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*Original Research Article*

# Interictal Psychiatric Comorbidity in Patients with Epilepsy

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## ABSTRACT

Epilepsy is a neurological disorder with a life time prevalence of one percent. Psychiatric comorbidities are relatively frequent in people with epilepsy. Population-based studies have identified a lifetime prevalence of about 30 to 35 percent of comorbid psychiatric disorders. Depressive and anxiety disorders account for majority of psychiatric comorbidity.

**Aim:** To evaluate the frequency and categories of interictal psychiatric comorbidity in patients with epilepsy and the relationship between the sociodemographic and clinical variables and interictal psychiatric comorbidity of patients with epilepsy.

**Method:** 30 consecutive patients with epilepsy and 30 controls meeting the inclusion and exclusion criteria were evaluated for interictal psychiatric comorbidity using MINI Plus. Standardised MMSE was used to evaluate cognitive impairment. Sociodemographic variables were recorded using Modified Kuppuswamy Socio-Economic Status Scale. Statistical analysis was done using chi- square test.

**Results:** 26.7% patients with epilepsy are found to have psychiatric comorbidity and 16.7 % of the control has psychiatric disorders. The difference in frequency does not have statistical significance. The present study finds that among the various clinical variables of epilepsy, only frequent seizures have statistically significant relation to the presence a psychiatric disorder.

**Conclusion:** Comorbid psychiatric disorders are common in patients with epilepsy, but majority of the patients have no psychiatric disorders. Patient's with epilepsy have unmet mental health needs.

***Key Words:*** Interictal, Epilepsy, Psychiatric Comorbidity.

## INTRODUCTION

Epilepsy is a common neurological disorder with a life time prevalence of about one percent. There are 50 million people living with epilepsy worldwide, and most of them reside in developing countries. [(1)] The prevalence of epilepsy is approximately 7 per 1000 in the developed world. The annual incidence is around 50/100000. [(2)] About 10 million persons with epilepsy are there in India. The life time prevalence of epilepsy in India is 1% (1.9% in rural and 0.6% in urban India) as reported in 2014. [(1)]

Psychiatric comorbidities are relatively frequent in people with epilepsy. But the great majority of patients with epilepsy do not have psychiatric comorbidity of any kind. Most of the clinical manifestations in the peri-ictal categories are more or less unique to epilepsy. In contrast interictal categories include disorders that would meet standard diagnostic criteria for psychiatric disorders. Population-based studies published in the last 2 decades have recognized that not only are people with epilepsy at an increased risk of developing psychiatric comorbidities but

also patients with psychiatric comorbidities are at increased risk of developing epilepsy. [3,4] Lifetime prevalence of psychiatric disorders in epilepsy is about 30 to 35 percent. Major Depressive Disorders (17.4% compared with 10.7% in controls), Mood Disorders (34.2% compared with 19.6% in controls) and Anxiety Disorders account for a majority of these conditions. [3] Elevated risk of suicide is identified in patients with epilepsy. [5] In individuals with epilepsy, the highest risk of suicide is found during the first half year after diagnosis and with comorbid psychiatric disorders. [6] Major depression is associated with a six fold increased risk of unprovoked seizures and also longer duration of hospitalization. [7] Dissociative convulsions often mimic seizures and occur both in people with or without epilepsy. [8] Although most people with epilepsy function within the normal range of cognitive ability, comparisons with appropriate control groups consistently demonstrate deficits. [2]

However, despite decades of research evidences and recommendations, contemporary standards of practice fail to integrate screening and treatment of the psychiatric comorbidity into routine clinical care of patients with epilepsy.. It has been pointed out that the comorbidities continue to be under-recognized and undertreated and that patients with epilepsy have significant unmet mental health needs. [3,11] Psychiatric comorbidity plays an important role in the premature mortality seen in epilepsy patients. [9]

There are only a limited number of studies investigating epilepsy and the data from India is scarce with only a few recent published studies on psychopathology in epilepsy. The present investigation evaluated the frequency and categories of the interictal psychiatric comorbidity in patients with epilepsy and their correlation with socio-demographic and clinical variables.

## METHODOLOGY

**Source of data:**

This study was conducted in Father Muller Medical College which is a multispecialty general hospital. The population of the study consisted of all patients attending the outpatient facilities of the Department of Neurology and Department of Medicine with a clinical diagnosis of Idiopathic Generalized Tonic Clonic Epilepsy from July 2016 to August 2016. A convenient sample of 30 patients between the ages of 18 to 50 years and duration of epilepsy being less than 10 years were recruited for the study. Patients with a past history of a neuropsychiatric disorder and having medical disorders like Diabetes Mellitus, Hypothyroidism and chronic debilitating conditions known to cause psychopathology and cognitive impairment were excluded from the study. 30 non-affected relatives of the patients between the ages of 18-50 years fulfilling the exclusion criteria formed the control for the study.

Ethical clearance was obtained from the institutional ethical committee. The design and nature of the clinical study was explained to the patients and to significant relatives of the patients and controls. A written informed consent was obtained from all patients and controls participating in the study. Socio demographic and clinical variables were recorded in a specific proforma prepared for this study and Modified Kuppuswamy Socio-Economic Status Scale [12] was used to assess socio demographic data. Patients and controls underwent a thorough clinical examination to rule out other medical disorders

The interictal psychiatric comorbidities of patients and psychiatric disorders of controls were assessed using MINI PLUS version 5.0.0. [13] Standardized Mini Mental Status Examination [14] was used to screen patients for cognitive impairment. The patients with epilepsy were evaluated during the interictal period, at least 1 week after the last seizure. The diagnosis was made according to International Classification of Mental and Behavioral Disorders 10$^{th}$ revision (ICD-10 WHO 1992).

## RESULTS

Statistical analysis was done using Pearson Chi – Square tests to compare the patients and controls. A p value of less than 0.05 was taken to be statistically significant. Majority (53.3%) of patients are in the age group of 18 to 30 years when compared to controls that are in the age group of 41-50 years. In both groups majority of the individuals are males, completed high school, unemployed, married and from a rural background. Most of the patients in both groups are from socioeconomic class of II in Modified Kuppuswamy Socio-Economic Status Scale. Details are described in Table 1. No statistically significant differences are found between the two groups in the socio- demographic variables.

**TABLE 1 – Socio demographic variables**

| Socio demographic variables | | Controls | Epilepsy |
|---|---|---|---|
| Age (in years) | 18-30 | 7 (23.3%) | 16 (53.3%) |
| | 31-40 | 7(23.3%) | 7(23.3%) |
| | 41-50 | 16(53.3%) | 7(23.3%) |
| Gender | Male | 19(63.3%) | 18(60.0%) |
| | Female | 11(36.7%) | 12(40.0%) |
| Education | Graduate or postgraduate | 2 (6.7%) | 7(23.3%) |
| | Intermediate or post high school diploma | 8(26.7%) | 5(16.7%) |
| | High school certificate | 14(46.7%) | 11(36.7%) |
| | Middle school certificate | 4(13.3%) | 6(20.0%) |
| | Primary school certificate | 2(6.7%) | 1(3.3%) |
| Occupation | Profession | 0(0.0%) | 2(6.7%) |
| | Semi profession | 1(3.3%) | 2(6.7%) |
| | Clerical, shop-owner, farmer | 3(10.0%) | 2(6.7%) |
| | Skilled worker | 6(20.0%) | 4(13.3%) |
| | Semi skilled worker | 5(16.7%) | 4(13.3%) |
| | Unskilled worker | 4(13.3%) | 3(10.0%) |
| | Unemployed | 11(36.7%) | 13(43.3%) |
| Marital status | Single | 5(16.7%) | 14(46.7%) |
| | Married | 25(83.3%) | 16(53.3%) |
| Residence | Urban | 4(13.3%) | 4(13.3%) |
| | Rural | 26(86.7%) | 26(86.7%) |
| Socioeconomic class | II | 5(16.7%) | 6(20.0%) |
| | III | 13(43.3%) | 13(43.3%) |
| | IV | 12(40.0%) | 10(33.3%) |
| | V | 0(0.0%) | 1(3.3%) |

**TABLE 2 – Clinical variables in patients with epilepsy**

| | | |
|---|---|---|
| Duration of epilepsy (in years) | <1 | 2(6.7%) |
| | '1-2' | 7(23.3%) |
| | '2-5' | 7(23.3%) |
| | '5-10' | 14(46.7% ) |
| Average frequency of seizures | 1 per year | 2(6.7%) |
| | 1 per 6 months | 1(3.3%) |
| | 1 per 4 months | 3(10.0%) |
| | 1 per 3 months | 5(16.7%) |
| | 1 per 2 months | 7(23.3%) |
| | 1 per month | 1(3.3%) |
| | 1 per 2 weeks | 2(6.7%) |
| | 1 per week | 2(6.7%) |
| | 1 per day | 2(6.7%) |
| | less than1 per year | 5(16.7%) |
| Duration of seizure free period (in months) | < 1 month | 13(43.3%) |
| | '1-2' | 3(10.0%) |
| | '2-4' | 4(13.3%) |
| | '4-6' | 2(6.7%) |
| | '6-8' | 1(3.3%) |
| | '8-10' | 2(6.7%) |
| | '10-12' | 2(6.7%) |
| | >48 | 3(10.0%) |
| Number of antiepileptic drugs | 1 | 15(50.0%) |
| | 2 | 12(40.0%) |
| | 3 | 3(10.0%) |

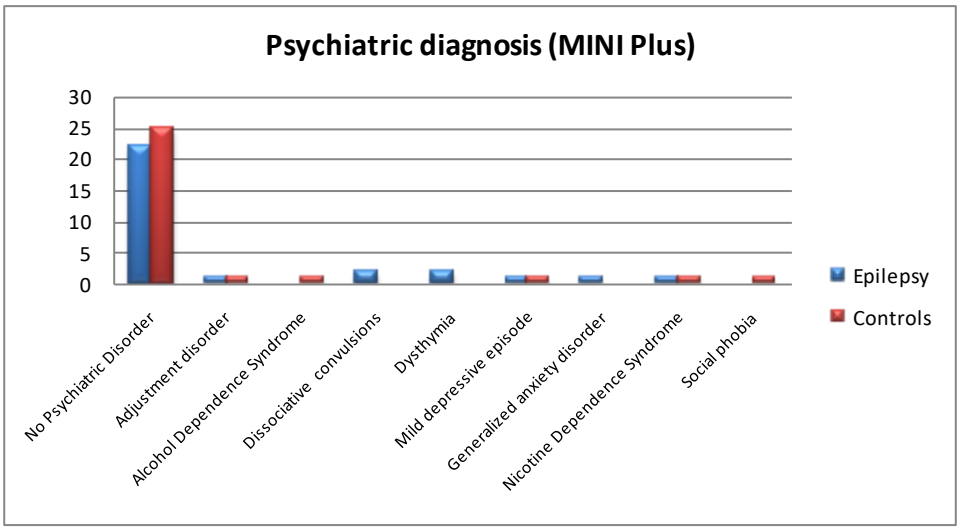
Table 2 describes the clinical variables studied. Majorities (46.7%) of patients have epilepsy for duration of 5 to 10 years and have one seizure episode every 2 months (23.3%). Majority of the patients have less than one month but more than a week of seizure free period. Half of the patients are on a single antiepileptic drug.

Among the patients with epilepsy majority (73.3%) have no psychiatric comorbidity. Table 3 and Figure 1 show MINI Plus diagnosis in both patients and controls. Dysthymia (6.7%) and Dissociative convulsions (6.7%) are common in patients with epilepsy compared to controls. Among the clinical characteristics of epilepsy only the presence of frequent episodes of seizures (one per day and one per 2 month) are found to have statistically significant relation to the presence of psychiatric comorbidity with a p value of 0.012.

**TABLE 3 – Psychiatric disorders in patients of epilepsy and controls**

| Psychiatric diagnosis (MINI Plus) | Patients with Epilepsy | Controls | Total |
|---|---|---|---|
| No Psychiatric Disorder | 22(73.3%) | 25 (83.3%) | 4(78.3%) |
| Adjustment disorder | 1(3.3%) | 1 (3.3%) | 2(3.3%) |
| Alcohol Dependence Syndrome | 0(0.0%) | 1(3.3%) | 1(1.7%) |
| Dissociative convulsions | 2(6.7%) | 0(0.0%) | 2(3.3%) |
| Dysthymia | 2(6.7%) | 0(0.0%) | 2(3.3%) |
| Mild depressive episode | 1(3.3%) | 1(3.3%) | 2(3.3%) |
| Generalized anxiety disorder | 1(3.3%) | 0(0.0%) | 1(1.7%) |
| Nicotine Dependence Syndrome | 1(3.3%) | 1(3.3%) | 2(3.3%) |
| Social phobia | 0(0.0%) | 1(3.3%) | 1(1.7%) |
| Total | 30(100.0%) | 30(100.0%) | 60(100.0%) |

**FIGURE-1:**




## DISCUSSION

This study is an observational, cross-sectional, descriptive case control clinical study. There is no statistically significant difference found in sociodemographic variables between the patients and controls. The frequency of psychiatric disorders in our study is 27.7% which is similar to the findings of previous studies. Among the psychiatric disorders 13.3% are mood disorders and anxiety disorder which is similar to the previous studies. [3-5] Also dissociative convulsions are present in 6.7% of the patients in concordance to the earlier studies. [8] However our study does not find any statistical significance in the frequency of psychiatric comorbidity between patients and controls. This is in contrast to previous population based prevalence studies.

Our study finds that patients with more frequent episodes of seizures are more prone for psychiatric comorbidity. It is similar to previous findings which showed more unprovoked seizures in patients with comorbid psychiatric disorders and more duration of hospitalization. Studies have

indicated the bidirectional relationship between psychiatric comorbidity and epilepsy and also the possibility of a common underlying mechanisms between the two. [7,10] The deleterious neurobiological processes that underpin depression, anxiety and psychosis may interact with those producing seizures to increase the extent of brain dysfunction and thereby likelihood of developing pharmaco-resistant epilepsy. [10]

Our study is unique in the finding that though psychiatric disorders are more frequent in patients with epilepsy it is not statistically significant compared to controls. As a matter of fact majority of patients with epilepsy do not have any psychiatric comorbidity.

There are certain strengths and limitations in our study. We have assessed psychiatric disorders in healthy controls which allowed comparison with epilepsy patients unlike prevalence studies. Our study has also excluded confounding variables like debilitating chronic diseases and cognitive impairment which can alter the results. We have studied patients diagnosed with only idiopathic generalized tonic clonic epilepsy and hence excluded other secondary causes which can be a confounding variable. Also complex partial epilepsies have been shown to have more psychiatric disorders compared to other epilepsies. We have assessed psychiatric disorders using a standardized psychiatric tool (MINI Plus). We have evaluated the patients only during the interictal period of minimum of a week post seizure which avoided the risk of inclusion of psychiatric symptoms unique to seizure. Limitations of this study are small sample size, controls are healthy individuals and not a disease matched sample, and the study center being a tertiary care center decreases the scope for its generalization to the general population. Further improvement in the study would be a larger sample size and preferably disease matched controls.

## CONCLUSION

Psychiatric disorders among patients with epilepsy are quite common but yet under-recognized. One in three patients with epilepsy have a comorbid psychiatric disorder with mood and anxiety disorders predominating. Patients with epilepsy have a relatively higher risk for psychopathology although majorities have no psychiatric comorbidity. Therefore appropriate recognition and efficient treatment of psychiatric disorders in patients with epilepsy may improve their quality of life and consequently lead to better treatment success in the treatment of epilepsy.

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