



“DEPRESSION PREVALENCE IN PATIENTS WITH NON-EPILEPTIC SEIZURES”

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ABSTRACT

Background: Non-epileptic seizures, more specifically psychogenic non-epileptic seizures, are in most cases linked to depression and a variety of other psychiatric disorders, with depression being the most common and significant condition from the clinical perspective. Quality of life, work capacity, and response to treatment are compromised by depression, which is poorly recognized in everyday neurology, particularly in low- and middle-income countries.

Objective: Depression prevalence in patients with non-epileptic seizures was estimated, and its correlation with some clinical features was investigated.

Materials and Methods: The researchers carried out a cross-sectional study at Hamdard University Hospital and Dr Ziauddin University Hospital between April, 2025 and September, 2025. The study involved 120 patients with non-epileptic seizures, and these patients were chosen using consecutive sampling. The diagnosis of the patients was confirmed after clinical evaluation and a thorough review of the medical records. Depressive symptoms were evaluated through a standardized and validated screening instrument. A structured proforma was used to collect socio-demographic and clinical data. Descriptive statistics served the purpose of prevalence determination, and the links between depression and clinical variables were checked with the help of the most suitable statistical methods.

Results: In 60% of patients with non-epileptic seizures, depression was found. Out of these, 24.2% were depressed mildly, 25.8% were moderately depressed, and 10.0% were severely depressed. Depression was more pronounced among female patients, patients with longer seizure duration, frequent seizure episodes, and those who had been admitted to the hospital before.

Conclusion: Depression is very common in patients with non-epileptic seizures and is closely linked to major clinical features. Therefore, it is necessary to carry out screening regularly and provide a combination of psychiatric care to these patients if we want to increase their quality of life and outcomes.

Keywords: *Non-epileptic seizures; Psychogenic non-epileptic seizures; Depression; Psychiatric comorbidity; Quality of life; Tertiary care hospitals*

INTRODUCTION

Depression is a common psychiatric comorbidity in the seizure-related disorders and is seriously affecting the quality of life of patients, their functional abilities, and utilization of healthcare services. The patients of non-epileptic seizures, namely psychogenic non-epileptic seizures, have received more attention in the recent past since the research is indicating that such patients might be having

even more mood-related issues as compared to those who suffer epilepsy. An overall change in mood surrounding and between seizures has a very profound impact on the perceptions of symptoms and the behavior of the patients towards the disease and their general quality of life and as a result, depression is an important clinical problem and not merely a secondary symptom (1). The comparison of the population of epileptic and non-epileptic seizures has been studied in research papers, which have found that non-epileptic seizures are accompanied by more depressive symptoms, an outcome of their psychosocial life and emotional dis-regulation (2). Major multicenter investigations also suggest that depression is prevalent to patients of seizures in general and therefore it is crucial that critical evaluations of non-epileptic seizure patients are carried out (3).

Clinical importance of depression in seizure disorders is not only due to its ability to communicate emotional pain but also due to the fact that depressive symptoms are clinically found to anticipate exacerbation of a disease condition and the development of seizure-like events. As it has been reported, epilepsy, depression and anxiety have been associated with increased incidences of seizure, reduced adherence to treatments and reduced responsiveness to treatment which demonstrates a bi-direction relationship between mood and the neurological symptoms (4). Further, the outcomes of the cross-sectional study are suggestive of the high prevalence rate of psychiatric comorbidity and depression has been cited as the most common diagnosis among different groups of epileptics (5). The systematic reviews and meta-analyses are also based on the studies conducted in low- and middle-income countries stating that many patients with seizure disorders present the depressive symptoms, which confirms the combinative impact of biological predisposition and environmental stressors (6). These findings can be used as a theoretical foundation of the anticipation that the degree of depressions can be even greater in non-epileptic seizures.

A number of comparative studies have demonstrated that there are pronounced psychological differences between epileptic seizures and psychogenic non-epileptic seizures (PNES) in sensing emotions, controlling moods and fear patterns. Individuals having non-epileptic seizures (NES) tend to exhibit high levels of depressive symptoms, emotional suppression, and alexithymia, that points to the maladaptive coping strategies being translated out of psychological agony (7). This is further complicated by the challenges in diagnosis, where a wrong diagnosis of non-epileptic seizures leading to being diagnosed as epileptic may lead to incorrect treatments, length of stay in the hospital, and depression which is worsened by frustration and feeling long-term illness (8). Also, the studies of children and adolescents indicate that non-epileptic seizures are very closely linked with internalizing disorders like depression and that affective pathology appears to be at the centre of the disorder regardless of the age (9).

The insufficiency of mental health services is among the conditions in South Asia and most other developing regions that certainly lead to the rise in the number of people with depression disorders due to seizure disorders. Two articles that treat people with and without seizure disorders in Pakistan have revealed that the former experience very high rates of anxiety and depression. This is likely to be caused by the fact that they are stigmatized in their society and lack proper psychological support (10). In the meantime, a study conducted in epilepsy monitoring units has shown that mood issues in patients greatly influence the quality of life and affect it negatively at times even more than the attacks themselves, which underscores the critical role of depression, which is not dependent on other variables, in patient outcomes (11). In addition to that, it has been observed that, on the personality aspect, the persons who have non-epileptic seizures are more frequently described as having such traits like emotional instability and relationship problems as an example that depressive disorders in this group of patients can be related to their susceptibility (12).

Recent therapeutic and biological studies indicate neuropsychiatric multifacetedness of psychogenic non-epileptic seizures and their relationship with depression. Enhancements of the current case-based interventions that target treatment-resistant depressive symptoms have produced symptomatic/improved outcomes in non-epileptic seizure patients, suggesting that a successful management of depression may yield improved results in seizure (13). According to studies on biomarkers, neuroendocrine responses to non-epileptic and epileptic seizures differ, and it is possible to suggest that abnormal stress physiology may become the source of depressive symptoms (14). On

the molecular level, systems biology approaches indicate that variations in the neural signaling, stress response networks, as well as emotional regulation networks, can be used to describe both the presence of depression and the absence of non-epileptic seizures, which require the incorporation of these elements into the treatment (15).

Despite the growing knowledge on the psychological nature of non-epileptic seizures, depression is not well diagnosed or treated in the daily clinical setting. It has been consistently observed in comparative clinical studies that non-epileptic seizure patients experience poorer quality of life and a greater burden of psychiatric comorbidity than epileptic patients, and that one of the primary influences is that of depression (16). Neurophysiological research also indicates that the depressive symptoms, as well, are correlated with brain activity changes and a decreased quality of life in populations of seizures, which is the objective indicators of the mood disorder (17). In addition, it has been noted that patients with epilepsy as well as non-epileptic seizures have complex neuropsychiatric profiles with the highest prevalence of depression and hence, diagnosis and management becomes difficult (18). In sum, these findings indicate the necessity to study the phenomenon of depression among non-epileptic seizure patients with greater attention, in particular, in the setting of local clinical conditions.

Objective: Determine the frequency of depression in patients with non-epileptic seizures and investigate its clinical relationship with seizure features and psychological comorbidities in a tertiary-care hospital setting.

MATERIALS AND METHODS

Study Design: This study used a cross-sectional observational design.

Study Settings: The research was carried out at Hamdard University Hospital and Dr Ziauddin University Hospital.

Duration of Study: The period under review is six months, from April 2025 to September 2025.

Sample Size: The total sample size of **120 patients** was determined through prevalence-based estimation, which assumed a moderate prevalence of depression in non-epileptic seizure populations, with a 95% confidence level and acceptable margin of error. Eligible patients presenting throughout the study period were daily recruited by consecutive sampling to ensure adequate representation.

Inclusion Criteria: The study included patients aged 18 years and above with a confirmed diagnosis of non-epileptic seizures. The diagnosis was the result of a neurologist's clinical evaluation, which was supported by the patient's medical records and the electroencephalography findings showing no evidence of epilepsy. Male and female patients coming for a neurology medical check-up, whether outpatients or inpatients, during the study period, were candidates for the study. Enrolled were those participants who gave informed consent and were capable of completing the depression assessment.

Exclusion Criteria: Patients who had epilepsy or a combination of epileptic and non-epileptic seizures were not taken into the study. Furthermore, people with severe cognitive disorders, acute psychotic conditions, or physical problems causing unreliability in their evaluation were not part of the study. To prevent confounding effects, the ones being treated for major depressive disorder or other severe psychiatric illnesses were not included. Those who refused to be part of the study or had incomplete clinical data were also not taken into account.

Methods

Patients diagnosed with non-epileptic seizures were identified from the neurology outpatient departments and inpatient services of the hospitals selected for the study. The diagnosis was verified by means of detailed clinical evaluation, medical records review, and available electroencephalography findings to rule out epileptic seizures. After acquiring informed consent, information regarding socio-demographic and clinical characteristics was gathered using a structured

proforma. Depression was measured with a standardized and validated screening device suitable for adult clinical populations and was carried out by trained healthcare professionals to guarantee reliability. The intensity of depressive symptoms was determined based on the recognized cut-off points. Data collection was performed in a quiet clinical environment to reduce the likelihood of response bias. Approval from the ethics committees of both hospitals was granted before the start of the study, and participant confidentiality was stringently upheld. The gathered data was input into statistical software for analysis. Descriptive statistics were presented to find out the prevalence of depression, while the clinical variables were briefly described by frequencies, percentages, means, and standard deviations.

Results

In total, there were 120 patients diagnosed with non-epileptic seizures involved in the final analysis. The average age of participants was 32.8 ± 9.6 years, with a higher number of female patients. The majority of the participants were single and from urban families. The mean duration of seizure symptoms was 2.9 ± 1.7 years, which shows that the study population had a relatively chronic clinical presentation.

Table 1 gives the socio-demographic profile of the respondents. Most of the sample were females, correlating with the recognized gender distribution typically reported in the case of non-epileptic seizure populations. Most of the patients had finished their secondary-level education, while only a few of them were working at the time of the evaluation.

Table 1: Socio-demographic Characteristics of Participants (n = 120)

Variable	Frequency (%)
Gender (Female)	78 (65.0)
Gender (Male)	42 (35.0)
Mean Age (years)	32.8 ± 9.6
Urban Residence	74 (61.7)
Rural Residence	46 (38.3)
Unemployed	68 (56.7)

Clinical characteristics relating to seizure history are shown in **Table 2**. The majority of patients noted that they had a high frequency of seizures, occurring at least once a week. A large percentage of them had been on anti-epileptic drugs even before the non-epileptic seizures were confirmed to be the reason for their conditions, pointing to a delay in the diagnosis in a normal clinical practice.

Table 2: Clinical Characteristics of Non-Epileptic Seizures

Clinical Variable	Frequency (%)
Seizure duration > 2 years	71 (59.2)
Weekly seizure frequency	66 (55.0)
Prior AED use	82 (68.3)
Hospital admission history	49 (40.8)

The incidence of depression was very high among patients with non-epileptic seizures. According to the standardized depression scale scores, **72 patients (60.0%)** were recorded as having depressive symptoms of different levels of severity. **Table 3** shows the frequencies of various levels of depression severity. Close to half of the depressed subgroup was made up of moderate to severe depression, which highlights the significant clinical burden of mood disorders in this group of patients.

Table 3: Severity of Depression Among Participants

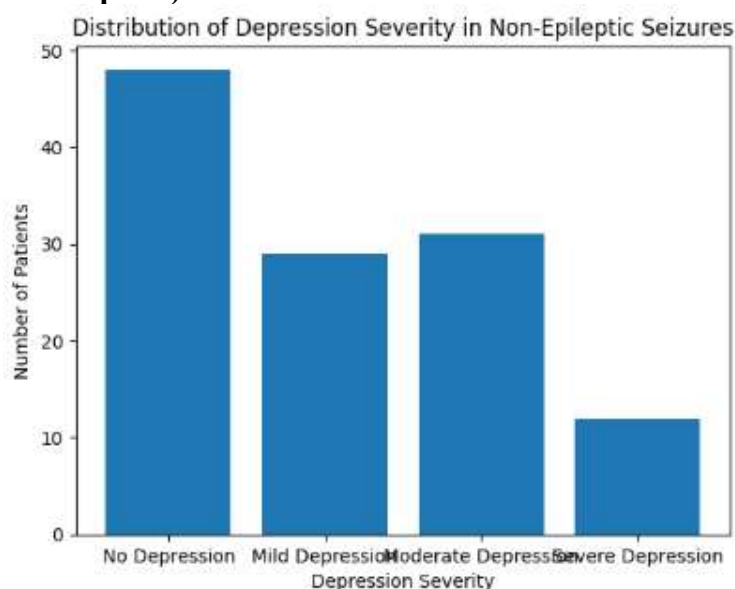
Depression Severity	Frequency (%)
No Depression	48 (40.0)
Mild Depression	29 (24.2)
Moderate Depression	31 (25.8)
Severe Depression	12 (10.0)

Table 4 shows associations between depression and some selected clinical variables. Depression was observed more frequently in female patients and patients with a longer duration of illness. Patients having frequent seizure episodes were among those with the highest rates of moderate to severe depressive symptoms.

Table 4: Association of Depression with Clinical Variables

Variable	Depression Present n (%)
Female gender	52 (66.7)
Seizure duration > 2 years	49 (69.0)
Weekly seizures	46 (69.7)
Prior hospital admission	38 (77.6)

Graph 1 (Bar Chart Description):



A bar graph displaying the "**distribution of depression severity**" among patients with non-epileptic seizures revealed that the highest number of patients was in the moderate depression category. The second and the third highest were the mild and the severe depression categories, respectively, visually emphasizing the commonness of clinically significant depressive symptoms in this population.

Discussion

The findings of the current study have indicated that depression is extremely common in patients with non-epileptic seizures since 60% of the sample was experiencing depressive symptoms of mild to severe severity. This level is in line with the body of research building up that depression is the patient profile and primary comorbidity in non-epileptic seizure groups and not merely the secondary product of constantly repeated seizure-like experiences. The literature available has confirmed that mood conditions arrive and leave with the seizure fits and contribute heavily to the development of self-conceptualisation of illness among the patients, which is why the close relation between the non-epileptic seizures and affective dysregulation are considered closely related (1). Also, the comparative studies have indicated that depression is more prevalent and in a more severe manifestation in patients with non-epileptic seizures as compared to those with epilepsy, which supports the high levels of depression in the current cohort (2,3). The cause of the high burden of depression that this study has described can be partly expressed in the fact that non-epileptic seizures are both long-lasting and of unpredictable nature, which is that, patients experience the victimization of diminished functionality, isolation, and victimization.

Past studies of individuals with epilepsy have demonstrated that depressive and anxiety symptoms may provoke aggravation in the clinical course including increased seizure frequency and reduced quality of life, which might imply that mood and seizure activity may exhibit a circular relationship (4). Similarly, psychiatric comorbidities led by depression have been found to be the most prevalent mental illness in patients with seizure disorders due to cross-sectional studies (5). Findings of meta-analyses carried out in different healthcare facilities show that the signs of depression are common among the whole population of seizures and especially in regions with limited resources where psychosocial aspects could possibly worsen emotional pain (6). The gender disparity as presented in the present work such as higher percentage of female patients with depression can be attributed to the findings of the preceding comparative studies that indicated women with non-epileptic seizures have more emotional distress, anxiety and depressive symptoms. The study in psychological profiling has found out that non-epileptic patients are more likely to experience emotional suppression and alexithymia as personality traits, which when exposed to stress, can cause depression (7).

The issue of misdiagnosis is also always a serious issue within the medical practice because non-epileptic seizures are usually mixed with epileptic ones. This has the effect of administering the wrong treatments to the patients over a long period of time and causing them psychological distress. Delays in diagnosis have been linked with more of the depression symptoms in the patient as the patient gets frustrated, stigmatized, and uncertain about their disease (8). Correlation that occurs in the present research between a longer duration of seizures and more cases of depression also broadly proves the fact that the more sick people take, the more they become emotionally distressed. The findings of the study of children and developmental researches indicate that non-epileptic seizures are highly associated with internalizing disorders, including depression, in all ages. This means that the susceptibility to such feelings as depression might be an intrinsic aspect of the disorder that is not necessarily a response to it (9). Simultaneously, in South Asian local studies reveal also that depression level is drastically increased among non-epileptic seizure patients. These works indicate that mental health outcome of such patients is dependent on cultural stigma, mental health ignorance, and absence of psychological support systems (10).

One of the most significant and most dramatic effects of depression on non-epileptic seizure patients is impairment of the quality of life, which the influence of depression, in fact, causes even a larger quality of life impairment than that of frequency of seizures. Research carried out in the epilepsy monitoring units has revealed that mood disorders and anxiety contribute to the significant proportion of the quality of life decline, and the findings did not differ with the neurological ones (11). Additional research on the personalities of the patients has found out that maladaptive personality characteristics including emotional instability and poor tolerance to stressors are present in patients with non-epileptic seizures which may predispose these individuals to develop depressive disorders (12). Hence, these mental vulnerabilities are indicators of the need to carry out an extensive psychiatric assessment among this group of patients. There are therapeutic interventions to depression that can

result in a spectacularized reduction in seizure control and a higher level of overall functioning and depression treatment may have an indirect effect in seizure. The first evidence of the benefits of integrating psychiatric care with treating non-epileptic seizures showed that individualized case-based treatment of treatment-resistant depression among patients with non-epileptic seizures produced positive results in terms of symptom and functions improvement (13). The biological study on stress related biomarkers have also aided in enhancing the knowledge on the neuropsychiatric mechanism of depression in patients having non-epileptic seizures which in specific case, is exemplified by the alterations in cortisol level, which depicts an abnormal stress system that may lead towards the development of mood disorders (14).

Molecularly, the research studies of systems biology have shown that the pathways of neural signaling and emotional regulation may be the source of the depressive symptoms and the occurrence of non-epileptic seizures (15). The clinical relevance of the current results has been enhanced by comparative clinical research studies which have indicated that non-epileptic seizure patients are worse off in terms of their quality of life and a greater burden of psychiatric comorbidities compared to epilepsy patients (16). These findings are supported by neurophysiological evidence because it has revealed that in population of seizures, depressive symptoms correlate with altered patterns of brain activity and reduced quality of life (17). The group of epilepsy patients with non-epileptic seizures is very vulnerable, as it is complicated with neuropsychiatric characteristics and weighs an extremely high rate of depression, which further complicates the diagnostic and treatment process (18). This evidence demonstrates the need to initiate regular depression screening, timely psychiatric referral, and combined neuropsychiatric treatment in tertiary hospital settings. Depression treatment among such patients may lead to improved mental health and overall health and reduce the healthcare use setting through reduced recurrent visits because of seizure-related incidents.

Conclusion

This study brings to light the high occurrence rate of depression in patients with non-epileptic seizures (NES), giving rise to the issue of depression as a major clinical comorbidity instead of a secondary or incidental finding. A large percentage of the patients demonstrated moderate to severe symptoms of depression, with the highest percentage being females, and the rest were those who had a longer duration of illness and seizure episodes of high frequency. These data signify the deep integration of psychological suffering and the physical expressions of non-epileptic seizures. Depression, which goes hand in hand with impairment in function, was also linked to a higher use of medical services, indicating that depression might have a negative effect on total well-being. The outcomes of the study are supportive of the point that detection at an early stage and pushing forward the use of depression screening tools among patients with non-epileptic seizures are very important. Combining psychiatric assessment and mental health activities with regular neurological care might be the key to achieving higher patient outcomes, improved quality of life, and effective seizure management. The next set of research should be based on the longitudinal design and the intervention-oriented methods to better grasp the cause-and-effect relationships and find more effective multidisciplinary treatment strategies.

References

1. Hopp J, Pahlavan A, Richert M, Grimes K, Turlington K, Cassady M, Kvartha MD, Thompson SM. Peri-ictal changes in depression and anxiety in persons with epileptic and non-epileptic seizures. *Frontiers in Psychiatry*. 2022;13:912697.
2. Scévola L, Wolfzun C, Sarudiansky M, Pico MM, Ponienman M, Stivala EG, Korman G, Kochen S, D'Alessio L. Psychiatric disorders, depression and quality of life in patients with psychogenic non-epileptic seizures and drug resistant epilepsy living in Argentina. *Seizure*. 2021;92:174–181.
3. Shi W, Sun H, Peng W, Chen Z, Wang Q, Lin W, Ding M, Sun H, Wang X, Wang T, Wang X. Prevalence and risk factors of anxiety and depression in adult patients with epilepsy: A multicenter survey-based study. *Therapeutic Advances in Neurological Disorders*. 2023;16:17562864231187194.

4. Zhong R, Chen Q, Zhang X, Li N, Lin W. Depressive and anxiety symptoms are predictors of seizure recurrence in adults with newly diagnosed epilepsy. *Frontiers in Psychiatry*. 2021;12:784737.
5. Abd Elhafiz MM, Hefny MM, El Malky I. Prevalence and predictors of psychiatric comorbidities in epilepsy: A cross-sectional study. *Sohag Medical Journal*. 2024;28(3):174–180.
6. Tadesse G, Tinsae T, Nakie G, Rtbey G, Andualem F, Tadesse A, Melkam M, Takelle GM, Fentahun S. Prevalence and factors associated with depressive symptoms among patients with epilepsy in Ethiopia: A national-based systematic review and meta-analysis. *Frontiers in Neurology*. 2024;15:1352648.
7. Trobliger R, Myers L, Simpson T, Krámská L. A comparison of patients with epileptic seizures versus those with psychogenic non-epileptic seizures on measures of alexithymia, mood, and anxiety. *Seizure*. 2024;120:33–40.
8. Jungilligens J, Michaelis R, Popkirov S. Misdiagnosis of prolonged psychogenic non-epileptic seizures as status epilepticus: Epidemiology and associated risks. *Journal of Neurology, Neurosurgery & Psychiatry*. 2021;92(12):1341–1345.
9. Gigliotti F, Di Santo F, Cesario S, Esposito D, Manti F, Galosi S, Ferrara M, Leuzzi V, Baglioni V. Psychogenic non-epileptic seizures and functional motor disorders in developmental age: A comparison of clinical and psychopathological features. *Epilepsy & Behavior*. 2023;140:109117.
10. Perwez S, Jamal R. Comparison of anxiety and depression among epileptics and non-epileptics in Peshawar. *Clinical and Counselling Psychology Review*. 2021;3(2).
11. Rocamora R, Chavarría B, Pérez E, Pérez-Enríquez C, Barguilla A, Panadés-de Oliveira L, Principe A, Zucca R. Mood disturbances, anxiety, and impact on quality of life in patients admitted to epilepsy monitoring units. *Frontiers in Neurology*. 2021;12:761239.
12. Kustov G, Zhuravlev D, Zinchuk M, Popova S, Tikhonova O, Yakovlev A, Rider F, Guekht A. Maladaptive personality traits in patients with epilepsy and psychogenic non-epileptic seizures. *Seizure*. 2024;117:77–82.
13. Hashmi M, Mugunthan P, Jain P, Nimmakayala T, Alnaher S. Case report: Successful management of psychogenic non-epileptic seizures with intranasal esketamine. *Frontiers in Psychiatry*. 2025;16:1527166.
14. ider F, Turchinets A, Druzhkova T, Kustov G, Guekht A, Gulyaeva N. Dissimilar changes in serum cortisol after epileptic and psychogenic non-epileptic seizures: A promising biomarker in the differential diagnosis of paroxysmal events. *International Journal of Molecular Sciences*. 2024;25(13):7387.
15. Malekpour M, Jafari A, Kashkooli M, Salarikia SR, Negahdaripour M. A systems biology approach for discovering the cellular and molecular aspects of psychogenic non-epileptic seizure. *Frontiers in Psychiatry*. 2023;14:1116892.
16. Mandal M, Chakraborty DP, Thakur RK, Bera NK. A comparative study of psychiatric comorbidities and quality of life in patients with epilepsy and psychogenic non-epileptic seizures. *Asian Journal of Medical Sciences*. 2024;15(3):215–220.
17. Azuma H, Akechi T. EEG correlates of quality of life and associations with seizure without awareness and depression in patients with epilepsy. *Neuropsychopharmacology Reports*. 2022;42(3):333–342.
18. Giugno A, Martino I, Sammarra I, Fratto E, Fortunato F, Labate A, Gambardella A. Neuropsychiatric profile in average intelligent individuals with coexisting epilepsy and psychogenic non-epileptic seizures. *Epilepsia Open*. 2023;8(2):678–684.