



Prevalence and clinical implications of psychopathology in adults with epilepsy seen in an outpatient clinic in Nigeria



Mosunmola Florence Tunde-Ayinmode, M.B.B.S., F.M.C.Psych.^{a,*},
Olatunji Alao Abiodun, M.B.B.S., F.M.C.Psych.^a, Peter Omoniyi Ajiboye, M.B.B.S., F.W.A.C.P., (Psych.)^a,
Oluwabunmi Ideraoluwa Nimat Buhari, M.B.B.S., F.W.A.C.P., (Psych.)^a,
Emmanuel Olatunde Sanya, M.B.Ch.B., M.Sc., F.W.A.C.P.^b

^a Department of Behavioral Sciences, College of Health Sciences, University of Ilorin, Nigeria

^b Department of Internal Medicine, College of Health Sciences, University of Ilorin, Nigeria

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ABSTRACT

Background: The psychopathological and clinical characteristics of adult patients with epilepsy attending our neurology clinic were evaluated to determine prevalence of psychopathology and its associated factors towards improving services and initiating collaborative care which is currently nonexistent.

Methods: The study was a two-stage procedure conducted over 1 year using the General Health Questionnaire in the first stage and Schedule for Clinical Assessment in Neuropsychiatry in the second stage. Diagnosis of psychiatric disorders was based on *International Classification of Diseases: 10th Revision* criteria.

Results: Sixty-three patients were interviewed. Mean age was 34.43 ± 13.7 years; more than half of the patients had less than one seizure episode per month. Fourteen patients (22.2%) had partial epilepsy; 40 (63.5%), generalized; and 9 (14.3%), unclassified seizures. The rate of psychiatric morbidity was found to be 28.6%. Depressive disorders were the most common (66.7%), followed by psychotic disorders (11.1%), anxiety disorders (11.1%) and dementia (11.1%). Psychopathology was more common in women ($P=.007$), those older than 40 years ($P=.038$) and those with partial epilepsy ($P=.017$).

Conclusion: About one third of patients with epilepsy studied had undetected and untreated psychopathology. Our neurology clinic urgently needs currently nonexistent collaborative care involving neurologists, psychiatrists and primary care physicians in order to improve the mental health of the patients with epilepsy.

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1. Introduction

Epilepsy is a term that describes a group of chronic brain disorders in which there is a recurrent typical seizure which occurs as a result of excessive and/or hypersynchronous abnormal activity of neurons in the brain. It manifests clinically as sudden onset of motor, sensory, somatosensory, psychic or behavioral symptoms and signs which may be associated with or without convulsions or loss of consciousness [1,2].

It is the most common noncommunicable neurological disorder globally [2]. It is more common in developing countries like Nigeria where, unfortunately, identification and treatment are also unacceptably low [2].

Apart from the physical burden of the disorder, epilepsy exerts psychological and social burden on affected individuals and their families [2–6]. Psychopathology in patients with epilepsy is reportedly higher than in the general population [7]; specifically, previous studies have found that depressive disorders, anxiety disorders and

psychotic disorders occur more frequently in these patients [2–7]. There is a strong relationship between psychopathology and epilepsy [2–7]. This relationship can sometimes be bidirectional [8–10]. Psychopathology in epilepsy can be heterogeneous, occurring as part of the behavioral manifestation of the seizure at its various phases (preictal, ictal and postictal) [8], or it can occur as an interictal phenomenon [8]. Psychiatric-related epilepsy disorders may also be linked to psychotropic effects of some antiepileptic medications [11] like phenobarbitone, which may cause depression.

The interface between epilepsy and psychopathology like that between neurology and psychiatry and between their practitioners is complex and requiring of greater attention [12].

The diagnostic and management misunderstanding of epilepsy-related psychopathology is probably the most important reason for this advocacy; mistaking conversion disorders or depression for absence status or partial complex status, seizure-related hallucination or automatism for functional psychosis and aura of epilepsy for panic disorders are some examples [13]. In low-resource countries with inadequate advanced investigating tools like magnetic resonance imaging (MRI), computed tomographic (CT) scan or video-monitoring electroencephalogram (EEG), the problem of misdiagnosis can be more serious [1].

* Corresponding author.

E-mail addresses: mosunmola@ilorin.gov.ng (M.F. Tunde-Ayinmode), tunab2001@yahoo.com (O.A. Abiodun), poboye203@yahoo.com (P.O. Ajiboye), nimat72@yahoo.com (O.I.N. Buhari), emanuelosanya@yahoo.com (E.O. Sanya).

The prevalence of epilepsy related psychiatric disorders varies widely globally and is affected by several factors, examples of which include research instruments used, case definition, seizure type, severity, frequency and control and socioeconomic status of the patients among others [6,14,15]. The prevalence of all psychiatric disorders in epilepsy as reported by several studies ranges from 6% to 70% [3,4,15–19].

Factors known to predispose patients with epilepsy to psychopathology are many and varied; the presence of focal seizures, poorly controlled or frequently occurring seizures [20], the use of polypharmacotherapy [21,22] and the use of depressogenic drugs like phenobarbitone [23,24] are example of factors that have been reported.

Epilepsy-related psychiatric morbidity especially depression may lower the quality of life of patients, and this could negatively affect drug compliance and seizure control [25,26], which may sometimes be fatal [18,25,27]. These issues are of major concern to clinicians.

A large proportion of patients with epilepsy in the developing countries remain unidentified, and their psychiatric comorbidity is undetected and untreated. This is despite the fact that over 80% of patients with epilepsy can be diagnosed at the primary and secondary care levels based on symptomatology alone [2]. Paucity of current data in developing countries suppresses the magnitude of psychopathology and therefore the amount of attention and resources that policy and program developers and implementers allocate to these problems. This is tied to the underdevelopment of neuropsychiatric infrastructures that pervade many of these countries, including Nigeria. These factors make it difficult to implement public health measures and hamper effective policy and program formulation to address the twin challenge of epilepsy and psychopathology. In our neurology clinic, formal collaborative care with neurologists and psychiatrists does not exist. The purpose of this study is to provide evidence on the prevalence of psychopathology (psychiatric morbidity) and its associated factors among our adult patients with epilepsy attending the neurology clinic with the aim of initiating collaborative care in conformity with global standard practice [11].

2. Methods

2.1. Study site

The study was conducted in the adult neurology clinic of University of Ilorin Teaching Hospital (UIITH), Ilorin. Ilorin is the capital of Kwara state and one of the 36 states in Nigeria. It is located in the north-central geopolitical zone, one of six zones in the country. Kwara state has a population of about 2.3 million [28]. UIITH is a major point of specialist care for the host state and five adjoining others. The neurology clinic is in the Department of Internal Medicine and is supervised by two consultant neurologists and a complement of resident (trainee) physicians at various levels of training. Most of the patients are referred to the neurology clinic from the family physicians in the hospital, private clinics as well as primary- and secondary-level public health facilities. The clinic runs once a week and sees all neurological cases referred to it.

The hospital has facilities for seizure investigations like EEG, CT scan and MRI machines. However, these investigations are available only to patients who can afford the cost.

2.2. Study population

The study population consisted of consecutive attendees at the adult neurology clinic over the 1-year duration of the study who had a diagnosis of epilepsy made by the two supervising consultant neurologists. The diagnoses by the neurologists were by consensus and were on the basis of symptomatology and EEG (if the patient could afford the cost) guided by the International League Against Epilepsy classification of epilepsy [29]. In this classificatory system,

seizures are separated into two broad divisions: focal (partial), characterized by focal cerebral localization of onset, and generalized seizures, which demonstrate excessive neural discharges within both hemispheres simultaneously; these have subdivisions and also provision for unclassified seizures [29].

2.3. Sampling method

It was a two-stage investigation in which all consecutive attendees to the clinic (new or follow-up cases) who met the inclusion criteria were approached to participate in the study. Those who gave consent were recruited over the period of 1 year that the study took place.

2.4. Instruments and data collection

In the first stage (carried out by trained research assistants), the participants were screened for current psychiatric symptoms using the 12-item General Health Questionnaire (GHQ-12) [30]. GHQ-12 is a well-known screening instrument for psychological or psychiatric disorders that has been used in many countries of the world including Nigeria [31]. It inquires about recent changes in mental well-being. GHQ-12 was validated in a nonpsychiatric sample of a general hospital and in a community sample in Nigeria [32]. The optimum cutoff point (i.e., score which gives optimum sensitivity and specificity and minimum misclassification rates) was a score of 3 [32]. In that study, the sensitivity, specificity and minimum misclassifications rate obtained were 83.7%, 79.8% and 19.4%, respectively. In addition to the above instrument, these patients were also interviewed with a semistructured questionnaire designed by the investigators on socio-demographic characteristics, epilepsy and epilepsy-related psychosocial characteristics of the patients.

In the second stage, all participants scoring 3 and above on GHQ-12 and one out of every five (20%) of those scoring less than 3 (GHQ-12 negative or noncases) were assessed for psychiatric diagnoses using Schedule for Clinical Assessment in Neuropsychiatry (SCAN) [33]. This was the prestudy agreed percentage of GHQ-12-negative patients to be recruited for the second stage interview. The first GHQ-12-negative patient was chosen and every fifth GHQ-negative patient afterward. GHQ-12-negative patients were recruited for second-stage assessment to minimize type II error (i.e., false-negative individuals), and the 20% GHQ-12-negative patients included for the second stage were based on psychometric properties of GHQ-12 in our environment [32]. SCAN is a World Health Organization diagnostic instrument for clinicians trained to use it. It contains information for assessing, measuring and classifying psychopathology and behaviors associated with the major psychiatric disorders of adult life. The SCAN was applied by three consultant psychiatrists who had training in its use. These consultants were unaware of the participants' scores on GHQ-12. An interrater reliability analysis using the kappa statistic was performed to determine consistency among raters using 10 patients with common psychiatric diagnosis. The average of kappa across all pairs of raters was 0.89 [34]. Psychiatric diagnoses were assigned based on the *International Classification of Diseases: 10th Revision* criteria. Secondary data about epilepsy characteristics were also extracted from the participants' case notes. The case notes of patients seen were marked in order to avoid double sampling. Ethical approval for the study was granted by the hospital ethical committee.

2.5. Data analysis

Data analysis was done using Statistical Package for Social Sciences version 16.0. Simple frequency tables and cross tabulations were generated to detect variable distribution trends and associations, and χ^2 and Fisher's Exact Test were used to test for significant differences. *P* value less than .05 was set as the level for significant difference.

3. Results

3.1. Sociodemographics

Sixty-nine patients with epilepsy were seen during the study period, but only 63 (91%) of them met the inclusion criteria and gave written informed consent to participate in the study (Table 1). The 63 patients were made up of 36 (57.1%) males and 27 (42.9%) females; male/female ratio was 4:3. The mean age was 34.43 (S.D.=13.7). On the whole, majority of the patients were younger than 40 years (71.4%) and had formal education (81%). Those who were currently married were 46.0%, while 43.0% were gainfully employed.

Table 1
Sociodemographic and clinical characteristics of patients with epilepsy.

Variables	N	(%)
Gender		
Male	36	(57.1)
Female	27	(42.9)
Age group (years)		
≤25	21	(33.3)
26–40	24	(38.1)
>40	18	(28.6)
Educational status		
No formal education	12	(19.0)
Primary education	16	(25.4)
Secondary education	16	(25.4)
Tertiary education	19	(30.2)
Occupational status		
Unemployed	12	(19.0)
Students	24	(38.0)
Employed	27	(43.0)
Marital status		
Single	30	(47.6)
Married	29	(46.0)
Separated/divorced	2	(3.2)
Widow	2	(3.2)
Age at onset of epilepsy (years)		
<18	22	(34.9)
19–40	30	(47.6)
>40	11	(17.5)
Frequency of seizure (n=56)		
≥1 per week	12	(21.4)
≥1 per month	10	(17.9)
<1 per month	34	(60.7)
History of birth difficulties (n=38)		
Yes	13	(34.2)
No	25	(65.8)
Childhood history of medical problems (n=41)		
Yes	14	(34.2)
No	27	(65.8)
Classification of epilepsy		
Partial seizures	14	(22.2)
Generalized seizures	40	(61.9)
Unspecified seizures	9	(14.3)
Subclassification of seizures		
Partial seizures: simple	1	(1.6)
Complex	7	(11.1)
Secondary generalization	6	(9.5)
Generalized seizures: absence	1	(1.6)
Grand mal	39	(61.9)
Unclassified seizures	9	(14.3)
Duration of epilepsy (years)		
<1	13	(20.6)
1–4	16	(25.4)
≥5	34	(54.0)
EEG records		
Normal	15	(23.8)
Abnormal	13	(20.6)
Not available	35	(55.6)
Number of antiepileptic drugs (n=62)		
1	49	(79.0)
≥2	13	(21.0)
Previous psychiatric consultation (n=61)		
Yes	9	(14.3)
No	52	(85.2)
GHQ score		
<3	48	(76.2)
≥3	15	(23.8)
SCAN psychiatric diagnosis		
Present	18	(28.6)
Absent	45	(71.4)
Type of psychiatric diagnosis (n=18)		
Depressive disorder	12	(66.7)
Psychotic disorders	2	(11.1)
Anxiety disorders	2	(11.1)
Dementia	2	(11.1)

N=63 except where indicated otherwise.

3.2. Neurological characteristics

Fourteen (22.2%) patients had partial epilepsy, 40 (63.5%) had generalized epilepsy, and the remaining 9 (14.3%) patients had unclassified epilepsy (Table 1). Of those with partial epilepsy, 7 (7/14; 50%) had complex partial seizure, 6 (6/14; 42.9%) had partial with secondary generalization and the remaining 1 (7.1%) patient had simple partial seizure. On the other hand, majority of those with generalized seizures, 39 (39/40; 97.5%) had generalized tonic-clonic type.

Only 28 (28/63; 44.4%) patients had evidence of EEG recordings in their case notes; of these, 13 (13/28; 46.4%) had abnormal EEG to support their diagnosis. The patients without EEG reports were probably those who could not afford it. There were 29 (29/63; 46%) patients who had seizure disorders for less than 5 years and 34 (34/63; 54%) for 5 or more years. The mean duration in years of having seizures was 9.00 (S.D.=9.86), and the mean age of onset of seizures was 25.87 (S.D.=17.16).

Categorization of the frequency of seizures shows that there were 12 (12/63; 19.1%) subjects with 1 or more seizures per week, 10 (10/63; 15.9%) had not more than 1 seizure per month, and majority 34 (34/63; 54.0%) had less than 1 seizure in a month. In terms of antiepilepsy drug used, monotherapy rather than polytherapy was used in the majority of the patients, and no patient was on phenobarbitone.

3.3. Prevalence and types of psychiatric morbidity

Fifteen patients scored ≥3 [23.8% (15/63)] on GHQ and were considered as probable cases with psychiatric morbidity. Those who screened negative, i.e., GHQ score 3, were 48 (76.2%). In all, 18 (28.6%) participants had a current psychiatric diagnosis with the SCAN instrument (the 15 GHQ-12-positive and 3 of the GHQ-12-negative patients interviewed were psychiatric cases after interview with SCAN). Depressive disorders were the most common (12/18; 66.7%), followed by two (11.1%) cases of psychotic disorders, two (11.1%) cases of dementia and one case each of somatoform disorder and generalized anxiety disorder (Table 2).

A breakdown of the current psychiatric diagnosis of the different types of epilepsy shows that of the seven participants with complex partial seizure, four (4/7; 57%) had psychiatric diagnosis; three of them had depression, of which two were severe, and one had acute schizophrenia-like psychosis. Four of the patients with partial seizure with secondary generalization (4/6; 66.7%) also had psychiatric

Table 2
Distribution of the psychiatric disorders identified by SCAN.

Psychiatric disorders identified (N=63)	Types (number of cases) (n=18)
Depression types (n=12)	Mild (4) Moderate (6) Severe (2)
Anxiety disorders (n=2)	Generalized anxiety disorder (1) Somatoform disorder (1)
Psychotic disorders (n=2)	Acute schizophrenia-like psychosis (1) Schizophrenia (1)
Chronic organic brain disorder (n=2)	Dementia (2)
Types of epilepsy	Psychiatric disorders types
Complex partial seizure (n=7)	Severe depression (2) Moderate depression (1) Acute schizophrenia-like psychosis (1)
Partial seizure with secondary generalization (n=6)	Generalized anxiety disorder (1) Somatoform disorder (1) Moderate depression (2)
Generalized epilepsy (n=40)	Mild depression (2) Moderate Depression (3) Schizophrenia (1) Dementia (1)
Unclassified epilepsy (n=9)	Mild depression (2) Dementia (1)

It is now well established that patients with epilepsy have a higher rate of psychiatric morbidity than the general population [35–37]; our study agrees with this fact. The rates of psychiatric morbidity in the general population show great variability, but figures of about 12.1%–16.2% have been suggested, and in Nigeria, lifetime prevalence rate of *Diagnostic and Statistical Manual of Mental Disorders: Fourth Edition* diagnosis in the most recent National survey was 12.1% [35]. These rates are much lower than the prevalence rate observed in our study. Also, there is evidence to suggest that rates of psychopathology in community-based studies are lower than hospital-based ones especially those from tertiary centers [4,23].

Again, great variability in prevalence rate exists when hospital-based and community-based studies are reviewed. Literature suggests that the prevalence rate of epilepsy-related psychopathology in community-based studies is about 6% to less than 30% [27,38,39] and more than 20% to over 60% for hospital-based studies [4–6,16,19,23,40,41]. In agreement with this trend, the prevalence of psychiatric morbidity in our patients was higher than in the community-based studies analyzed.

From the above perspectives and compared with local and international studies analyzed (Table 3), we considered our prevalence rate of 28.6% as relatively low. This may be because majority of our patients did not have focal or poorly controlled epilepsy or long-duration epilepsy or seizures managed with multiple drugs or phenobarbitone. These are some of the factors known to elevate risk of psychiatric morbidity among patients with epilepsy.

There are very few studies on psychiatric comorbidity in adults with epilepsy in Nigeria. We have, therefore, tried to elaborate more on how the present study is different from previous local studies. This comparison is important in order to identify specific pattern and make necessary adjustment to our intervention program. There is a lot of sociocultural diversity across Nigeria that is likely to impact on the prevalence and pattern of psychopathology, making regional studies and comparisons imperative [42].

Our rate is lower than that of Gureje [6], who reported prevalence rate of psychiatric morbidity of 37.3% among 204 patients with epilepsy in Abeokuta, southwest Nigeria, using the Clinical Interview Schedule (CIS). It is also lower than that observed in the study by Onwuekwe et al. [43] in which an 85.5% prevalence rate of depression was found among 83 patients with epilepsy in Enugu, southeast Nigeria, using the Beck Depression Inventory (BDI). However, our rate is higher than the 26% reported by Okubadejo et al. [5] among 95 patients with epilepsy in Lagos, southwest Nigeria. The differences in methodology and sociocultural characteristics may explain this variability.

The study by Gureje is the most comprehensive previous study in Nigeria among adults with epilepsy, and we therefore compared the type of epilepsy-related psychopathology in our study with it. Out of the 76 patients with psychiatric disorders in that study, about 29% had psychotic disorders, while 24% had depressive disorders, compared to about 11% and 66.7%, respectively, in ours.

The apparent variation is the prominence of depression in our study and psychotic disorders in the study by Gureje [6]. In the latter study, the setting was a neurological unit of a psychiatric hospital in southwest Nigeria, while our study was conducted in the neurology clinic of a teaching hospital in the north-central part of the country. Another difference is the over two-decade time gap between the two studies. In addition, while our study used GHQ-12 and SCAN (two-stage procedure) to assess patients, Gureje's study only used the CIS.

The paucity of data on psychiatric comorbidity in adult population in a developing country like Nigeria deserves further emphasis. For instance, there are only three previously published data from the adult population on this subject in Nigeria, all of which are from the southern part. As far as we know, ours is the first from the north-central region. Therefore, it is suggested that future studies of psychopathology among patients with epilepsy in Nigeria should be multicentered, involving all the six geopolitical zones of the country

and using the same set of standard psychiatric instruments. This will allow any true regional differences in prevalence rates and pattern of psychopathology and associated factors to be observed. Furthermore, cross-cultural comparison of findings between Nigeria and developed countries will also be made easier.

With regards to the frequency of types of comorbidities observed in our patients, depression was the most common, being 66.7%, followed by anxiety and psychotic disorders. This pattern is consistent with several literatures in which depression has been reported to be the most common psychopathology in epilepsy [4,18,23,43–47]. The lifetime prevalence of anxiety and major depressive disorders in the general population of Nigerians from the most current national community-based study is 5.7% and 3.1%, respectively. These values are much lower than those in our patients with epilepsy and are consistent with the observed global trend. The clinical implication of these observations is the need to screen all our patients for psychiatric morbidity, identify risk factors and manage appropriately. In addition, it is important to encourage the use of drugs that are less likely to cause depression.

In an attempt to investigate susceptibility issues, an analysis of factors associated with psychopathology was carried out, and it revealed that being a woman and being older than 40 years and having partial seizures were the significant factors. There is a wide base of support for the risk elevation tendency of focal seizures especially temporal lobe epilepsy [6,40,44,48] compared to other forms of seizure. The higher rate of psychopathology among women in our cohort is in agreement with a previous study by Kimiskidis et al. [44] in which being a female was identified as a risk factor for depression and anxiety in patients with epilepsy. Increased occurrence of adverse psychosocial problems relative to men and physiological stressors such as menstruation and pregnancy may elevate the risk of psychopathology in some women [49]. Nevertheless, there are studies that contradict this view; some suggest that elevated risk is not gender related [5,43], while another suggests that the risk in men is greater [18]. Older patients in this study were more likely to have psychopathology, and this is in contrast to an earlier study by Gureje [6] who found the younger subjects to be more affected. However, there are other studies that have found no association between age and psychopathology [5,18,43].

One of the major and consistent problems in epilepsy-related psychiatric morbidity is the issue of underdetection and its consequences. The degree of this problem will vary widely and may be related to level of development of neuropsychiatric collaborative care available in a particular setting and at a particular time. For example, in the study by Edeh and Toone [40] in UK general practice setting, they found that only 30.7% of the patient population studied had previous psychiatric consultations compared to 5.9% in the Gureje [6] study in southwest Nigeria. In our study, which is more than two decades after that of Gureje's [6], patients with previous psychiatric consultations were 14.3% of the sample population. Although some level of improvement is apparent, compared to the study by Edeh and Toone [40], the level of psychiatric contact by our epilepsy patients is still very low. This may probably be related to the persisting shortage in neuropsychiatric care in Nigeria in terms of both manpower and infrastructure [6,42]. The clinical importance of this poor psychiatric contact is the need to evolve collaborative care for our patients with epilepsy that will bring about early identification, prevention and treatment of psychiatric problems.

The strength of our study is the fact that a combination of screening and structured diagnostic instruments was used. One limitation of the study is the small sample size which obviated subgroup and intragroup statistical analysis, although studies of similar size are not unusual in epilepsy-related psychopathology research. On the whole, the study is still a significant effort towards improving epilepsy research and management considering our resource-poor setting.

5. Conclusion

The present study is the first in our neurology clinic to evaluate specifically the prevalence and pattern of psychiatric morbidity among our patients with epilepsy. It has provided evidence that psychopathology is prevalent and that depression is the most common of them. The study has also shown that these problems are often undetected and untreated. It suggests the need to develop a comprehensive collaborative care involving the neurologists, psychiatrists and primary care physicians and the need to improve facilities for diagnosis and treatment.

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