

DEPRESSION IN PRIMARY EPILEPSY PATIENTS UNDER TREATMENT AT BOLAN MEDICAL COLLEGE/HOSPITAL, QUETTA

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ABSTRACT

Objective: To find out the prevalence and severity of depression among the patients with Primary epilepsy treated at Bolan Medical College/Quetta Hospital.

Study Design and Setting: Descriptive cross sectional study was carried out at the Department of Neurology, Bolan Medical College/Hospital.

Methodology: This study was conducted after the approval of the CPSP (CPSP/REU/NEU-2022-001-768). Patients were recruited by non-probability convenience sampling and 185 patients between the ages of 18 and 65 years were enrolled who met the inclusion criteria of having confirmed primary epilepsy of at least one-year duration. Secondary epilepsy, prior psychiatric disease or recent use of psychiatric drugs were exclusion criteria. A structured proforma was used to collect data and the severity of depression was evaluated by the 17-item Hamilton Depression Rating Scale (HDRS). The data was analyzed using SPSS version 26. A p-value ≤ 0.05 was considered statistically significant.

Results: 112(60.5%) patients were diagnosed with depression. Thirty-eight (20.5%) participants were depressed, 34 (18.4%) participants were moderately depressed, 24 (13.0%) participants were severely depressed and 16 (8.6%) participants were very severely depressed. Low socioeconomic status, rural living, generalized epilepsy and duration of illness for >5 years were significantly associated with depression ($p=0.02, 0.03, 0.04$ and 0.01 , respectively).

Conclusion: Depression is a very common psychiatric co-morbidity in patients with primary epilepsy. These patients' treatment adherence, seizure control and quality of life may benefit from routine screening and early psychiatric treatment.

KEYWORDS: Depression, Epilepsy, Mental Health, Psychiatric Comorbidity, Quality of Life. Seizure Disorders

INTRODUCTION

Epilepsy is a very common chronic neurological condition around the world and is defined by recurrent unprovoked seizures caused by abnormal activity of the brain's electrical activity¹. It is found in people of all ages and poses a significant public health problem due to its long term physical, psychological, social and economic impact. Patients with epilepsy face greater burden in low and middle-income countries, where almost 80% of people live, and there are limited facilities for neurological and mental health services, low awareness and social stigma.² In developing countries like Pakistan, delayed diagnosis, limited treatment facilities, low awareness and social stigma are also important factors which contribute to the burden of the disease and poor quality of life among the patients suffering from epilepsy^{3,4}.

Epilepsy is not just a disorder of recurrent seizures, but is also linked with a number of neuropsychiatric comorbidities that have a significant impact on patient wellbeing. Depression in epilepsy is among these comorbidities, which is often underdiagnosed and under-treated, and has a significant effect on disease and function outcomes, and compliance with treatment.³ Studies have reported that epilepsy patients have a significantly higher rate of depression than the general population; the prevalence rates range from 20% to 60%, depending on the study population, diagnostic criteria, assessment tools, and sociocultural background.^{5,6}

Epilepsy and depression are linked in a complex way and the link seems to be bi-directional. These findings suggest that the association between epilepsy and depression could involve common neurobiological mechanisms, and not be simply a psychosocial effect of chronic illness. Abnormalities in neurotransmitter systems, including serotonin, gamma-aminobutyric acid (GABA), glutamate, and norepinephrine, have been found in both epilepsy and depression.⁷ In addition, abnormalities in the hypothalamic-pituitary-adrenal axis, inflammatory mediators, and structural brain changes have been seen in both epilepsy and depression.⁸

The presence of depression in epilepsy patients has major clinical implications. Depression can also impact occupational and community functioning, educational outcomes, interpersonal and marital functioning, and social functioning.⁹ In addition, untreated depression among epilepsy patients has been linked to increased health care utilization, morbidity and risk of suicidal ideation and suicide attempts.¹⁰ However, psychiatric screening of

epilepsy patients is not part of routine practice in many health care systems, especially in resource-limited countries.

A number of demographic and clinical factors have been cited as a risk for depression in patients with epilepsy. Female gender, prolonged duration of illness, frequent seizures, generalized epilepsy, low educational status, unemployment, low socioeconomic status and rural residence have been identified as important factors influencing the presence of depression in patients with epilepsy.^{5,11} The cumulative psychosocial stress, social isolation and dependency that occur in patients with long standing epilepsy and their fear of seizure recurrence may play a role in the development of depression. In addition, the social and economic disadvantage experienced by epilepsy patients in poorly served communities is a further factor that diminishes mental health in these patients.¹¹ Poor access to health care services also contributes to poor mental health among those with epilepsy living in poorly served communities.

Epilepsy in Pakistan continues to be a social stigma, misconceptions and discrimination. Prevalent cultural attitudes about epilepsy can cause educational obstacles, marital problems, unemployment, and social isolation. These psychosocial stressors can increase susceptibility to anxiety/ depressive disorders. Though the burden of epilepsy and psychiatric comorbidities is high, very few local studies have been done to assess the depression among epilepsy patients in Pakistan and Balochistan province where mental health services are limited. The majority of the studies available have been completed in urban tertiary care facilities of larger provinces, and there are limited data on psychiatric morbidity of people with epilepsy in the regions.¹²

Patients with epilepsy may also be at risk of depression and identification of this condition is crucial, as early detection and prompt treatment will have a positive effect on patient outcomes. The use of regular monitoring of depressive symptoms could help to ensure timely psychiatric referral, improve compliance with medication, better seizure management, and positively influence quality of life. Validated instruments like the Hamilton Depression Rating Scale (HDRS) enable the systematic examination of the level of depression symptoms and to determine patients who may benefit from psychological or psychiatric assistance.³

The study was designed to determine the prevalence and severity of depression among primary epilepsy patients attending Bolan Medical College/ Hospital in Balochistan; since there is very little regional data available on depression among epilepsy patients. The purpose of the study was to also examine the relationship between demographic and clinical factors and depression.

METHODOLOGY

This descriptive cross-sectional study was conducted in the Neurology Department of Bolan Medical College/Hospital, Quetta, from 27 March 2026 to 30th June 2026 after obtaining ethical approval from the CPSP (REF No. CPSP/REU/NEU-2022-001-768) and conducted in accordance with the principles of the Declaration of Helsinki. They were also granted administrative permission by the concerned hospital authorities.

Sample size was calculated using the WHO sample size calculator by taking expected prevalence of depression among epilepsy patients as 62%, confidence level 95%, and margin of error 7%, resulting in a sample size of 185 patients¹¹. The patients were recruited in outpatient and inpatient neurology services through a non-probability convenience sampling method.

Both genders aged between 18 and 65 years' patients who had a confirmed diagnosis of primary epilepsy over a period of at least one year were included. According to the international clinical criteria, epilepsy was considered as one or more unprovoked seizures with high likelihood of recurrence or two or more unprovoked seizures at least 24 hours apart¹². The patients who had not experienced psychiatric illness in the past before epilepsy was diagnosed were used to minimize the confounding bias as the previous studies have already done¹³.

Individuals had secondary epilepsy attributed to identifiable causes including brain tumors, infections of the central nervous system, or stroke and hence were excluded to keep homogeneity of the study population¹⁴. Moreover, the patients who had previously been diagnosed with major psychiatric disorders like schizophrenia, bipolar disorder or major depressive disorder or those who were under psychiatric treatment were excluded to prevent the overestimation of the prevalence of depression. People who have taken antidepressants, antipsychotics, or mood stabilizers during the past three months were also excluded, as they may have an impact on the severity of depression scores¹⁶. The patients who were considered to possess acute medical illness or had unstable conditions in the system and needed urgent medical attention were excluded in order to have reliable data collection.

The objectives, procedures, risks, and benefits of the study were explained to all eligible participants in a language that they understood. Informed consent was signed before enrollment. Anonymity and confidentiality were also observed as special identification codes and the storage of all data in password-protected systems so that all the data was not exposed to any other party.

Structured and pretested proforma was used to collect data and included demographic variables (age, gender, marital status, education level, socioeconomic status, and residence) and clinical variables (type of epilepsy, age at onset, duration of illness, and family history of epilepsy or psychiatric illness). The measure of depression was based on using the 17-item Hamilton Depression Rating Scale (HDRS), which is a clinician-administered instrument of assessing the severity of depression that has been extensively validated. A score of 8 or above was a sign of depression and severity was classified as mild, moderate, severe and very severe based on standard cutoff values.

The SPSS version 26 was used to analyze the data. Continuous variables were expressed as the mean standard deviation and categorical variables were represented as frequencies and percentage. Chi-square, independent t-tests, and one-way ANOVA were used as inferential statistics to identify the links between depression and demographic or clinical variables. The statistically significant p-value was less than 0.05.

RESULTS

The study involved 185 patients who had primary epilepsy. The average age of the participants was 34.6 ± 11.8 years with most of the respondents being in the 18-40 age bracket (61.1). It was slightly male-dominated (54.1% males and 45.9% females). Participants mostly were married (58.4%), were of low socioeconomic status (63.2%), and were living in rural locations (57.3%).

There were higher incidences of generalized epilepsy (62.7) than focal epilepsy (37.3). The average patient epilepsy duration was 6.2 ± 4.1 years and 29.7% of the patients had a positive family history of epilepsy.

Depression: frequency and severity.

A psychiatric comorbidity burden was high, as 112 out of the 185 patients (60.5%), had depression (HDRS score ≥ 8). There was a range of severity among individuals who were depressed.

Table 1: Frequency and Severity of Depression among Patients with Primary Epilepsy (n = 185)

Depression Category	Frequency (n)	Percentage (%)
No Depression	73	39.5
Mild	38	20.5
Moderate	34	18.4
Severe	24	13.0
Very Severe	16	8.6
Total Depressed	112	60.5

As shown in Table 1, over fifty percent of the participants in the study had some form of depression. The most common type was mild depression, moderate, and severe. Interestingly, severe to very severe depression was reported in a significant percentage (21.6) which demonstrates the clinical importance and urgency of psychiatric assessment in this subgroup.

Correlation of Depression and Demographic Factors.

The prevalence of depression among females (66.7% vs. 55.0% in males) was not statistically significant ($p = 0.08$). The low socioeconomic status of patients ($p = 0.02$) and living in rural areas ($p = 0.03$) were significantly found to have high rates of depression.

Table 2: Depression Relationship with Demographic Characteristics

Variable	Depression Present n (%)	Depression Absent n (%)	p-value
Gender (Male)	55 (55.0%)	45 (45.0%)	0.08
Gender (Female)	57 (66.7%)	28 (33.3%)	
Low Socioeconomic	80 (68.4%)	37 (31.6%)	0.02
Middle/High	32 (47.1%)	36 (52.9%)	
Rural Residence	70 (66.0%)	36 (34.0%)	0.03
Urban Residence	42 (53.2%)	37 (46.8%)	

Table 2 underscores the fact that socioeconomic and environmental variables have a huge role to play in the prevalence of depression in epilepsy patients. Those who had a disadvantaged background and were living in rural areas were more vulnerable.

Correlation of Depression with Clinical Variables.

Duration of epilepsy ($p = 0.01$), and type of epilepsy ($p = 0.04$) were statistically significantly associated with depression. Depression rates were higher in patients who had longer disease (>5 years) and generalized epilepsy.

Table 3: Depression in relation to Clinical Characteristics

Variable	Depression Present n (%)	Depression Absent n (%)	p-value
Duration ≤ 5 years	38 (48.7%)	40 (51.3%)	
Duration >5 years	74 (69.2%)	33 (30.8%)	0.01
Generalized Epilepsy	78 (67.0%)	38 (33.0%)	0.04

Focal Epilepsy	34 (49.3%)	35 (50.7%)	
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Table 3 shows that the risk of depression is greatly associated with the length of illness, which may be caused by chronic disease burden and psychosocial stress. Similarly, generalized epilepsy can be linked to more serious manifestation of the disease, which adds to an increase in depressive symptoms.

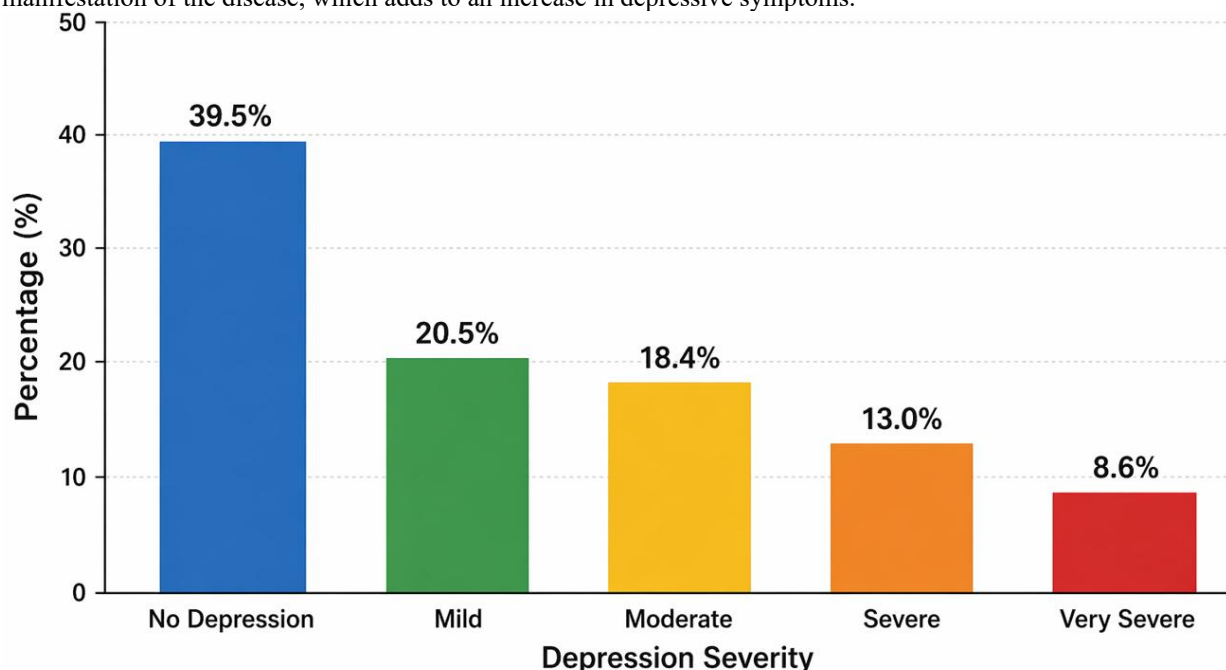


Figure 1: Distribution of DEpression severity Among Primary Epilepsy Patients (n= 185)

The Figure 1 shows clearly that even though a large percentage of the patients may not have depression, the overall impact of mild to very severe depression is much higher. This slow increase in mild to very severe categories indicates a spectrum distribution where the magnitude of the mild category to the severe ones is important before one develops the severe forms.

DISCUSSION

This study confirms that a high proportion of patients with primary epilepsy were depressed (60.5%) attending Bolan Medical College/Hospital. This discovery suggests that depression is a significant psychiatric comorbidity in patients with epilepsy, and is a significant contributor to disease burden and quality of life impairment. Previous regional and international studies have indicated similar findings, reporting high prevalence of depression among people with epilepsy with increased prevalence among people in low resource settings.^{9,10}

The most common depression categories in the present study were mild and moderate depression, while there was also a significant number of patients with severe to very severe depression. This is reminiscent of earlier studies that have found that depressive symptoms in people with epilepsy tend to be untreated until they become severe and impair social and occupational function. Impaired treatment adherence, higher seizure frequency, higher healthcare utilization, and lower psychosocial well-being are also known to be associated with depression in patients with epilepsy, with a prevalence of^{11,12}. Thus, a timely and early psychiatric response is crucial to optimize overall patient outcome.

In the current study, there was a substantial association between depression and the length of illness. Depressive symptoms were more frequent among patients with a disease duration of more than 5 years than among patients with disease durations less than 5 years. Patients who suffer from chronic neurological illness may be more vulnerable to psychological distress, social isolation, dependency and cost, which can lead to vulnerability to depression. In previous studies¹⁴, a longer duration of epilepsy was found to be an important predictor of depressive symptoms, similar to this.¹⁵

The present study also found a statistically significant association between generalized epilepsy and depression. Depressive symptoms were more common in patients with generalized seizures than in patients with focal epilepsy. This could be because of the severity, unpredictability and social impact of generalized seizures that can adversely affect emotional health and social functioning. In earlier work, similar results have been reported indicating that uncontrolled seizures and severity of epilepsy are significant factors in psychiatric morbidity among epilepsy patients.¹⁷

There was also a significant correlation between sociodemographic factors and depression in the present study. Significantly more patients in low socioeconomic status and in rural areas suffered from depression than did other groups. Mental health services in rural areas, social stigma, lack of healthcare access, and financial hardship could be factors that heighten their psychological burden. The results are similar to other regional studies that focus on

social determinants of mental health in epilepsy patients, which report that 14/18 had an interaction between these factors.¹⁹

CONCLUSION

Depression is highly prevalent among patients with primary Epilepsy and represents a significant psychiatric comorbidity that adversely affects patient wellbeing and treatment outcomes. The present study identified depression in more than half of the study participants, with a considerable proportion experiencing severe to very severe depressive symptoms. Longer duration of illness, generalized epilepsy, low socioeconomic status, and rural residence were significantly associated with depression.

The findings of this study emphasize the importance of routine psychiatric screening and early identification of depressive symptoms in patients with epilepsy. Integration of mental health services into epilepsy care may improve treatment adherence, seizure control, and overall quality of life among affected patients.

RECOMMENDATIONS

Routine screening for depression should be incorporated into the standard management protocol for patients with primary Epilepsy, particularly in tertiary care settings. Healthcare professionals involved in epilepsy care should be trained to identify early symptoms of depression and refer patients for appropriate psychiatric evaluation and management.

Special attention should be given to high-risk groups, including patients with prolonged duration of illness, generalized epilepsy, low socioeconomic status, and rural residence. A multidisciplinary approach involving neurologists, psychiatrists, and psychologists is recommended to ensure comprehensive patient care.

Public health initiatives aimed at increasing awareness regarding epilepsy and mental health, reducing social stigma, and improving access to psychiatric services in underserved areas should also be encouraged. Furthermore, large-scale multicenter longitudinal studies are recommended to further explore the causal relationship between epilepsy and depression and to evaluate the effectiveness of early psychiatric interventions.

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