

The use of Beck Depression Inventory for assessment of depressive symptoms in epilepsy: a single-center experience in Kosovo

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ABSTRACT

Depressive disorders are common comorbidities in people living with epilepsy, and they can have a profound effect on both the course of epilepsy and the overall quality of life of those affected. A total of 125 patients diagnosed with epilepsy were recruited from the outpatient care in the Neurology Clinic at the University Clinical Centre of Kosovo, over a 3-month period (October 2023 to December 2023). The Beck Depression Inventory was used to measure the severity of depressive symptoms

in these participants. In this study, we observed that 75% of women and 61.4% of men reported mild, moderate, or severe depressive symptoms. According to the severity of depressive symptoms, participants with generalized epilepsy were more likely to report severe depressive symptoms. They represented 59.0% of the participants reporting mild depressive symptoms, 61.5% of the participants reporting moderate depressive symptoms, and 47.6% of the participants reporting severe depression. Assessing and addressing depressive symptoms in individuals with epilepsy through a multidimensional approach and standardized methods is a critical aspect of providing quality care for all patients.

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Key words: Beck Depression Inventory; BDI; depression; epilepsy; risk assessment.

Contributions: VG, conception; VG, RH, design; VG, RH, supervision, funding; VG, PB, EM, materials; VG, PB, EM, data collection and/or processing; RH, analysis and/or interpretation; VG, EZ, literature review; VG, RH, EZH, writing; VG, RH, EZ, PB, EM, critical review. All the authors reviewed and approved the final version to be published.

Conflict of interest: the authors declare no conflict of interest.

Funding: none.

Ethical approval and consent to participate: the study was approved by the Ethical Committee of Kosovo's Chamber of Doctors (reference number: 08/2024).

Availability of data and material: data and materials are available by the authors.

Informed consent: participants were able to give their informed consent to participate in the study.

Received: 4 February 2024.

Accepted: 7 February 2024.

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Italian Journal of Medicine 2024; 18:1703

doi:10.4081/ijm.2024.1703

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Introduction

Depressive disorders in epilepsy represent a complex and often overlooked neurological and psychiatric health intersection.¹ Epilepsy, a chronic neurological condition characterized by recurrent seizures, can significantly impact an individual's emotional well-being.² The point prevalence of active epilepsy is reported to be 6.38 per 1,000 people, while the lifetime prevalence is 7.60 per 1,000 people.³ Depressive disorders, such as major depressive disorder and dysthymia, are common comorbidities in people living with epilepsy, and they can have a profound effect on both the course of epilepsy and the overall quality of life of those affected.^{1,4} This intricate relationship between epilepsy and depression underscores the importance of comprehensive care and support for individuals with co-occurring conditions.⁴

Depressive symptoms involve a diverse array of emotional, cognitive, and physical manifestations that are characteristic of depressive disorders.⁵ Common manifestations include persistent sadness, loss of interest or pleasure in previously enjoyable activities, changes in appetite and weight, sleep disturbances, fatigue, feelings of worthlessness or guilt, difficulty concentrating, and thoughts of death or suicide.^{5,6} These symptoms can manifest to varying degrees of severity, and their duration may fluctuate, ranging from weeks to years. These symptoms can significantly impact an individual's daily life, relationships, and overall well-being.⁶ Depressive symptoms encompass a wide range

of experiences, and their presentation can vary from person to person.⁵⁻⁷

Assessing and addressing depressive symptoms in individuals with epilepsy is a critical aspect of comprehensive care, as these symptoms can have far-reaching consequences.⁸ The evaluation process requires a multidimensional approach that considers various factors: clinical assessment, medical history, psycho-social factors, neurobiological mechanisms, risk assessment for self-harm or suicide, and comorbidity.^{8,9} Healthcare professionals typically employ structured assessments, such as the Diagnostic and Statistical Manual of Mental Disorders criteria, to diagnose depressive disorders accurately.¹⁰ Additionally, they may utilize standardized questionnaires like the Beck Depression Inventory (BDI) to gauge symptom severity and monitor progress over time.¹¹

In conclusion, the evaluation of depressive symptoms is a vital step in identifying and addressing depressive disorders effectively.¹ Recognizing the wide-ranging nature of these symptoms and their potential impact on an individual's life underscores the importance of thorough assessments by trained healthcare professionals.^{3,9} Accurate diagnosis and assessment facilitate the development of tailored treatment plans, which may include psychotherapy, medication, lifestyle modifications, and support systems to help individuals regain their emotional well-being and improve their overall quality of life.⁸ This study aims to delve deeper into the complex interplay between depressive disorders and epilepsy, shedding light on the use of the BDI as a valuable tool for assessing and monitoring depressive symptoms in individuals with epilepsy.

Materials and Methods

Participants

A total of 125 patients diagnosed with epilepsy were recruited from the outpatient care in the Neurology Clinic at the University Clinical Centre of Kosovo, over a 3-month period (October 2023 to December 2023). The inclusion criteria for the study participants were as follows: adult patients (≥ 18 years old), diagnosed with epilepsy by experienced epileptologists at the Neurology Clinic according to the criteria defined by the International League Against Epilepsy.

Exclusion criteria were as follows: patients younger than 18 years old, patients with insufficient mental capacity to

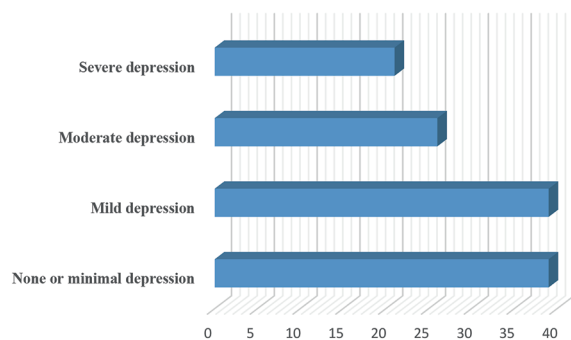


Figure 1. Distribution of the participants according to their Beck Depression Inventory scores.

consent and to understand and answer the self-report questionnaire (documented intelligence quotient < 80 , less than eight years of education, or mini-mental state examination ≤ 24), and patients diagnosed with other severe chronic medical conditions (other than epilepsy), and patients with psychogenic non-epileptic seizures. Further data were collected on gender, age, marital status, educational level, employment status, epilepsy type, anti-seizure medication use, and antidepressant treatment. After receiving a detailed description of the study, participants were able to give their informed consent to participate in the study. The study was approved by the Ethical Committee of Kosovo's Chamber of Doctors (reference number: 08/2024).

Beck Depression Inventory

The BDI is a widely recognized self-report assessment tool designed to measure the severity of depressive symptoms in individuals. The BDI consists of 21 multiple-choice questions or items that cover a range of emotional, behavioral, and cognitive symptoms associated with depression, such as sadness, guilt, fatigue, and changes in appetite and sleep patterns.

Each item in the BDI is scored on a scale from 0 to 3, with higher scores indicating more severe depressive symptoms. The total score is obtained by summing the scores for all 21 items, and it can range from 0 to 63. Generally, BDI scores are interpreted as follows: i) minimal or no depression (0-13 points); ii) mild depression (14-19 points); iii) moderate depression (20-28 points); iv) severe depression (29-63 points).

The BDI is just one tool in a broader assessment and treatment strategy for epilepsy patients, and a comprehensive evaluation should consider both the neurological and psychological aspects of their health. It is important to note that while the BDI is a useful assessment, it should be used in conjunction with clinical judgment and other diagnostic criteria to make a comprehensive evaluation of an individual's mental health.

Statistical analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) software, version 26 (SPSS Inc., Chicago, IL, USA). A significance level of $P=0.05$ was adopted. Descriptive statistics of the categorical (frequencies and percentages) and continuous variables (mean and standard deviation) were calculated. In these analyses, the patient groups were classified according to BDI scores into four groups: minimal or no depression, mild depression, moderate depression, and severe depression. The correlation between these groups and different variables was compared using the Pearson chi-square test.

Results

Among the 125 patients included in the study, 68 (54.4%) were female and 57 (45.6%) were male. Based on the BDI scores, 39 participants reported experiencing none to minimal depressive symptoms, 39 reported mild depressive symptoms, 26 reported moderate depressive symptoms, and 21 reported severe depressive symptoms (Figure 1).

The prevalence of depressive symptoms was analyzed according to sociodemographic characteristics, such as gender, age, marital status, employment status, and type of epilepsy (Table 1). From the analyzed data, we concluded that there was no significant difference among these groups regarding these factors. Furthermore, it is observed that although 75% of women and 61.4% of men reported depressive symptoms, there is no significant difference according to the gender of participants ($X^2=3.44$; $P=0.32$). When comparing the data according to marital status, the presence of depressive symptoms was slightly higher in the married participants 69.5% compared to the non-married participants 68.2%. Additionally, severe depressive symptoms were more common among the married participants (18.6%).

Similarly, there were no significant differences when comparing the data according to the type of epilepsy. In addition, we analyzed the severity of depression according to the employment status and concluded that the depressive symptoms were more prevalent among the unemployed participants (71.0%) compared to the employed participants, although without significant differences.

The analyzed data (Table 2) showed that many of the participants (60.0%) were diagnosed with generalized epilepsy, whereas 30.4% were diagnosed with focal epilepsy, and 9.6% were diagnosed with combined generalized and focal epilepsy. According to the severity of depressive symptoms among patients with generalized epilepsy,

they represented 59.0% of the participants reported mild depressive symptoms, 61.5% of the participants reported moderate depressive symptoms, and 47.6% of the participants reported severe depression.

Discussion

Context

This study aimed to investigate the utility of the BDI for assessing depressive symptoms in individuals with epilepsy. The findings from this research provide valuable insights into the applicability of the BDI as a tool for identifying and monitoring depression in this specific population.

Depression is highly prevalent in people with epilepsy, with some studies reporting rates as high as 70.3%.¹² A study by Elger *et al.* showed that people with epilepsy are more likely to develop depression and other mood disorders, even before they have their first seizure, and it can be a single episode, a chronic or recurrent issue, or a lifelong illness.¹³ Engidaw *et al.* concluded that the prevalence of depression in epilepsy patients may be influenced by factors such as age, educational status, social support, perceived stress, seizure frequency, and multiple medication treatment.¹⁴ Various studies showed that its prevalence varies depending on the population studied and the assessment tool used.^{15,16}

Table 1. Prevalence of depressive symptoms according the demographic variables of the study sample.

Total number of patients: 125		None or minimal depression	Mild depression (n=39)	Moderate depression (n=26)	Severe depression (n=21)	Chi-square test	P-value
Gender	Female	17 (25.0%)	23 (33.8%)	14 (20.6%)	14 (20.6%)	3.44	0.32
	Male	22 (38.6%)	16 (28.1%)	12 (21.1%)	7 (12.3%)		
	Mean age±SD	39.1±12.96	43.9±13.99	45.0±14.85	41.4±15.92		
Marital status	Not married	21 (31.8%)	19 (28.8%)	16 (24.2%)	10 (15.2%)	1.3	0.72
	Married	18 (30.5%)	20 (33.9%)	10 (16.9%)	11 (18.6%)		
Epilepsy type	Focal	12 (31.6%)	10 (26.3%)	7 (18.4%)	9 (23.7%)	2.57	0.85
	Generalized	23 (30.7%)	26 (34.7%)	16 (21.3%)	10 (13.3%)		
	Combined generalized and focal	4 (33.3%)	3 (25.0%)	3 (25.0%)	2 (16.7%)		
Employment status	Employed	8 (42.1%)	5 (26.3%)	5 (26.3%)	1 (5.3%)	3.12	0.78
	Unemployed	29 (29.0%)	32 (32.0%)	20 (20.0%)	19 (19.0%)		
	Retired	2 (33.3%)	2 (33.3%)	1 (16.7%)	1 (16.7%)		

SD, standard deviation.

Table 2. Prevalence of depressive symptoms according to the type of epilepsy.

Severity of depression based on BDI	Type of epilepsy			Total test	Chi-square test	P-value
	Focal	Generalized	Combined generalized and focal			
Total number of patients	38 (30.4%)	75 (60.0%)	12 (9.6%)	125		
Normal or minimal depression	12 (30.8%)	23 (59.0%)	4 (10.3%)	39	2.57	0.86
Mild depression	10 (25.6%)	26 (66.7%)	3 (7.7%)	39		
Moderate depression	7 (26.9%)	16 (61.5%)	3 (11.5%)	26		
Severe depression	9 (42.9%)	10 (47.6%)	2 (9.5%)	21		

BDI, Beck Depression Inventory.

Many studies have further elaborated on the use of the BDI tool for the assessment of depressive symptoms among patients with epilepsy.¹⁷⁻²⁰ BDI has proven to be useful in different settings, in outpatient clinics and tertiary epilepsy centers, as a screening tool for patients who need further evaluation for depression.^{17,18} Moreover, it has shown to be useful to monitor changes in depressive symptoms over time and evaluate the effectiveness of treatment.¹⁹ However, additional studies have analyzed the disadvantages of using the BDI for depressive symptoms assessment in patients with epilepsy.²¹ First of all, BDI is a self-report tool, which means that it relies on the patient's subjective experience and may not capture all aspects of depression.²¹ Secondly, BDI may not be suitable for patients with cognitive impairment or language barriers and may not be sensitive enough to detect mild or atypical forms of depression.²¹ Vacca *et al.* emphasize that BDI is not specific to epilepsy-related depression and may not differentiate between depression and other comorbidities.¹⁷

Currently, there are several alternatives to the BDI being used in clinical practice and research to evaluate depressive symptoms in epilepsy.¹⁹ Patient Health Questionnaire-9, a self-report tool, consists of nine items that assess the frequency of depressive symptoms over the past two weeks, such as feeling down, having little interest or pleasure in doing things, and feeling tired or having little energy.²² Neurological disorders depression inventory for epilepsy, a self-report tool, consists of six items that assess the frequency of depressive symptoms, such as feeling sad, feeling guilty, and having trouble sleeping.²³ Visual-analogue method involves asking patients to rate their mood on a scale from 0 to 10, where 0 represents the worst mood possible and 10 represents the best mood possible and has been shown to be a simple and effective screening tool for depression in epilepsy clinics.¹⁹ The choice of tool depends on the patient's age, cognitive status, and language proficiency, as well as the clinical setting and the preferences of the healthcare provider.^{19,22,23}

The BDI has been translated into many languages worldwide, making it a widely used tool for measuring depressive symptoms in different countries.^{24,25} Cultural differences have been reported in the use of BDI, but it remains a commonly used tool for measuring depressive symptoms worldwide.²⁵ The Chinese version of BDI-II has been found to have good psychometric properties for measuring depression among middle school teachers.²⁶ A study conducted in Spain, Portugal, and Brazil found that BDI-II is suitable for clinical use and its scoring can be considered invariant even between participants in different countries.²⁷ BDI has been considered highly reliable regardless of the population, and it has been used for 35 years to assess and identify depressive symptoms.²⁸ Therefore, BDI can be used as a reliable tool for measuring depressive symptoms in different countries, but cultural differences should be considered when interpreting the results.^{25,28}

Implications

The implications of our findings are multifaceted. First, they underscore the importance of routine depression screening in individuals with epilepsy. Depression is a common comorbidity in epilepsy, and its identification is crucial for providing comprehensive care to this population. Given the ease of administration and the sensitivity of the BDI, it can

be readily incorporated into clinical practice to screen for depressive symptoms in epilepsy patients.

Second, our results support the potential use of the BDI as a monitoring tool for tracking changes in depressive symptoms over time. Regular assessments using the BDI can help clinicians gauge the effectiveness of depression interventions and tailor treatment plans accordingly. This is particularly relevant in epilepsy care, where the relationship between depression and seizure control remains an active area of research.

Limitations

Despite the promising findings, several limitations should be considered when interpreting the results of this study. First, the sample size of our study may not be representative of the broader epilepsy population. Future studies with larger and more diverse samples are expected to enhance the generalizability of our findings. Second, the cross-sectional design of our study limits our ability to establish causality between epilepsy and depression. Longitudinal studies are needed to explore the temporal relationship between these conditions and better understand the direction of their association. Third, while the BDI is a widely used instrument, it is not without its limitations. It relies on self-reporting, which can be influenced by response biases and subjective interpretations.

Future research could benefit from incorporating clinician-administered interviews or other objective measures to complement the self-reported data.

Conclusions

In conclusion, our study highlights the potential of the BDI as a valuable tool for assessing and monitoring depressive symptoms in individuals with epilepsy. The association between BDI scores and the presence and severity of depressive symptoms in our study underscores the importance of routine depression screening in this population. The BDI's ease of administration and sensitivity make it a practical choice for clinicians to integrate into their epilepsy care protocols. While our findings offer promising insights, further research is needed to explore the longitudinal dynamics of depression in epilepsy, potential combinations of assessment tools, and the development of targeted interventions. By addressing these issues, we can enhance our understanding of the complex interplay between epilepsy and depression, ultimately improving the mental health and overall well-being of individuals living with this neurological condition.

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