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Association between non-suicidal self-injury and suicidal behavior in Borderline Personality Disorder: a retrospective study

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ABSTRACT

Introduction. Suicidal behavior (SB) spectrum is nuclear in the clinic and management of Borderline Personality Disorder (BPD). Although in recent research papers non-suicidal self-injury behavior (NSSI) and suicidal behavior (SB) differ in intentionality, frequency and lethality; these two behaviors have been described concurrently with a controversial distinction. Few works talk about the reason for the co-occurrence between both entities in the psychiatric population in general and in BPD in particular. The aim of the report is to analyze the link between SB and NSSI in BPD.

Methods. A cross-sectional, observational and retrospective study was carried out on a sample of 134 patients between 18 and 56 years old, diagnosed with BPD according to DSM-5 criteria. The association between variables was analyzed through a negative binomial and multivariate logistic regression model.

Results. 77.6% report a history of at least one suicide attempt (SA), while 30.4% none. The average number of SA is 2.69. For NSSI, 64.2% presented them, while 35.8% did not. A statistically significant association is found between both of them. NSSI are also significantly related to performing a greater number of SA according to the multivariate analysis.

Conclusions. The results suggest that these behaviors are nuclear and frequent in BPD. Both appear significantly related to each other. Looking ahead, longitudinal studies are needed to confirm the relationship between these variables.

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Keywords. Borderline Personality Disorder, non-suicide self-injury, suicide behavior, suicide, prevention.

Actas Esp Psiquiatr 2021;49(5):199-204 | *ISSN: 1578-2735*

ASOCIACIÓN ENTRE LAS AUTOLESIONES SIN FINALIDAD SUICIDA Y LA CONDUCTA SUICIDA EN TRASTORNO LÍMITE DE PERSONALIDAD: UN ESTUDIO RETROSPECTIVO

Introducción. El espectro de la conducta suicida (CS) es nuclear en la clínica y el manejo del trastorno límite de personalidad (TLP). Aunque en trabajos de investigación recientes las autolesiones sin finalidad suicida (ASFS) y la CS se diferencian en intencionalidad, frecuencia y letalidad, se ha descrito que estos dos comportamientos a menudo ocurren de manera concurrente, siendo la distinción entre ambas un tema controvertido. Pocos trabajos hablan del porqué de la coocurrencia entre ambas entidades en población psiquiátrica en general y en TLP en particular. El objetivo del presente trabajo es analizar la relación entre CS y ASFS en TLP.

Metodología. Se realiza un estudio transversal, observacional y retrospectivo de una muestra de 134 pacientes de entre 18 y 56 años, con diagnóstico de TLP de acuerdo con criterios DSM-5. La asociación entre variables se analizó a través de un modelo de regresión logística multivariado y binomial negativa.

Resultados. El 77,6 % refieren antecedentes de al menos un IS, mientras que el 22,4 % ninguno. La media del número de IS es de 2,69. Para las ASFS, el 64,2 % las presentaban, mientras que el 35,8 % no. Se encuentra una asociación estadísticamente significativa entre ambas. Los ASFS también se relacionan de manera significativa con realizar mayor número de IS según el análisis multivariante.

Conclusiones. Los resultados apuntan a que estas conductas son nucleares y frecuentes en el TLP. Ambas aparecen relacionadas entre sí de forma significativa. De cara al futuro, estudios longitudinales permitirían esclarecer la dirección de dicha relación.

Palabras clave. Trastorno Límite de Personalidad, conductas autolesivas sin finalidad suicida, conducta suicida, suicidio, prevención.

INTRODUCTION

Borderline Personality Disorder (BPD) is a multifactorial etiology disorder characterized by emotional instability, feeling of emptiness and impulsive behaviors[1]. Among the impulsive behaviors associated with BPD, suicidal behavior (SB) is considered a core aspect[2-4]. Between 40 and 85% of BPD patients commit suicide attempts (SA), with an average of three per patient[5,6]. Completed suicide rate amid BPD patients is between 5 and 10%, which is about 400-times higher than the estimated for general population[5,7]. It is considered a symptom with great clinical relevance and important prognostic value, and it is one of the manifestations that most affects the functionality of these patients[6].

The spectrum of SB and related behaviors takes into account behaviors that cause direct and deliberate harm to oneself[8]. Nonsuicidal self-injury (NSSI), SB, and completed suicide itself are included[9]. Although in recent research, NSSI and SB differ in intent, frequency and lethality[10], it has been described that these two behaviors often occur concurrently[11,12]. For some authors, NSSI are a risk factor and in some way, precursor behaviors, for the future appearance of SA[13-16]. Likewise, the iceberg model has been used to illustrate the great prevalence of undetected self-harm behaviors as part of a spectrum that encloses SB and finishes with completed suicide[17,18].

The distinction between SB and NSSI is a controversial issue, from which different theories have been postulated, such as the "Gateway Theory", that of the "Third variable" and that of "Acquisition of capacity for suicide" by Joiner[19]. Furthermore, few studies deal with the reason for the co-occurrence between both entities in the psychiatric population in general and in Borderline Personality Disorder (BPD) in particular.

From the hypothesis that SA in patients with BPD are associated with the concomitant presence of NSSI and reciprocally, NSSI are associated with the presence of SA; the objectives of this work are:

- Analyze the relationship between SB and NSSI in BPD
- Determine if SA are related to NSSI presence and NSSI to SA
- Know if the presence of NSSI are related to a greater number of SA

METHODS

We performed a cross-sectional, observational and retrospective study which aimed to analyze the relationship between the NSSI and the SB using a sample of 134 patients between 18 and 56 years old, diagnosed with BPD according to DSM-5 criteria (listed in Table 1). These patients were recruited consecutively in the admission process to the Personality Disorders Day Unit of the *Hospital Clínico San Carlos* in Madrid, which is a specific and nationwide reference unit for the treatment of patients with this diagnosis.

Table 1 Diagnostic criteria for Borderline Personality Disorder, according to DSM-5 (APA. American Psychiatric Association. Diagnostic Manual and Statistics of Mental Disorders (DSM-5). Arlington V, editor. Madrid: Editorial Médica Panamericana; 2014.)

1.	Desperate or exaggerated efforts to avoid an experience of helplessness
2.	Pattern of interpersonal relationships characterized by instability, which oscillates between idealization and rejection of other people
3.	Alteration of the experience of one's own identity
4.	Impulsiveness
5.	Suicidal behaviors
6.	Affective instability
7.	Chronic feeling of emptiness
8.	Inappropriate bouts of anger or rage
9.	Transitory paranoid ideas

The main descriptive characteristics of the patients are shown in Table 2.

Patients who met criteria for other diagnoses, had an IQ of less than 85 or severe neurological disease, a history of traumatic brain injury, severe medical illness, current abuse of psychoactive substances –except for tobacco- or declined to participate in the study were excluded. The Hospital Ethics Committee approved the evaluation protocol, and all the participants signed the informed consent.

For the clinical evaluation we used the validation into Spanish of the Columbia-Suicide Severity Rating Scale[20], assessing the presence or not of SA and NSSI, number of SA and modality of the attempts of autolysis. Patients were individually evaluated by a psychiatrist and a clinical psychologist for approximately 120 minutes in the

Table 2 Descriptive variables of the studied sample /n/Percentage (%)

	n	Percentage (%)
Sex (N = 134)		
Male	37	27.6
Woman	97	72.3
Marital status (N = 114)		
Single	83	72.8
Married or with a partner	26	22.8
Divorced or separated	5	4.4
Children (N = 134)		
No	109	81.4
Yes	25	18.6
Current activity (N = 134)		
Unemployed	78	58.2
Working	16	11.9
Student	24	17.9
Leave from work	16	11.9
Educational level (N = 134)		
Primary studies	18	13.5
Secondary studies	53	39.8
Vocational training	27	20.3
University studies	35	26.6
Socioeconomic level (N = 134)		
Low	20	22.7
Intermediate	37	42
High	31	35.2
Years of evolution of the disease (N = 134)		
Up to five years	23	17.2
Between five and ten years	26	19.4
More than ten years	85	63.4
Type of previous treatment (N = 134)		
None	3	2.2
Psychopharmacological	34	25.4
Psychotherapeutic	12	8.9
Psychopharmacological + Psychotherapeutic	85	63.4

Personality Disorder Day Hospital of the *Hospital Clínico San Carlos* in Madrid (Spain). In order to reduce variability, all tests were performed at similar times (between 10 and 12 a.m.).

Statistical analysis

The mean and the standard deviation were used for the description of continuous data and the percentages for categorical data. Regarding the quantitative variables, their concordance to a normal distribution was determined using the Kolmogorov-Smirnov test. The sample was divided into two groups according to whether or not there was a history of NSSI. Variable comparisons were made using Chi-squared test and Student's t-test. The association between variables was analyzed through a multivariate negative binomial logistic regression model. Data analysis was performed using the SPSS statistical package, version 19.0. The significance level established for all of the hypothesis testing was 0,05.

RESULTS

For suicide / suicide attempts (SA), 104 patients out of 134 (77.6%) reported a history of at least one SA, while 30 patients (22.4%) did not have NSSI, as shown in Figure 1. The mean number of SA is 2.69 for each patient, with a standard deviation of 1.774.

For non-suicidal self-injurious behaviors (NSSI), 86 patients (64.2%) reported a history of NSSI, while 48 patients (35.8%) did not present this history, as also detailed in Figure 1.

Within the method followed to carry out the SA, the distribution shown in Table 3 is observed. The most frequent method is the combination of methods (53.5%), followed by drug overdose (46.5%).

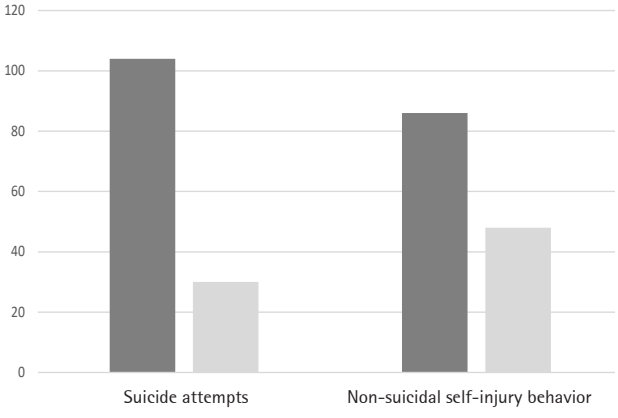

Figure 1 Suicidal and related behaviors (n = 134)

Table 3 Autolytic attempt method in the studied sample

	N	Percentage (%)
Drug overdose		
Yes	40	46.5
No	46	53.5
Venoclysis		
Sí	6	7
No	80	93
Poisoning		
Sí	1	1.2
No	85	98.8
Hanging		
Sí	1	1.2
No	85	98.8
Precipitation		
Sí	6	7
No	80	93
White weapon		
Sí	1	1.2
No	85	98.8
Throwing oneself into vehicles		
Sí	2	2,3
No	84	97.7
Other methods / combination of methods		
Sí	46	53.5
No	40	46.5

With the multivariate analysis using logistic regression, a statistically significant association (p = 0.038) was found with the NSSI, with an odds ratio of 3.218, for a 95% confidence interval (1.069-9.690). With the multivariate analysis using negative binomial regression, the NSSI (64.2%) were also significantly related to performing a greater number of SA according to the multivariate analysis.

In turn, NSSI are statistically significantly associated with SA (p = 0.006) with an odds ratio of 4.037, and a 95% confidence interval (1.491-10.932).

DISCUSSION

The data presented show slightly higher SA history figures (77.6%) than those collected in the literature (40-70%)[5,21,22]. This may be due to the fact that the patients in the studied sample come from a clinical population with distinctive characteristics compared to other populations of patients with BPD. They are patients with BPD with a clinical course classified as severe, and who have been referred to the Personality Disorders Unit of the *Hospital Clínico San Carlos de Madrid*, either from the health area of the Hospital in which the Unit is located, or from other health centers, as a specific unit for BPD treatment, to benefit from more individualized programs for this type of population[23].

Another peculiar characteristic of the sample studied is that the presence of a history of suicide attempts (SA) (77.6%) is more frequent than the presence of self-injurious behaviors without suicidal intent (NSSI) (64.2%). The literature collects precisely the opposite data, that is, that NSSI are more frequent than SA[24]. This characteristic could also be associated with the greater clinical severity of the patient sample mentioned previously. Given that, in the spectrum of suicidal behaviors and related behaviors, the way of reacting to circumstances experienced as stressful in moments of emotional overflow will be more likely to carry out a disruptive act or behavior with the purpose of death than to an act without that purpose. Precisely the main distinguishing feature between an SA and NSSI is the intention to die[8,9,25].

The distinction between SB and NSSI is a subject in debate in the scientific literature. The model of Hamza et al 2012[19] has been accepted, in which a model is proposed that integrates the "Gateway Theory", that of the "Third variable" and that of "acquisition of capacity for suicide" of Joiner to explain the relationship between NSSI and SB. The BPD can function as this third variable, although the study model presented as will be pointed out later limits being able to conclude that it leads a progressive training from the NSSI to the SB itself through an increase in the perceived load or the feeling of frustrated belonging.

The present study finds a strong statistical association in the multivariate analysis between NSSI and SB in patients diagnosed with BPD, a finding also present in other studies[14]. Suicide risk is associated with NSSI, particularly repeated self-harm. A statistically significant association was found in the multivariate analysis performed by negative binomial regression between the NSSI and the number of SA. That is, having presented NSSI is related not only to the presence of SA, but also to a greater number of attempts. Thus, the present study reproduces results found by other authors, who affirm that the history of NSSI is also associated with the risk of repetition of self-injurious behavior, especially the first month after the hospital evaluation[26].

There are few longitudinal studies that allow establishing the direction of the link between NSSI and SB. But, in

any case, the statistical relationship between history of NSSI and the risk of future SB[19] can be affirmed. It is found that NSSI behaviors are a greater predictor of SA than vice versa, that is to say that SA with respect to NSSI, as recent works have pointed out[15,27,28]. It is observed that both are closely related and can form a continuum in the expression of a basic discomfort common to them[29]. Therefore, the identification of NSSI could be of interest in the prevention of more disruptive and serious behaviors such as SA, based on these results.

The main limitation of the study is that it is an observational, descriptive and cross-sectional study, of concurrent and retrospective temporality. This design model does not allow the establishment of causal links between the statistical associations described and does not have the statistical power comparable to that of a prospective study. Likewise, the presence of a control group could make the study more consistent, an aspect that was rejected at first because the statistics service and the Ethics Committee considered it unnecessary.

CONCLUSIONS

NSSI and SB are core behaviors in BPD. BPD is associated with high SA and NSSI rates. Both appear to be related to each other in BPD in the present study in a significant way according to the multivariate analysis. Likewise, in its quantitative assessment, a greater number of SA are significantly associated with NSSI.

Acknowledgment. We want to thank all the members of the Institute of Psychiatry and Mental Health of the *Hospital Clínico San Carlos* for their support and help in collecting the data for this study.

Conflict of interests. None.

BIBLIOGRAPHY

1. Lieb K, Zanarini MC, Schmahl C, Linehan PMM, Bohus PM. Borderline personality disorder. Lancet, vol. 364, 2004, p. 453-61.
2. Paris J. Borderline Personality Disorder. Encycl. Hum. Behav. Second Ed., vol. 377, 2012, p. 372-6.
3. Gunderson JG. Reducing Suicide Risk in Borderline Personality Disorder. JAMA. 2015;314:181.
4. Baus N, Fischer-Kern M, Naderer A, Klein J, Doering S, Pastner B, et al. Personality organization in borderline patients with a history of suicide attempts. Psychiatry Res. 2014;218:129-33.
5. Jopling EN, Khalid-Khan S, Chandrakumar SF, Segal SC. A retrospective chart review: Adolescents with borderline personality disorder, borderline personality traits, and controls. Int J Adolesc Med Health. 2018;30.
6. Hawton K, van Heeringen K. Suicide. Lancet. 2009;373:1372-81.
7. Oumaya M, Friedman S, Pham A, Abou Abdallah T, Guelfi JD, Rouillon F. Personnalité borderline, automutilations et suicide : revue de la littérature. Encephale. 2008;34:452-8.
8. Turecki G, Brent DA. Suicide and suicidal behaviour. Lancet. 2016;387:1227-39.
9. Posner K, Oquendo MA, Gould M, Stanley B, Davies M. Columbia Classification Algorithm of Suicide Assessment (C-CASA): Classification of suicidal events in the FDA's pediatric suicidal risk analysis of antidepressants. Am J Psychiatry. 2007;164:1035-43.
10. Baetens I, Claes L, Muehlenkamp J, Grietens H, Onghena P. Non-suicidal and suicidal self-injurious behavior among flemish adolescents: A web-survey. Arch Suicide Res. 2011;15:56-67.
11. Jacobson CM, Muehlenkamp JJ, Miller AL, Turner JB. Psychiatric impairment among adolescents engaging in different types of deliberate self-harm. J Clin Child Adolesc Psychol. 2008;37:363-75.
12. Nock MK, Joiner TE, Gordon KH, Lloyd-Richardson E, Prinstein MJ. Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. Psychiatry Res. 2006;144:65-72.
13. Portzky G, van Heeringen K, Brent B, Cheung C, Crowell D, Donaldson D, et al. Deliberate self-harm in adolescents. Curr Opin Psychiatry. 2007;20:337-42.
14. Andover MS, Gibb BE. Non-suicidal self-injury, attempted suicide, and suicidal intent among psychiatric inpatients. Psychiatry Res. 2010;178:101-5.
15. Asarnow JR, Porta G, Spirito A, Emslie G, Clarke G, Wagner KD, et al. Suicide attempts and nonsuicidal self-injury in the treatment of resistant depression in adolescents: Findings from the TORDIA study. J Am Acad Child Adolesc Psychiatry. 2011;50:772-81.
16. Hawton K, Witt KG, Salisbury TLT, Arensman E, Gunnell D, Hazell P, et al. Psychosocial interventions following self-harm in adults: a systematic review and meta-analysis. The Lancet Psychiatry. 2016;3:740-50.

17. Arensman E, Corcoran P, McMahon E. The iceberg model of self-harm: new evidence and insights. The Lancet Psychiatry. 2018;5:100-1.

18. Geulayov G, Casey D, Bale L, Brand F, Clements C, Farooq B, et al. Suicide following presentation to hospital for non-fatal self-harm in the Multicentre Study of Self-harm: a long-term follow-up study. The Lancet Psychiatry. 2019;6:1021-30.

19. Hamza CA, Stewart SL, Willoughby T. Examining the link between nonsuicidal self-injury and suicidal behavior: a review of the literature and an integrated model. Clin Psychol Rev. 2012;32:482-95.

20. Al-Halabí S, Sáiz PA, Burón P, Garrido M, Benabarre A, Jiménez E, et al. Validación de la versión en español de la Columbia-Suicide Severity Rating Scale (Escala Columbia para Evaluar el Riesgo de Suicidio). Rev Psiquiatr y Salud Ment. 2016;9:134-42.

21. Leichsenring F, Leibing E, Kruse J, New AS, Leweke F. Borderline personality disorder. Lancet. 2011;377:74-84.

22. Dubovsky AN, Kiefer MM. Borderline Personality Disorder in the Primary Care Setting. Med Clin North Am. 2014;98:1049-64.

23. Lana F, Sánchez-Gil C, Ferrer L, López-Patón N, Litvan L, Marcos S, et al. Efectividad de un programa terapéutico integrado para trastornos graves de la personalidad. Seguimiento pragmático de 36 meses. Rev Psiquiatr Salud Ment. 2015;8:3-10.

24. Nock MK, Prinstein MJ. A functional approach to the assessment of self-mutilative behavior. J Consult Clin Psychol. 2004;72:885-90.

25. Klonsky ED. The functions of deliberate self-injury: A review of the evidence. Clin Psychol Rev. 2007;27:226-39.

26. Bennardi M, McMahon E, Corcoran P, Griffin E, Arensman E. Risk of repeated self-harm and associated factors in children, adolescents and young adults. BMC Psychiatry. 2016;16:421.

27. Prinstein MJ, Nock MK, Simon V, Aikins JW, Cheah CSL, Spirito A. Longitudinal Trajectories and Predictors of Adolescent Suicidal Ideation and Attempts Following Inpatient Hospitalization. J Consult Clin Psychol. 2008;76:92-103.

28. Wilkinson P, Kelvin R, Roberts C, Dubicka B, Goodyer I. Clinical and psychosocial predictors of suicide attempts and nonsuicidal self-injury in the Adolescent Depression Antidepressants and Psychotherapy Trial (ADAPT). Am J Psychiatry. 2011;168:495-501.

29. Victor SE, Klonsky ED. Correlates of suicide attempts among self-injurers: A meta-analysis. Clin Psychol Rev. 2014;34:282-97.