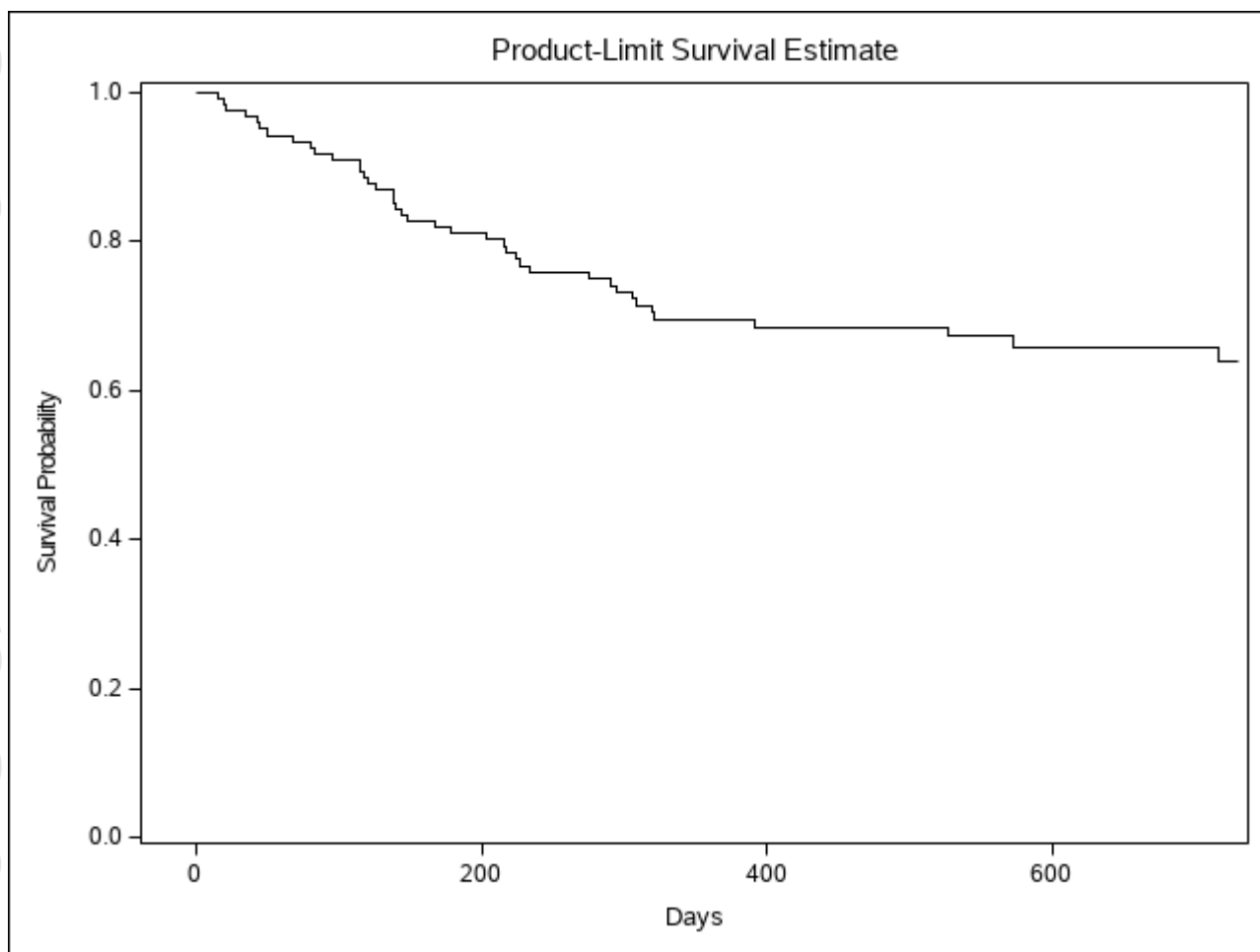




Figure 2. Survival curve of patients with BPD with and without the interaction between CSA and psychosocial functioning.

