



Research Paper

Borderline Personality Traits in Patients With Epilepsy



Sara Shoja¹ , Nikoo Saeedi¹ , Seyed Mehran Homam^{2*}

1. Student Research Committee, Mashhad Branch, Islamic Azad University, Mashhad, Iran.

2. Department of Neurology, School of Medicine, Mashhad Branch, Islamic Azad University, Mashhad, Iran.



Citation Shoja S, Saeedi N, Homam SH. Borderline Personality Traits in Patients With Epilepsy. *Caspian J Neurol Sci.* 2023; 9(1):15-21. <https://doi.org/10.32598/CJNS.9.32.389.1>

Running Title Borderline Personality in Patients with Epilepsy

doi <https://doi.org/10.32598/CJNS.9.32.389.1>



© 2018 The Authors. This is an open access article under the [CC-BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license.

ABSTRACT

Background: Although much research on patients with epilepsy (PWE) has focused on psychiatric disorders such as depression, anxiety, and psychotic disorders, the relationship between epilepsy and personality disorders has not been frequently studied.

Objectives: The study aimed to evaluate borderline personality traits in PWE.

Materials & Methods: In this case-control study, we evaluated 211 PWE who were consecutively referred to 22 Bahman Hospital, Mashhad, Iran, in 2021. We also compared the patients with an age-matched and gender-matched control group. The Borderline personality traits were assessed by the second subscale of the schizotypal questionnaire (STB) which is known as the borderline personality scale questionnaire. Data were coded and analyzed by SPSS software, version 20.

Results: Epilepsy group had significantly higher borderline personality features in comparison with the control group ($P=0.029$). PWE had significantly higher scores in hopelessness ($P=0.017$) and impulsivity factors ($P=0.046$) on the STB questionnaire. Our results revealed that PWE who were married ($P=0.011$) and who had epilepsy for more than 10 years, had significantly higher borderline personality traits ($P=0.04$).

Conclusion: PWE are more likely to have borderline personality traits. Therefore, it is important to screen epileptic patients to detect it earlier to avoid further consequences and its possible effects on therapeutic responses.

Keywords: Epilepsy, Personality, Seizures

Article info:

Received: 25 Apr 2022

First Revision: 15 May 2022

Accepted: 01 Jun 2022

Published: 01 Jan 2023

* Corresponding Author:

Seyed Mehran Homam

Address: Department of Neurology, School of Medicine, Mashhad Branch, Islamic Azad University, Mashhad, Iran.

Tel: +98 (51) 38448060, **Fax:** +98 (51) 38448060

E-mail: mehromam@mshdiau.ac.ir

Highlights

- In this research patients with epilepsy (PWE) had significantly higher borderline personality features in comparison with the non-epileptic subjects.
- Our results revealed that married PWE who had epilepsy for more than 10 years, had significantly higher borderline personality traits.

Introduction

Epilepsy is a common neurologic disorder that is characterized by an enduring predisposition for generating epileptic seizures [1]. In a systematic review and meta-analysis study, the pooled incidence rate of epilepsy was reported at 61.4 per 100000 person-years. This rate was higher in low and middle-income countries [2]. A meta-analysis performed in Iran showed that the prevalence of epilepsy is 5% and it was estimated that almost 3% of patients are younger than 20 years [3]. Although much research on patients with epilepsy (PWE) has focused on psychiatric disorders such as depression, anxiety, and psychotic disorders, the relationship between epilepsy and personality disorders (PDs) has not been frequently studied. However, the link between PDs and epilepsy has remained a controversial issue. The main discussion is whether the personality changes are linked with the biology of epilepsy, or they are secondary consequences to other issues such as social stigmatization and or the long-term use of anticonvulsant drugs [4]. There are only a few numbers of studies that assessed PDs by using standardized diagnostic instruments. Their results showed that the rate of PDs in PWE ranges from 18% to 75%, which mostly included cluster C disorders [5-7].

Borderline personality disorder (BPD) is classified as cluster B personality disorder. This cluster also includes antisocial, narcissistic, and histrionic PDs. BPD is characterized by instability of interpersonal relationships, the absence of a clear self-image, unstable emotions, and impulsivity. Surveys have reported the point prevalence of BPD to be 1.6% in the general population with a lifetime prevalence of 5.9% [8]. The pathophysiology of BPD is likely a combination of hereditary predisposition combined with an early childhood environmental factor and neurobiological dysfunction. Despite the absence of any morphological changes in the CT scan of BPD patients, amygdala volume reduction has been reported in some studies with structural MRI [9, 10]. It is widely reported that the existence of PD in PWE is associated

with poor therapeutic response, reduced compliance, and an increased risk of a suicide attempt. Therefore, PDs may result in therapeutic and prognostic implications in PWE. Additionally, regarding the inconsistency among the results of different studies, it might be interesting to find out the relationship between demographic and epilepsy features and borderline personality traits. The results of this study may be helpful for clinicians and alert them to behavioral abnormalities in several epileptic patients. In the present study, we aimed to evaluate borderline personality traits among PWE.

Materials and Methods

Population's characteristics

This case-control study was performed on 211 PWE, who consecutively referred to 22 Bahman Hospital in Mashhad, in 2021. None of the included patients had resistant epilepsy and the cause of referring included changing the type or dose of medication, routine check-ups, or complaining of increased frequency of seizures.

The inclusion criteria included being older than 18 years and a definite electro-diagnosis of epilepsy based on International League Against Epilepsy (ILAE) classification. The exclusion criteria included being illiterate, having a cognitive, psychologic, or mental disorder, or suffering from any known chronic systemic disease. A total of 229 PWE were included. Totally, 3 patients had an inadequate education level for reading and understanding the questions, 10 patients had systemic diseases, and 5 patients were suffering from mental disorders, which were removed from our study, accordingly.

Two hundred and forty-four healthy volunteers were selected from the family members of patients who were hospitalized in different wards of the hospital as the control group. However, 2 persons because of reporting a history of seizures, 19 persons because of incomplete filling of the questionnaire, 8 persons because of having underlying diseases, and 4 persons because of psychological problems such as depression and bipolar disorder, were excluded.

The control group was matched to the PWE based on age and gender. For the control group, the inclusion criteria included the willingness to participate in the study, and the exclusion criteria included having a history of epilepsy, being illiterate, having a known psychologic or cognitive disorder, or any chronic systemic disease.

Instrument

The borderline personality scale is classified as the second subscale of the schizotypal questionnaire (STB) that was first described by Rawlings et al. [11] which is known as the borderline personality scale. This questionnaire contains 24 questions and 3 factors including hopelessness, impulsivity, and dissociative and paranoid symptoms dependent on tensions. In 1995, Zheng et al. [12] reported that the alpha value of this questionnaire is 0.80 for the total scale. In Iran, Mohammadzadeh et al. [13] reported a 4-week test-retest reliability of 0.84, 0.53, 0.72, and 0.50 for the total scale, hopelessness, impulsivity, and dissociative and paranoid symptoms dependent on tensions, respectively. Also, the Cronbach alpha values for the total scale, hopelessness, impulsivity, and dissociative and paranoid symptoms dependent on tensions were obtained at 0.77, 0.64, 0.58, and 0.57, respectively. Also, we used a checklist that contained demographic variables (age, gender, educational levels, marital status, and economic level) and epilepsy-related characteristics (type of epilepsy and the number of seizures per month).

Data analysis

Data were analyzed by SPSS software version 20 (SPSS Inc., Chicago, USA). Independent T test and Chi-square were applied to assess the association between the overall score of borderline PD scores and demographic and disease-related variables. In all the statistical tests, $P < 0.05$ was considered the significance level.

Results

Comparison of clinical and demographic characteristics of two groups. As shown in Table 1, no significant difference in clinical and demographic characteristics was found between the PWE and healthy control group.

Borderline personality features

In comparison to the control group, PWE had significantly higher total scores on the BTS questionnaire. Furthermore, we found that PWE had higher scores on two

factors of the BTS questionnaire including hopelessness and impulsivity (Table 2).

Correlation Between Borderline Personality Traits and Demographic and Epilepsy-Related Characteristics

The association of borderline personality traits with demographic features was explored and its results are shown in detail in Table 3. Married patients and PWE who had epilepsy for more than 10 years, had significantly higher borderline personality traits than those with a disease duration of fewer than 10 years.

Discussion

In the present study, we focused on borderline personality traits among PWE and compared it with age and gender-matched control group. The results of our study provided the first evidence of the relationship between epilepsy and borderline personality traits. We found that PWE had more tendency to present borderline personality traits. We also found that married patients and patients with earlier onset of seizures showed more borderline personality traits.

The starting point for the development of borderline personality traits in PWE is mainly based on the observation that diagnostic criteria for borderline personality disorder share similarities with descriptions of patients with temporal lobe epilepsy (TLE). These patients may also present with explosive emotions, unstable relationships, impulsivity, hyperirritability, hyper-religiosity, philosophic interests, episodes of psychosis, anxiety, affective disorders, and dissociative states [14-18]. However, the hypothesis that epilepsy, particularly those types originating temporal-limbic structures, generate either neuro-behavioral symptoms or causes the development of borderline personality traits, is still controversial [19]. For instance, several studies did not report the classic behaviors of TLE patients, or an increased prevalence of psychopathology or personality disorders among PWE [20-22]. However, a growing body of knowledge suggests a considerable proportion of PWE shows behavioral changes such as intense affect, unstable mood, uncontrolled behaviors, interpersonal dependence, and turbulent personal relationships. Some of the personality changes and behavioral alterations in PWE resemble the clinical presentation of BPD, raising the question of whether epilepsy causes borderline personality traits. A considerable number of studies have focused on mood disorders in PWE.

Table 1. Borderline personality traits in patients with epilepsy and control group

Variables	PWE	Control	P
Educational level (No.)	Primary school	25	0.891
	High school	90	
	University education	75	
Marital status (No.)	Single	95	0.111
	Married	67	
	Widow	12	
Economic status (No.)	High income	6	0.9
	Middle income	126	
	Low income	23	
Number of epilepsy seizures (per month)	No seizure	-	
	One seizure	-	
	≥2 seizures	26	
Type of epilepsy (No.)	Focal Simple	-	
	Focal complex	-	
	Generalized tonic	105	
	Generalized colonic	21	
	Generalized tonic-colonic	19	
Duration of disease (No.)	<10 years	-	
	≥10 years	118	

PWE: patients with epilepsy.


Table 2. Results of assessment of borderline personality traits in patients with epilepsy and control group

STB Questionnaire Variables	Min	Max	Mean±SD	P	
Total score	Control	0	10	5.4±3.1	0.029
	PWE	3	15	7.6±3.7	
Hopelessness factor	Control	0	5	1.9±1.5	0.017
	PWE	0	7	2.9±1.8	
Impulsivity factor	Control	0	6	2.6±1.5	0.046
	PWE	0	8	3.6±2.1	
Dissociative Symptoms	Control	0	5	0.9±1.1	0.269
	PWE	0	3	1.1±0.9	

PWE: patients with epilepsy; STB: schizotypal questionnaire; SD: standard deviation.



Table 3. Association between demographic and clinical data and borderline personality traits

Variables	Group	Min	Max	Mean±SD	P	
Age (y)	<40	Control	0	10	5.6±3.1	0.092
		PWE	3	15	7.7±3.8	
	≥40	Control	0	10	5.1±3.2	
		PWE	3	15	7.4±3.5	
Gender	Male	Control	0	10	4.9±3	0.115
		PWE	3	14	7.6±3.8	
	Female	Control	0	10	5.7±3.2	
		PWE	3	15	7.6±3.7	
Education level	Primary	Control	0	10	5.6±3.3	0.076
		PWE	3	15	7.8±3.5	
	Secondary	Control	0	9	5±2.9	
		PWE	3	14	6.9±4.2	
Marital status	Single	Control	0	10	5.6±2.5	0.603
		PWE	3	13	7.2±4	
	Married	Control	0	10	5±3.4	
		PWE	3	13	7.8±3.4	
	Widow or divorced	Control	2	9	6.8±2.9	
		PWE	5	15	8.3±4.6	
Income level	Low	Control	0	10	6.3±2.9	0.179
		PWE	3	15	8.7±4.3	
	Middle	Control	0	10	5.3±3.1	
		PWE	3	13	7.3±3.3	
	High	Control	0	7	3.3±3.3	
		PWE	4	12	6±2.9	
Type of epilepsy	Focal	-	3	15	-	0.516
	Generalized	-	3	14	-	
Number of epilepsy seizures (per month)	≤1	-	3	11	-	0.319
	>1	-	3	15	-	
Duration of disease (y)	<10	-	3	11	-	0.04
	≥10	-	3	15	-	

PWE: patients with epilepsy; SD: standard deviation.

There are many much studies investigating personality disorders among epileptic patients and all of the performed studies evaluated all clusters of personality disorders. In this regard, Arnold et al. [23], Manchanda et al. [6], and Lopez-Rodriguez et al. [7] reported cluster C PDs, particularly avoidant and dependent PD, as the most frequent PD among PWE. This significant difference in the prevalence of cluster C personality disorders can be explained as dependency is a common psychologic feature of PWE because epilepsy is a disabling disease that stigmatization, social difficulties, decreased self-efficacy, self-esteem, and self-control. From this point of view, it can be concluded that dependency is an adaptive reaction to chronic disease.

To the best of our knowledge, this is the first study concentrating only on borderline personality traits among PWE. Furthermore, the relationship between epilepsy and borderline BPD has been investigated, so far. We found a significant difference in borderline personality traits between PWE and the control groups. Though, these findings are not in consistency with previous studies. For example, Swinkels et al. reported that PWE and the control group did not have a significant difference regarding borderline personality traits [24]. In line with this study, Baishya et al. compared different personality traits in patients with TLE and a matched control group [25]. They did not observe any significant difference in scores for borderline personality traits. Different results may be explained by using different sample sizes, and different questionnaires. In the mentioned studies, the questionnaires measured all types of personality disorders. On the other side, Harris et al. showed that patients with BPD presented behavioral alterations consistent with those occurring in patients with TLE [26]. Besides, investigations on patients with psychogenic non-epileptic seizures showed that BPD is the most common personality disorder [27-29].

As we expected, there was a significant relationship between borderline personality traits and marital status. The married PWE were more likely to show borderline personality traits. It is commonly known that the relationship of dysfunction is considered as a diagnostic criterion for BPD. BPD is associated with a lower probability of marriage and the probability of break up and divorce is remarkably higher. Relationship stability and quality are both lower in relationships where one of the partners is affected by BPD. It can be hypothesized that married PWE experience more interpersonal problems especially with their spouse, which reveals further features of their PD [30]. Furthermore, we found that duration of epilepsy is associated with higher borderline personality. This can be explained as epilepsy is supposed to have an influence on the development of maladaptive personality traits.

Conclusion

The PWE have higher scores for borderline personality traits. However, the mean score for BPD is not as much as it can be considered as real BPD. The results of our study demonstrated the existence of a relationship between borderline personality traits and marital status. It is suggested to the clinicians to be aware of personality changes in PWE.

Ethical Considerations

Compliance with ethical guidelines

All study procedures were in compliance with the ethical guidelines of the Declaration of Helsinki 2013. Both the case and the control group signed an informed consent form. Their personal information was confidential and it was not necessary to write down their names on the questionnaires. The study protocol was approved by School of Medicine at [Mashhad Branch, Islamic Azad University](#) (IR.IAU.MSHD.REC.1398.120).

Funding

This article extracted from thesis of Sara Shoja, sponsored by School of Medicine at the [Mashhad Branch, Islamic Azad University](#).

Authors contributions

Conceptualization, methodology, supervision, and funding acquisition: Seyed Mehran Homam; Investigation and Analysis: Sara Shoja; Writing-original draft, Writing-reviewing & editing: Nikoo Saedi.

Conflict of interest

The authors declared no conflict of interest.

References

- [1] Fisher RS, Acevedo C, Arzimanoglou A, Bogacz A, Cross JH, Elger CE, et al. ILAE official report: A practical clinical definition of epilepsy. *Epilepsia*. 2014; 55(4):475-82. [DOI:10.1111/epi.12550] [PMID]
- [2] Fiest KM, Sauro KM, Wiebe S, Patten SB, Kwon CS, Dykeman J, et al. Prevalence and incidence of epilepsy: A systematic review and meta-analysis of international studies. *Neurology*. 2017; 88(3):296-303. [DOI:10.1212/WNL.0000000000003509] [PMID] [PMCID]

- [3] Sayehmiri K, Tavan H, Sayehmiri F, Mohammadi I, V Carson K. Prevalence of epilepsy in Iran: A meta-analysis and systematic review. *Iran J Child Neurol*. 2014; 8(4):9-17. [PMID] [PMCID]
- [4] Trimble M. Treatment issues for personality disorders in epilepsy. *Epilepsia*. 2013; 54(S1):41-5. [DOI:10.1111/epi.12104] [PMID]
- [5] Victoroff J. DSM-III-R psychiatric diagnoses in candidates for epilepsy surgery: Lifetime prevalence. *Neuropsychiatry Neuropsychol Behav Neurol*. 1994; 7(2):87-97. [Link]
- [6] Manchanda R, Schaefer B, McLachlan RS, Blume WT, Wiebe S, Girvin JP, et al. Psychiatric disorders in candidates for surgery for epilepsy. *J Neurol Neurosurg Psychiatry*. 1996; 61(1):82-9. [DOI:10.1136/jnnp.61.1.82] [PMID] [PMCID]
- [7] Lopez-Rodriguez F, Altshuler L, Kay J, Delarhim S, Mendez M, Engel Jr J. Personality disorders among medically refractory epileptic patients. *J Neuropsychiatry Clin Neurosci*. 1999; 11(4):464-9. [DOI:10.1176/jnp.11.4.464] [PMID]
- [8] Leichsenring F, Leibing E, Kruse J, New AS, Leweke F. Borderline personality disorder. *Lancet*. 2011; 377(9759):74-84. [DOI:10.1016/S0140-6736(10)61422-5]
- [9] Schmahl CG, Vermetten E, Elzinga BM, Bremner JD. Magnetic resonance imaging of hippocampal and amygdala volume in women with childhood abuse and borderline personality disorder. *Psychiatry Res. Neuroimaging*. 2003; 122(3):193-8. [DOI:10.1016/S0925-4927(03)00023-4]
- [10] Weniger G, Lange C, Sachsse U, Irle E. Reduced amygdala and hippocampus size in trauma-exposed women with borderline personality disorder and without posttraumatic stress disorder. *J Psychiatry Neurosci*. 2009; 34(5):383-8. [PMID] [PMCID]
- [11] Rawlings D, Claridge G, Freeman JL. Principal components analysis of the schizotypal personality scale (STA) and the borderline personality scale (STB). *Pers Individ Differ*. 2001; 31(3):409-19. [DOI:10.1016/S0191-8869(00)00146-X]
- [12] Zheng W, Sellers TA, Doyle TJ, Kushi LH, Potter JD, Folsom AR. Retinol, antioxidant vitamins, and cancers of the upper digestive tract in a prospective cohort study of postmenopausal women. *Am J Epidemiol*. 1995; 142(9):955-60. [DOI:10.1093/oxfordjournals.aje.a117743] [PMID]
- [13] Mohammadzadeh A, Taghavi R, Mollazadeh J. The study of factor structure, validity, reliability and standardization of borderline personality scale (STB) in Shiraz University students. *J Fundam Mental Health*. 2006; 7(28):75-89. [DOI:10.22038/JFMH.2005.1842]
- [14] Helmstaedter C, Witt JA. Multifactorial etiology of interictal behavior in frontal and temporal lobe epilepsy. *Epilepsia*. 2012; 53(10):1765-73. [DOI:10.1111/j.1528-1167.2012.03602.x] [PMID]
- [15] Engel Jr J. Mesial temporal lobe epilepsy: What have we learned? *Neuroscientist*. 2001; 7(4):340-52. [PMID]
- [16] Kutlu G, Bilir E, Erdem A, Gomceli YB, Kurt GS, Serdaroglu A. Hush sign: A new clinical sign in temporal lobe epilepsy. *Epilepsy Behav*. 2005; 6(3):452-5. [DOI:10.1016/j.yebeh.2005.01.006] [PMID]
- [17] Blair RD. Temporal lobe epilepsy semiology. *Epilepsy Res Treat*. 2012; 2012:751510. [DOI:10.1155/2012/751510] [PMID] [PMCID]
- [18] Devinsky O. Diagnosis and treatment of temporal lobe epilepsy. *Rev Neurol Dis*. 2004; 1(1):2-9. [PMID]
- [19] Devinsky O, Najjar S. Evidence against the existence of a temporal lobe epilepsy personality syndrome. *Neurology*. 1999; 53(5 Suppl 2):S13-25. [PMID]
- [20] Cornaggia CM, Beghi M, Provenzi M, Beghi E. Correlation between cognition and behavior in epilepsy. *Epilepsia*. 2006; 47:34-9. [DOI:10.1111/j.1528-1167.2006.00685.x] [PMID]
- [21] Masia SL, Devinsky O. Epilepsy and behavior: A brief history. *Epilepsy Behav*. 2000; 1(1):27-36. [DOI:10.1006/ebeh.1999.0021] [PMID]
- [22] Gaitatzis A, Trimble MR, Sander JW. The psychiatric comorbidity of epilepsy. *Acta Neurol Scand*. 2004; 110(4):207-20. [DOI:10.1111/j.1600-0404.2004.00324.x] [PMID]
- [23] Arnold LM, Privitera MD. Psychopathology and trauma in epileptic and psychogenic seizure patients. *Psychosomatics*. 1996; 37(5):438-43. [DOI:10.1016/S0033-3182(96)71531-1]
- [24] Swinkels W, Duijsens I, Spinhoven P. Personality disorder traits in patients with epilepsy. *Seizure*. 2003; 12(8):587-94. [DOI:10.1016/S1059-1311(03)00098-0]
- [25] Baishya J, Ravish Rajiv K, Chandran A, Unnithan G, Menon RN, Thomas SV, et al. Personality disorders in temporal lobe epilepsy: What do they signify? *Acta Neurol Scand*. 2020; 142(3):210-5. [DOI:10.1111/ane.13259] [PMID]
- [26] Harris CL, Dinn WM, Marcinkiewicz JA. Partial seizure-like symptoms in borderline personality disorder. *Epilepsy Behav*. 2002; 3(5):433-8. [DOI:10.1016/S1525-5050(02)00521-8]
- [27] Beghi M, Negrini PB, Perin C, Peroni F, Magaudda A, Cerri C, et al. Psychogenic non-epileptic seizures: So-called psychiatric comorbidity and underlying defense mechanisms. *Neuropsychiatr Dis Treat*. 2015; 11:2519-27. [DOI:10.2147/NDT.S82079] [PMID] [PMCID]
- [28] Reuber M, Pukrop R, Bauer J, Derfuss R, Elger CE. Multi-dimensional assessment of personality in patients with psychogenic non-epileptic seizures. *J Neurol Neurosurg Psychiatry*. 2004; 75(5):743-8. [DOI:10.1136/jnnp.2003.013821] [PMID] [PMCID]
- [29] Harden CL, Jovine L, Burgut FT, Carey BT, Nikolov BG, Ferrando SJ. A comparison of personality disorder characteristics of patients with nonepileptic psychogenic pseudoseizures with those of patients with epilepsy. *Epilepsy Behav*. 2009; 14(3):481-3. [DOI:10.1016/j.yebeh.2008.12.012] [PMID]
- [30] Miano A, Dziobek I, Roepke S. Characterizing couple dysfunction in borderline personality disorder. *J Pers Disord*. 2020; 34(2):181-98. [DOI:10.1521/pedi_2018_32_388] [PMID]