e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15 (12); 1117-1123

Original Research Article

Epilepsy and Psychiatric Comorbidity: A Study of Treated Patients

Jitendar Singh[1], Tarun Pal[2], Neelam Rathi[3]

[1]Assistant Professor, Department of Psychiatry, LLRM Medical College, Meerut, U.P
[2]Associate Professor, Department of Psychiatry, LLRM Medical College, Meerut, U.P
[3]Professor, Department of Psychiatry, LLRM Medical College, Meerut, U.P

Received: 25-09-2023 / Revised: 28-10-2023 / Accepted: 30-11-2023
Corresponding author: Dr. Jitendar Singh
Conflict of interest: Nil

Abstract:

Background: Epilepsy affects a significant proportion of the population and is typically treated with antiepileptic drugs or surgery. There is a well-established link between epilepsy and psychiatric disorders, which has been overlooked in modern times. The purpose of this study is to document the prevalence and types of comorbid psychiatric disorders in patients with epilepsy, which have a significant impact on the quality of life and well-being of patients.

Objective: The study aims to determine the prevalence and types of psychiatric disorders in patients with epilepsy, and to explore the association between sociodemographic factors and comorbid psychiatric disorders.

Material & Method: The study was conducted at the Department of Psychiatry, L.L.R.M Medical College, Meerut, Uttar Pradesh, between February 2020 and June 2021. It followed an open, longitudinal, and follow-up design and enrolled all consecutive epilepsy patients referred for psychiatric evaluation who met the inclusion and exclusion criteria. The study used a detailed diagnostic interview and Mini International Neuropsychiatric Interview (M.I.N.I) Version 5.0.0 as study instruments. Ethical clearance was obtained, and written consent was obtained from all participants before enrolment in the study.

Result: The study enrolled fifty consecutive patients with epilepsy who attended the OPD. The Mini International Neuropsychiatric Interview was administered to the participants. In this study, the total number of patients with epilepsy (PWE) with psychiatric co-morbidities was 16/50 (32.0%).

Conclusion: Patients with epilepsy have a higher likelihood of experiencing psychiatric co-morbidities compared to those without epilepsy.

Keywords: Epilepsy, Antiepileptic, Psychiatric Comorbidity, Depression, Neuropsychiatric Interview.

Introduction

Epileptic seizures are involuntary behavioural events characterized by excessive or hyper synchronous electrical discharge in the brain. Hyper excitable neurons with sustained postsynaptic depolarization cause abnormal electrical discharges. [1] Descriptions of epileptic fits can be found in ancient texts dating back two millennia from Egypt, China, India, and Babylonia. Hippocrates (born 460 BC) was the first to propose that epilepsy was caused by brain diseases rather than supernatural causes, as was previously thought. However, this was quickly forgotten, and it wasn't until the late nineteenth century that a clearer understanding of epilepsy began to emerge, as a result of experiments in inducing epileptic seizures. Years later, additional research by Gibbs, Lennox, Penfield, and Jasper solidified our understanding of epilepsy as a medical illness. [2]

It affects 0.4-1% of the general population, with males being more affected than females. [3] The ILAE classification categorizes epilepsies as focal or localization-related versus generalized, as well as by Etiology. Antiepileptic drugs (AED) are the first-line of treatment. Drugs such as Options include carbamazepine, valproate, phenytoin, lamotrigine, and others. Surgery is performed. Good for resistant cases where temporal lobectomy is possible. The majority of epileptic patients have a good prognosis, and the majority of seizures can be adequately controlled with antiepileptic medication. Some seizures, such as absence seizures, usually go away by adulthood. Surgery is a good option for epileptic patients who do not improve with medications. [1] Since antiquity, clinicians have recognized the link between epilepsy and psychiatric disorders. This relationship has frequently been overlooked and understudied in modern times. Nonetheless, with the development of new antiepileptic and psychiatric therapies, as well as novel neuroimaging techniques, understanding the relationship between epileptic seizures and

psychopathology is becoming increasingly important. As evidenced by an increase in research and publications in the field, many psychiatrists and neurologists have recently taken up the investigation of neuropsychiatric aspects of epilepsy. [1] Epidemiological evidence suggests that epilepsy patients have a higher risk of psychiatric co-morbidities than non-epileptic patients. The most well-established link is between epilepsy and depression or dysthymia, but one-fourth or more epileptics have a variety of psychopathology.

Psychiatric manifestations may result directly from ictal discharges (e.g. psychic auras), as peri-ictal phenomena (e.g. postictal confusion), interictally or between seizures (e.g. schizophreniform psychosis) or with a variable & less – established relationship to the seizure discharges (e.g. most mood disorders). [1] Psychiatric co-morbidities have a significant impact on the quality of life and well-being of epilepsy patients. Psychiatric disorders in epilepsy may result from inhibitory activity that develops as a reaction to the chronic seizure disorder's excessive excitatory activity. [4,5]

In order to pursue remedial measures, screening, and treatment, it is critical to document the incidence and types of comorbid psychiatric disorders in patients. We undertook the current project to accomplish this goal. The purpose of this study is to look at the psychiatric comorbid conditions in patients with epilepsy.

Aims and Objectives:

1. The study aims to establish the current proportion of epilepsy patients who also have psychiatric disorders.
2. The study aims to categorize the specific types of psychiatric disorders according to either the ICD-10 diagnostic criteria.
3. The study aims to investigate how the distribution of psychiatric disorders varies across different sociodemographic factors.

Materials and Methods:

Study design: The study followed an open, longitudinal, and follow-up design and was conducted between FEB 2020 and June 2021 at the Department of Psychiatry, L.L.R.M Medical College, Meerut, Uttar Pradesh. Ethical clearance was obtained from the institutional committee.

Inclusion criteria: The study included individuals of any age group who have epilepsy and are willing to participate in the study. Additionally, they should be able to communicate verbally.

Exclusion criteria:

1. Previously diagnosed with a psychiatric disorder and documented in medical records.
2. Experiencing mental clouding or unconsciousness.
3. Unable to communicate verbally.
4. Suffering from other medical conditions that are clearly known to cause psychiatric disorders.

Sample: The study enrolled all patients with epilepsy who met the inclusion and exclusion criteria and were consecutively referred or presented directly to the department of Medicine/Neurology. Written consent was obtained from all participants before they were enrolled in the study.

Study Instrument:

The study used two main instruments: A detailed diagnostic interview that assessed socio-demographic profile, clinical details, and mental status examination of the patient. The Mini International Neuropsychiatric Interview (M.I.N.I) Version 5.0.0, which is a structured interview for and ICD-10. It has comparable validation and reliability scores to other diagnostic instruments and can be administered in a shorter period of time (mean 15 minutes). Each diagnostic category is identified by a module corresponding to a letter, with screening questions presented at the beginning and diagnostic boxes at the end of each module.

Procedure: The study enrolled consecutive epilepsy patients referred for psychiatric evaluation. Detailed interviews and study tools were applied during the first visit and at follow-up interviews after one, three, and six months of treatment. The study also made inquiries with informants, relatives, and other sources for reliable information about the patient. At the end of the study, the collected data was coded and tabulated for statistical analysis. Ethical considerations, confidentiality, and informed consent were maintained throughout the study without intervention with the treatment plan

Participant consent and ethics approval

The ethical approval was obtained prior to the start of the study. The study subject's permission was obtained. The study participants' confidentiality was protected.

Observation & result: The study enrolled fifty consecutive patients with epilepsy who attended the OPD. The Mini International Neuropsychiatric Interview was administered to the participants. In this study, the total number of patients with epilepsy (PWE) with psychiatric co-morbidities was 16/50 (32.0%). During the study period, a total of seventy epileptic patients were screened. Fifty patients met the eligibility requirements and were enrolled in the study. They all finished the study.

Study Sample

Table 1: Details of patients recruited

	Number of Patients
Patients screened for inclusion in the study	70
Patients included in the study	50
Patients excluded from the study	20

Table 2: Bio-socio-clinical profile of Patients with epilepsy.

Variables	Groups	N=50	%
Age at onset of seizures	≤30 years	31	62
	>30 years	19	38
Sex	Males	33	66
	Females	17	34
Education	High school & above	32	64
	Middle school & below	18	36
Occupation	Skilled workers & above	16	32
	Semiskilled workers & below	34	68
Socio economic class (SEC)	SE Class I ,II,III (≥Rs.1883)	18	36
	SE Class IV,V (≤Rs.1882)	32	64
Duration of seizures	≤6 months	11	22
	>6 months	39	78
Frequency of seizures	≤2/year	29	58
	>2/year	21	42
Family history of seizures	Present	10	20
	Absent	40	80
Recurrence of last seizure	≤6 months	28	56
	>6 months	22	44

Table-2 describes the socio demographic profile of study group. The age at onset of seizures was 30 years or below 30 years in 31/50(62%) patients. Those who had seizures onset after 30 years were 19/50(38%) patients. The mean age of onset was 33.77 ±11.4.

Sex distribution of the patients shows that there were 33(66%) males and 17(34%) females. While analyzing educational status of the patients it was found that 32(64%) had education level of high school and above while 18(36%) had education level of middle school and below. Occupational profile of the patients shows that 16 (32%) patients in the study were skilled worker and above while 34(68%) were semiskilled worker and below. Socio economic status was assessed according to B.G. Prasad scale (Updated for May 2016). Eighteen (36%) patients belonged to socio economic class (I, II, III) while 32(64%) belonged to socio economic class (IV, V). Duration of seizures was six months or less than six months in 11(22%) patients and more than six months in 39(78%) patients.

Frequency of seizures was two or less than two per year in 29(58%) patients and more than two per year in 21(58%) patients. Family history of seizures was present in 10(20%). Recurrence of last seizure was six months or less than six months ago in 28 (56%) patients and more than six months ago in 22(44%) patients.

Table 3: Prevalence of Psychiatric co-morbidities among patients with epilepsy

Variables	Groups	PWE	Co- Morbidity	%
Sex	Males	33	11	33.33
	Females	17	5	29.41
Age at onset of seizures	≤30 years	31	11	35.48
	>30 years	19	5	26.32
Socio economic class (SEC)	SE Class I,II,III (≥Rs. 1883)	18	3	16.67
	SE Class IV,V (≤ Rs. 1882)	32	13	40.63
Duration of seizures	≤6 months	11	3	27.27
	>6 months	39	13	33.33
Freq of seizures	≤ 2/year	29	6	20.69

	>2/year	21	10	47.62
Family history of seizures	Present	10	6	60.00
	Absent	40	10	25.00
Recurrence of last seizure	≤6 months	28	13	46.43
	>6 months	22	3	13.64
Total		50	16	32.00

Table-3 shows prevalence of psychiatric co-morbidities among patients with epilepsy. Co-morbidities among different sex shows that, in males, 11(33.33%) had psychiatric co-morbidities and in females, 5(29.41%) had psychiatric co-morbidities.

Psychiatric co-morbidities according to age at onset of seizures shows that in patients 30 years or less than 30 years of age, 11(35.48%) had psychiatric co- morbidities and in patients more than 30 years of age, 5 (26.32%) had psychiatric co- morbidities. In patients of socio economic (I, II, III), 3 (16.67%) had psychiatric co- morbidities and in patients of socio- e c o n o m i c class (IV, V), 13 (40.63%) had psychiatric co-morbidities.

Three (27.27%) patients had psychiatric co-morbidities in whom duration of seizure was six or less than six months, while thirteen (13.33%) patients had psychiatric co-morbidities in whom duration of seizures was more than six months. Psychiatric co-morbidities were present in six (20.69%) patients with frequency of seizures two or less than two per year, while psychiatric co-morbidities were present in 10 (47.62%) patients with epilepsy with frequency of seizures was more than two per years.

Six (60%) patients had psychiatric co-morbidities among patients who had family history of seizures, while ten (25%) had psychiatric co-morbidities among the patients with no family history of seizures.

Patients with epilepsy in whom recurrence of last seizure was six months or less than six months ago, 13(46.43%) had psychiatric co-morbidities. Patients with epilepsy who had recurrence of last seizure more than six months ago, 3(13.64%) had psychiatric co-morbidities.

Table 4: Prevalence of different types of Psychiatric co-morbidities among patients with epilepsy

		N	%	N	%	n	%	n	%	
Sex	Males	9	81.82	0	0.00	1	9.09	1	9.09	11
	Females	3	60.00	1	20.00	0	0.00	1	20.00	5
Age at onset of	≤30 years	8	72.73	0	0.00	1	9.09	2	18.18	11
seizures	>30 years	4	80.00	1	20.00	0	0.00	0	0.00	5
Socio economic	SE Class I, II, III (≥Rs.1883)	2	66.67	0	0	0	0	1	33.33	3
class (SEC)	SE Class IV, V (≤Rs.1882)	10	76.92	1	7.69	1	7.69	1	7.69	13
Duration of	≤6 months	2	66.67	0	0.00	1	33.33	0	0.00	3
seizures	>6 months	10	76.92	1	7.69	0	0.00	2	15.38	13
Frequency of	≤ 2/year	4	66.67	0	0.00	1	16.67	1	16.67	6
seizures	>2/years	8	80.00	1	10.00	0	0.00	1	10.00	10
Family history	Present	5	83.33	0	0.00	0	0.00	1	16.67	6

Table-4 shows prevalence of different types of psychiatric co-morbidities. Among the total study population of fifty patients with epilepsy, sixteen had psychiatric co- morbidities. Twelve had major depressive disorder, one had agoraphobia, one had alcohol dependence and two had psychotic disorder.

Table 5: Association of Bio-socio-clinical factors with Psychiatric co-morbidities

Variables	Groups	Co-Morbidity	With Out Comorbidity	P-Value
Sex	Males	11 (33.33%)	22	0.77
	Females	5 (29.41%)	12	
Age At Onset	≤30 Years	11 (35.48%)	20	0.49
	>30 Years	5 (26.32%)	14	
Socio Economic Class (Sec)	Se Class I,Ii,Iii (≥Rs 1883)	3 (16.67%)	15	0.11*
	Se Class Iv,V (≤Rs 1882)	13 (40.63%)	19	
Duration Of Seizures	≤6 Months	3 (27.27%)	8	1*

	>6 Months	13 (33.33%)	26	
Freq Of Seizure	≤2/Year	6 (20.69%)	23	0.04
	>2/Year	10 (47.62%)	11	
Family History Of Seizures	Present	6 (60%)	4	0.05*
	Absent	10 (25%)	30	
Recurrence Of Last Seizure	≤6 Months	13 (46.43%)	15	0.01*
	>6 Months	3 (13.64%)	19	

Chi-square test was applied to see the association of independent factors with the co-morbid conditions. (*) Fisher's exact test was used where values were below 5 in any cell contributing to 2 X 2 tables.

Table-5 shows comparison between patients with, and without psychiatric co- morbidities. While analyzing the presence of psychiatric co-morbidities it was found that it was more among males than females, but was not statistically significant (p =0.77).

All the patients were divided in two age groups. One was 30 years or less than 30 years and another was more than 30 years. The presence of psychiatric co- morbidities were found more in younger age groups and again it was not found statistically significant (p= 0.49).

According to B.G. Prasad socio economic classification we grouped all the patients in two groups, one was socio economic class (I, II, III) and another was socio economic class (IV, V). Psychiatric co-morbidities was found more in socio economic class (IV, V) but p value was not significant (p= 0.11). During study the effects of duration of seizures on psychiatric co-morbidities, the prevalence of psychiatric co-morbidities were more in the patients in whom the duration of seizures was six or less than six months (p= 1).

Frequency of seizures more than two per years was found significantly associated with psychiatric co-morbidities (p= 0.04).

Absence of family history of seizures was found to be associated with psychiatric co-morbidities (p= 0.05).

Presence of psychiatric co-morbidities was more in the patients in whom the recurrence of last seizure was six months or less than six months ago and it was statistically significant (p= 0.01).

After analyzing the data obtained from study subjects we found that development of psychiatric co-morbidities among patients with epilepsy was significantly higher among the patients having frequency of seizures more than two per year and family history of seizures and history of recurrence of last seizure six months or less than six months ago.

Developments of psychiatric co-morbidities were not found significantly different in genders, age, socio economic status and duration of seizures.

Table 6: Finding of psychiatric co-morbidities during follow up

Disorders	1 day	1 month	3 months	6 months	Total
Mood Disorders (Major Depressive Disorder)	0	1	2	9	12
Anxiety Disorders (Agoraphobia)	1	0	0	0	1
Substance Abuse (Alcohol Dependence Syndrome)	0	0	0	1	1
Psychotic disorders	0	0	0	2	2
Overall prevalence of psychiatric Comorbidity					16

Table-6 shows the new patients of respective disorder detected during each follow up.

Chi square test with Yates correction was applied and found significant presence of psychiatric co-morbidities with increases in duration of follow up (p 0.04).

Discussion

The current study is a prospective, open-label, longitudinal study of psychiatric co-morbidities in epilepsy patients undergoing treatment. Prior to the evaluation, all patients or caregivers provided informed consent. The research was conducted between February 2015 and June 2016. During the study, seventy patients were chosen, with twenty of them being excluded due to exclusion criteria. In sixteen of the fifty patients, psychiatric co-morbidities were present. For psychiatric co-morbidities, we used the Mini International Neuropsychiatric Interview English Version 5.0.0 scale. The findings support previous research that found psychiatric co-morbidities to be common in epilepsy patients. [6-8,9,10,11,12-14] The findings of this study confirmed previous findings that mood disorder (major depressive disorder) was prevalent in epilepsy patients. In comparison to other psychiatric co-morbidities. Using the chi square test, 33.33% of males and 29.41% of

females in this study had psychiatric co-morbidities. There was no statistically significant difference (p= 0.77) in psychiatric co-morbidities in epilepsy patients. According to the patient's gender. Previous studies reported similar findings. Jacob discovered that there was no difference in psychiatric co-morbidities between male and female epileptic patients. [10]

In the current study, two groups of patients were formed based on the age of disease onset. Psychiatric co-morbidities were found in 35.48% of those aged 30 and under, and 26.32% of those aged 30 and over. In the study, age at onset of seizures was not associated with psychiatric co-morbidities. This could be due to a small sample size. According to Caplan et al., those with depression were older in epileptic children with anxiety and affective disorders; however, the relationship was not significant. [15] Other studies found that patients with epilepsy who began having seizures at a young age had more psychiatric co-morbidities.

In our study, we used the BG Prasad socioeconomic classification to assess the socioeconomic class of Patients and divided them into two broad groups: SE Class I, II, III, and IV,V. Psychiatric co-morbidities were present in 16.67% of socioeconomic classes I, II, III, and 40.63% of socioeconomic classes IV, V. There was no statistically significant difference in psychiatric co-morbidities among socioeconomic groups. This could be because our sample is not representative of all socioeconomic classes.

Few studies have found that patients with lower socioeconomic status are more likely to develop psychiatric co-morbidities than those with higher socioeconomic status. According to Lemstra et al., lower socioeconomic status is associated with higher rates of psychiatric co-morbidities.[16] in the current study, 27.27% of patients with seizures lasting six months or less and 33.33% of patients with seizures lasting more than six months participated.

Psychiatric co-morbidities were present for months. There was no statistically significant difference (p= 1) in psychiatric co-morbidities in patients with epilepsy based on seizure duration. Our findings were consistent with those of Jacob et al, who discovered that seizure duration was not related to psychiatric co-morbidities. [10] In the current study, all patients were divided into two groups based on the frequency of seizures, more than two and two or less than two seizures per year. Psychiatric co-morbidities were lower (20.69%) in patients who had two or fewer seizures per year than in patients who had more than two seizures per year (47.62%). According to the frequency of seizures, there was a statistically significant (p= 0.04) association in psychiatric co-morbidities in patients with epilepsy. Our findings agreed with those of other studies. Won Lim Hye et al discovered that as the frequency of seizures increases, so do the psychiatric co-morbidities. [18] Kimiskidis et al. discovered that as seizure frequency increased, so did the incidence of psychiatric co-morbidities. [17].

Limitation of the study:

1. Due to the study being conducted at a single center with a small sample size, the findings may not be widely applicable.
2. The lack of neuroimaging and functional neuroimaging limited the ability to identify any focal basis of psychiatric pathologies.

Conclusion

Patients with epilepsy have a higher likelihood of experiencing psychiatric co-morbidities compared to those without epilepsy.

This study confirmed previous findings that major depressive disorder is more prevalent in epilepsy patients. Additionally, epilepsy patients tended to have lower levels of education and socio-economic status. The presence of recent seizures, frequent seizures, and a family history of seizures were linked to a higher incidence of psychiatric co-morbidities in these patients. Treating these disorders in addition to effectively managing seizures may significantly enhance their overall quality of life.

Financial disclosure: All authors solemnly declare that no financial support has been taken from any individual or pharmaceutical company for the submitted work and the authors have received no research grants from any individual or company

Acknowledgement: I would like to thank all the members of psychiatry department for their help & I am also thankful to all the patients for their cooperation, enthusiasm and interest shown by them throughout this study.

References:

1. Sadock BJ, Sadock VA, Ruiz P (Eds). Comprehensive Text book of Psychiatry. 9th edn, Lippincott Williams and Wilkins; 2009; 451-463.
2. Goldensohn ES, Porter RJ, Schwartzkroin PA. The American Epilepsy Society: an historic perspective on 50 years of advances in research. Epilepsia. 1997; 38: 124–50.
3. World Health Organization. Atlas: Epilepsy Care in the World. WHO. 2005.
4. Dodrill C. Correlates of generalized tonic–clonic seizures with intellectual, neuropsychological, emotional, and social function in patients with epilepsy. Epilepsia 1986; 27:399–411.

5. Aldenkamp A. Effect of seizures and epileptiform discharges on cognitive function. Epilepsia. 1997; 38(Suppl. 1):S52–5.
6. Verrotti A, Cicconetti A, Scorrano B, De Berardis D, Cotellessa C, Chiarelli F, et al. Epilepsy and suicide: pathogenesis, risk factors, and prevention. Neuropsychiatr Dis Treat. 2008; 4(2):365–70.
7. Hesdorffer DC, Ishihara L, Mynepalli L, Webb DJ, Hauser WA. Epilepsy, suicidality and psychiatric disorders: a bidirectional association. Ann Neurol. 2012; 72:184–91.
8. Bragatti JA, Torres CM, Isolan GR, Bianchin MM. Psychiatric comorbidities of epilepsy: a review. J Neurol Neurophysiol. 2011:S2.
9. EBE Fiordelli, Ettore Beghi, Graziella Ogliun and Vittorio Crespi. Epilepsy and psychiatric disturbance, a cross- sectional study. British Journal of psychiatry: 1993; 163: 446- 450.
10. Jacob R, Tharyan P. Psychiatric co-morbidities and quality of life in PWE. Ger J Psychiatry 2010; 13(2):79–85.
11. Jacoby A, Baker GA, Steen N, Potts P, Chadwick DW. The clinical course of epilepsy and its psychosocial correlates: finding from a U.K. community study. Epilepsia 1996; 37:148–61.
12. Seshadri V, Thomas J, Murthy JMK, Raju CR. Prevalence of depression and its effect on quality of life in PWE: A community based study and a comprehensive rural epilepsy study in South India (CRESSI). Neurol Asia 2004; 9(Suppl. 1):139 [Abstract].
13. Mendez MF, Cummings JL, Benson DF. Depression in epilepsy, significance and phenomenology. Arch Neurol. 1986; 42(8): 766–70.
14. Rudzinski LA, Meador KJ. Epilepsy and neuropsychological co-morbidities. Continuum (Minneap Minn) 2013; 19(3 Epilepsy): 682–96.
15. Caplan R, Siddarth P, Gurbani S, et al. Depression and anxiety disorders in pediatric epilepsy. Epilepsia. 2005; 46(5):720-30.
16. Lemstra M, Neudorf C, D‟‟Arcy C, Kunst A, Warren LM, Bennett NR. A sys- tematic review of depressed mood and anxiety by SES in youth aged 10-15 years. Can J Public Health 2008; 99:125-129.
17. Kimiskidis VK, Triantafyllou NI, Karaizou E, Gantzonis SS, Fountoulakis KN, Siatouni A, et al. Depression and anxiety in epilepsy: the association with demographic and seizure related variables. Ann Gen Psychiatry. 2007; 6:28.
18. Won Lim Hye, Seok Song Hyun, Ha Hwang Yang, Won Lee Ho, Kyu Suh Chung, Pa Park Sung, et al. Predictors of suicidal ideation in people with epilepsy living in Korea. J Clin Neurol. 2010; 6:81–8.