

Psychological Distress and Social Deprivation in Epilepsy: Experience from Calabar, Nigeria

Sidney K. Oparah, Vincent M. Uhegbu, Uduak E. Williams and Simon I. Ozomma

Department of Internal Medicine, University of Calabar Teaching Hospital, Nigeria

Abstract: People with epilepsy suffer discrimination and psychopathological co-morbidity. Timely detection of psychopathology in such persons enhances effectively tailored management and impact the outcome and patients' quality of life. This study determined the predictors of psychological distress among epilepsy patients in Calabar, Nigeria and their experience of social deprivation. In this cross-sectional study, a structured interviewer-administered questionnaire, incorporating the GHQ-12 instrument, was used to assess co-morbid psychological distress and the experience of deprivations among epilepsy patients at the University of Calabar Teaching Hospital, Nigeria. Data analysis was performed with $p < 0.05$ as the significant level. Sixty-three participants with the mean age (SD) of 32.5 (12.1) years and the median age at onset of 21 years completed the study. Twenty-six (41.3%) of the participants had psychological distress, with non-compliance with anti-epilepsy medication ($P=0.010$) and absence of a marital partner (0.037), as the identified predictors. Thirty-three (52.4%) had been absent from work or scheduled activity because of the challenges posed by epilepsy. Twenty-three (36.5%) of the participants had problems in their relationships and fifteen (23.8%) experienced deprivation of opportunities in their workplaces, schools, or society because they suffer epilepsy. Overall, 39 (61.9%) of the participants reported that living with epilepsy has brought some deprivation or limitation in their lives, linked to the occurrence of seizure attacks in public ($P = 0.000$) and co-morbid psychological distress ($P= 0.002$). The study revealed a high rate of co-morbid psychological distress and experienced social deprivation and discrimination among persons living with epilepsy in our setting.

Key words: Epilepsy • Psychopathology • Anxiety • Depression • Stigma

INTRODUCTION

Epilepsy is a chronic disorder of the brain that affects people in every country of the world and manifests as a continuing tendency to have seizures. Its most disabling aspect is the unpredictability of when and where the next seizure will occur [1]. Deprivation of social and leisure opportunities and discrimination in marital life, employment opportunities, education and housing and a higher level of psychopathological co-morbidity have been linked to epilepsy [2-5]. The stigma associated with epilepsy and the cultural beliefs triggered by the dramatic and unpredictable nature of epilepsy seizure manifestations foster psychosocial limitations in sufferers [6]. In many traditional African societies, the person with epilepsy is an outcast, as some believe that epilepsy results from visitations of evil spirits and the effects of witchcraft [7, 8].

Psychopathological morbidity in persons living with epilepsy may be evident during the prodromal, ictal, post-ictal and inter-ictal periods [9, 10]. In addition to the consequences of poor stress coping mechanisms in response to the social stigma associated with this condition, shared etiological factors have been implicated. Psychological distress has been defined as a state of emotional suffering characterized by undifferentiated combinations of symptoms ranging from depression and general anxiety states to functional disabilities, personality traits and behavioral problems [11, 12]. Co-existing psychological distress in patients largely goes unrecognized by attending clinicians [13]. Such co-morbidities add to the burden of epilepsy and adversely impact treatment outcomes. The detection and management of mood disorders are increasingly assuming an important role in the care of persons with epilepsy [14]. Timely detection of psychopathology in people with

epilepsy promotes effectively tailored management and impact the outcome and quality of life of these patients. Accomplishing the aforesaid demands a high index of suspicion on the part of attending healthcare providers; a disposition usually fostered by an adequate level of awareness.

Many tools assess specific psychopathologic entities such as depression, anxiety among others. The GHQ is considered, by some investigators, to be the Gold standard for the assessment of psychological distress [15]. The GHQ-12, which is an abridged form comprising 12 items, is the most popular version in epidemiological studies and has been locally validated and employed in various studies in Nigeria [16-18]. The scale consistently measures the same features across gender and between adults and adolescents [19, 20]. The GHQ-12 can be easily administered by both general and specialist clinicians and makes for rapid assessment. Its tendency to save time encourages its use even in a busy clinic setting.

Due to excessive patient load occasioned by the poor doctor: patient ratios in our setting [21-23], healthcare providers are more likely to focus on the control of the seizure manifestation of epilepsy while neglecting the psychosocial aspects of the disease. This study arose from the desire to raise the awareness of the problem as a vital, albeit initial step towards mitigation. The need for this study, which seeks to fill the knowledge gap, is made more imperative when one considers the lack of studies on this subject, especially in the oil-rich Niger Delta region and, to an extent, Nigeria and the West African region as a whole. In this study, the proportional morbidity and determinants of psychological distress among persons with epilepsy at the University of Calabar Teaching Hospital in Nigeria were determined, with the GHQ-12 instrument; and their experience of social deprivation as a result of biases and discrimination was assessed.

MATERIALS AND METHODS

This was a cross-sectional study involving the collection of data from epilepsy patients at the neurology outpatient clinics of the University of Calabar Teaching Hospital. Calabar, the capital city of Cross River State, is located in the Niger Delta region of Nigeria, a resource-poor sub-Saharan African nation [24]. The last nationwide census put the population of Calabar at 371, 022 persons, comprising of 186, 607 males and 184, 415 females [25]. Various health institutions render different levels of health care in the city. The University of Calabar Teaching Hospital is the only federal government-owned health

facility offering specialist neurology clinic services to the civilian population in the city.

Study Population: The participants were patients attending the adult neurology outpatient clinics of the teaching hospital, who met the eligibility criteria as follows:

Inclusion Criteria:

- Patients presenting for the first time with a diagnosis of epilepsy
- Those without a history of substance abuse
- Those fit enough to complete the study.
- Those not on medications, other than anticonvulsant drugs, that are known to have psychic effects.
- Patients who gave written informed consent.

Those with a history of substance abuse, too ill to complete the study, suffering from co-existing medical conditions, or those on medications known to cause mood changes were excluded from the study, besides those who declined consent.

Data Collection: The patients presenting with epilepsy at the afore-mentioned outpatient clinics during the study were serially recruited. From preliminary findings, an average of 60 adults presented with epilepsy at the neurology outpatient clinics of the hospital, for the first time, over a year. The sample size of 63 incorporating a non-response rate of 10% was determined using the formula for calculating sample size for studies when the population size is less than ten thousand [26].

Data collection was conducted over 18 months by well-trained, licensed physicians with a minimum of a first-degree qualification. A well-structured interviewer-administered questionnaire, consisting of four sections, was used to obtain the relevant information. The first section was on the socio-demographic characteristics of the participants; the next section accessed information regarding the duration of illness, the extent of control and other variables; the third section evaluated the participants' experiences regarding biases, deprivations, or limitations as a result of their seizure disorder status and their perception of the adequacy of support extended to them by their peers, colleagues and family members in the course of dealing with the challenges posed by their health condition; and the last section comprised components of the GHQ-12 questionnaire which has been validated and widely used in Nigeria, to assess psychological distress.

Definition of Terms: In this study, a person was diagnosed to have epilepsy if any of the following criteria were fulfilled:

- There is a history of more than one episode of unprovoked seizure at least 24 hours apart.
- A single seizure episode on the background of significant EEG findings.
- A prior clinical diagnosis of epilepsy by a clinician not below the level of a Senior Registrar.

The alternative bimodal scoring system of the GHQ-12 questionnaire which uses a dichotomous scale (0-0-1-1) instead of the 4-point scale was adopted for this study. The scores of each of the items are added to create a total score of distress, ranging from 0 to a maximum of 12. In the bimodal scoring system, the cut-off mark is 2 and scores up to 3 indicate the presence of psychological distress.

In this study, psychological distress was considered to be present if the total GHQ 12 score of a participant was up to 3 and above.

Data Management: Data analysis was with version 20 of the statistical package for social sciences (SPSS) software. Relevant tables were used to illustrate the results. Mean and the standard deviation were used to describe continuous variables. The median, minimum and maximum values were used to present continuous variables with a non-parametric pattern of distribution; and simple proportions were used for categorical data. Student's t-test was used to compare the means between two variables Chi-square was used to test for association between variables and binary logistic regression analysis to identify predictors of psychological distress among the participants. The level of significance was at $P < .05$.

Ethical Consideration: Ethical approval for the study was obtained from the Research and Ethics committee of the University of Calabar Teaching Hospital, with the assigned protocol number as UCTH/HREC/33/378. The study was conducted in compliance with the Helsinki declaration of 1975 as revised in 1983 and 2013. Before the data collection, the study was explained to each of the participants and they were assured of confidentiality, after which endorsed informed consent was obtained.

RESULTS

Sixty-three persons comprising thirty-seven males and 26 females living with epilepsy, who presented at the neurology outpatient clinics of the health facility,

participated in this study, giving a male: female ratio of 1.4: 1. The overall mean age (SD) of the participants was 32.5 (12.1) years. The demographic details of the participants are as shown in Table 1. The participants presented with various types of seizure disorders as follows: Simple partial (12.7%), complex partial (14.3%), Absence seizures (3.2%), Generalized tonic-clonic seizures (61.9%) and unknown variety (7.9%). The median ages at onset of seizure disorder were 17 years and 21 years for the male and female patients, respectively, with 21 years as the overall median age at onset ($p = 0.327$). Forty-two (66.7%) of the participants reported having had episodes of seizures while in public and 36 (57.1%) reported being compliant with their anti-epilepsy drugs (AED) medication. Further details of the clinical characteristics of the patients are as shown in Table 2.

Psychological Distress: Twenty-six (41.3%) of the participants, comprising 12 males and 14 females, were identified to have psychological distress during the study. Psychological distress among the patients with seizure disorders had no association with the sex of the participants ($\chi^2 = 2.889$; $p = 0.089$) and the type of seizure disorder ($\chi^2 = 1.286$; $p = 0.864$). Table 3 illustrates the identified predictors of psychological distress among seizure disorder patients in our study.

Social Deprivation: Twenty-three (36.5%) of the participants acknowledged having experienced problems (establishing and maintaining intimate relationships) in their relationships as a result of living with epilepsy. Thirty-three (52.4%) of the patients affirmed that they had been absent from work or scheduled activities because of the challenges posed by epilepsy. Fifteen (23.8%) reported experiencing deprivation of due benefits or opportunities in their places of work, school, or society because they suffer from epilepsy. Twenty-two (34.9%) of the patients admitted that living with epilepsy has limited their aspirations and achievement of their ambitions in life. Overall, 39 (61.9%) of the participants felt that living with epilepsy has led to some deprivation or limitation in their lives.

Experiencing some deprivation was associated with occurrence of seizure attacks in public ($\chi^2 = 14.84$; $p = 0.000$); whereas, there was no association between experiencing deprivation and sex ($\chi^2 = 1.01$; $p = 0.315$), marital status ($\chi^2 = 1.23$; $p = 0.540$), participants' level of education ($\chi^2 = 2.50$; $p = 0.475$) and participants' compliance with their AED medication ($\chi^2 = 0.02$; $p = 0.881$). Table 4 shows the association between reported experience of deprivation and psychological distress among the participants.

Table 1: Demographic characteristics of the participants

Parameter	Males (n = 37)	Females (n = 26)	Total (N = 63)	p-value
Age (in years)				
Mean age (SD)	32.8 (12.80)	32.2 (11.35)	32.5 (12.13)	0.867
Median age	32	30	31	
Range	15 to 66	18 to 51	15 to 66	
Marital status (%)				
Single	23 (62.2)	14 (53.8)	37 (58.7)	0.799
Married	13 (35.1)	11 (42.3)	24 (38.1)	
Divorced/ Separated	1 (2.7)	1 (3.8)	2 (3.2)	
Educational level				
Primary	3 (8.1)	3 (11.5)	6 (9.5)	0.221
Secondary	21 (56.8)	9 (54.6)	30 (47.6)	
Tertiary	10 (27)	13 (50)	23 (36.5)	
Postgraduate	3 (8.1)	1 (3.8)	4 (6.3)	
Monthly income (naira)				
Median income	16, 000	20, 000	20, 000	0.740
Range	0 to 300,	000 0 to 300,	000 0 to 300,	000

SD = Standard deviation

Table 2: Clinical characteristics of the participants

Parameter	Males (n = 37)	Females (n = 26)	Total (N = 63)	p-value
Age at onset (in years)				
Mean age at onset (SD)	23.2 (14.63)	19.8 (12.55)	21.8 (13.81)	0.327
Median age at onset	17	21	21	
Median duration of illness (years)	5	7.5	5	0.300
Range	2 wks to 44 years	1wk to 33 years	1wk to 44 years	
Median duration since last seizure (weeks)	4	4	4	0.345
Range	1 day - 104 wks	2 days - 104 wks	1 day - 104 wks	
Median no of episodes in last 6 months	3.5	3.5	3.5	0.195
Range	0 to 100	0 to 15	0 to 100	
Median GHQ-12 score	2	3.5	2	0.306
Range	0 to 11	0 to 8	0 to 11	

SD = Standard deviation; GHQ-12 = General health questionnaire - version 12

Table 3: Predictors of Psychological distress among the participants

Variable	B-coefficient	p-value
Sex	-1.155	.199
Age (years)	-.351	.625
Age at onset	.450	.533
Education	-1.044	.122
Marital partner	-2.038	.037
Income	.000	.815
Duration since last seizure episode (weeks)	-.002	.917
No of episodes within the past 6 months	.012	.739
Medication	2.228	.125
Interval between onset and use of AED medication	.441	.543
Duration of AED medication use	.266	.714
Compliance with AED medication	-4.223	.010
History of seizure episodes in public	.129	.899
Constant	1.091	.541

AED = Anti-epilepsy drug

Table 4: Relationship between reported deprivation and psychological distress among the participants

Parameter	Deprivation present (n = 39)	Deprivation absent (n = 24)	Test-statistic	p-value
Mean GHQ-12 score (SD)	3.7 (3.12)	1.2 (1.67)	13.49	0.001
Median GHQ-12 score	4	0.5		
Range of GHQ-12 scores	0 to 11	0 to 6		
Psychological distress				
Present	22	4	9.68	0.002
Absent	17	20		

Kappa = 0.36; p-value = 0.002

Table 5: Relationship between self-reported inadequate support and psychological distress among the participants

Parameter	Inadequate support (n = 16)	Adequate support (n = 47)	Test-statistic	p-value
Mean GHQ-12 score (SD)	4.6 (3.46)	2.2 (2.45)	9.80	0.003
Median GHQ-12 score	5	1		
Range of GHQ-12 scores	0 to 11	0 to 9		
Psychological distress				
Present	12	14	10.07	0.002
Absent	4	33		

Kappa = 0.38; p-value = 0.002

GHQ-12 = General health questionnaire – version 12

Perception of Support from Others: Sixty-two (98.4%) of the participants acknowledged that their families had been very supportive in dealing with the challenges of epilepsy; whereas, 47 (74.6%) reported deriving good support from colleagues and friends in dealing with the constraints posed by epilepsy. Overall, 47 (74.6%) felt that they had enjoyed an adequate level of support from others in facing the challenges of living with epilepsy. Table5 shows the relationship between self-reported lack of support and psychological distress among the participants.

DISCUSSION

The probability of recurrence after an episode of unprovoked seizure is estimated to be 40% to 50% in the general population [27]. The youthful ages at presentation and at the onset of epilepsy among the participants in this study corroborate reported observations that epilepsy tends to predominantly affect young adults and older children in the developing countries; distinct from the pattern seen in developed nations where the incidence of epilepsy is higher at the extremes of age [28]. Differences in aetiological factors provide a possible explanation for this variation in epidemiological trends between developed and developing countries.

A sizeable proportion of the participants in our study had psychological distress, lending credence to reports that persons with epilepsy are more likely to express anxiety, depression and low self-esteem [10, 29]. Khalid and Aslam [30] reported an even higher proportional morbidity of 67%, for psychological distress, in an Indian population of persons living with epilepsy.

In a survey carried out in the USA, 29% of people with epilepsy reported having at least one episode of major depression compared to 8.7% of persons without a chronic illness [31]. In one UK community, depression rates were about 3% to 9% among those with controlled epilepsy, compared to values of about 20% to 55% obtained in those with persistent seizures [32].

This study identified the absence of a marital partner as one of the predictors of psychological distress in the participants.

It has been established that people with epilepsy experience discrimination in various aspects of their lives such as marital life, employment opportunities, education and housing and a higher level of-psychopathological co-morbidity; in comparison to people without epilepsy [3, 5, 32]. A greater than one-third of the participants in this study had problems with establishing or maintaining intimate relationships, which could have contributed to the majority of them being either single or separated from their spouses. Sahar [33] investigated psychological distress in persons with epilepsy among a population in Pakistan and noted that many of the females identified to have psychological distress were unmarried. Furthermore, the predictive value of poor compliance with AEDs, in the development of psychological distress, as revealed in this study, could be a reflection of reports linking uncontrolled seizures to emotional distress [34]. The study also established an association between psychological distress and self-reported experience of some deprivation in life attributed to seizure disorder status. We found no demonstrable gender predilection to psychological distress or link to the type of seizure disorder.

The disruptive effect of epilepsy on the lives of persons living with the condition was evident in this study as over half of the participants reported being compelled to miss pre-scheduled formal and social events as a result of their seizure disorder. It has been documented that persons living with epilepsy suffer deprivation in social and leisure opportunities and poor self-esteem [32, 35]. Some of the participants reported being denied opportunities at work or school and over one-third acknowledged having to curtail their life ambition; whereas, a remarkable proportion had experienced some form of deprivation because they suffer epilepsy. The participants enjoyed a remarkably good level of support, especially from their family members and perceived inadequate support from others had a demonstrable association to a high GHQ-12 score and co-morbid psychological distress. The occurrence of seizure attacks in public was linked to the experience of deprivation in our study. The stigma associated with the disease of epilepsy and the cultural beliefs triggered by the dramatic and unpredictable nature of epilepsy seizure manifestations fosters psychosocial limitations in sufferers [6].

Social discrimination against people with epilepsy is largely due to misconception about the disease and the horror that strikes members of the public when confronted by the frightening sight of a person suffering epilepsy seizure [36]. In many traditional African societies, the person with epilepsy is an outcast, as not a few beliefs hold the view that epilepsy results from visitations of evil spirits and the effects of witchcraft [7, 8]. Such held beliefs and poor knowledge regarding epilepsy, influence the poor attitude of the society towards persons with epilepsy, compelling affected persons to try to keep their condition hidden, even within families. Thus, the occurrence of seizure episodes in public leaves such a sufferer at the mercy of societal biases and discrimination. Fortunately, it has been demonstrated that enlightenment programs aimed at correcting the misconceptions about epilepsy can remarkably improve the knowledge and perception towards persons living with epilepsy, even among rural community dwellers in Africa [37]. There is a need for social intervention programs in our setting, which had been demonstrated to modify public attitudes towards epilepsy.

Limitations: The hospital-based nature of this study poses some constraints to the generalizability of the findings to the larger population. Systematic randomized community-based studies with larger sample sizes are needed to explore the burden and determinants of social

deprivation and psychological distress in epilepsy patients.

CONCLUSION

This study demonstrated a high level of co-morbid psychological distress in persons living with epilepsy, in our setting, with the absence of a marital partner and non-compliance with anti-epilepsy drug therapy as the identified predictors in the population. Furthermore, the self-reported experience of social deprivation and the perception of inadequate support from family members and colleagues, were associated with the development of psychological distress; whereas, the occurrence of epileptic seizure episodes in public was linked to the experience of social deprivation, among the persons living with epilepsy.

ACKNOWLEDGEMENT

Conflict of Interest: We have none to declare.

Source of Funding: The study was funded by the authors and we did not receive sponsorship from any external source.

REFERENCES

1. McLin, W.M. and H.M. Boer, 1995. Public perceptions about epilepsy. *Epilepsia*, 36(10): 957-959.
2. Baskind, R. and G.L. Birbeck, 2005. Epilepsy-associated stigma in sub-Saharan Africa: the social landscape of a disease. *Epilepsy Behav*, 7: 68-73.
3. Nuhu, F.T., J.O. Fawole, O.J. Babalola, O.O. Ayilara and Z.T. Sulaiman, 2010. Social consequences of epilepsy: a study of 231 Nigerian patients. *Ann. Afr. Med.*, 9: 170-175.
4. Sillanpää, M., M. Jalava, O. Kaleva and S. Shinnar, 1998. Long-term prognosis of seizures with onset in childhood. *New England Journal of Medicine*, 338(24): 1715-1722.
5. Kobau, R., H. Zahran, D.J. Thurman, M.M. Zack, T.R. Henry, S.C. Schachter and P.H. Price, 2008. Epilepsy surveillance among adults-19 states, Behavioral Risk Factor Surveillance System, 2005. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 57(6): 1-20.
6. Baker, G.A., 2002. The psychosocial burden of epilepsy. *Epilepsia*, 43(6): 26-30.

7. Nwani, P.O., E.O. Arinzechi, A.L. Asomugha, K.O. Enwereji, M.C. Nwosu and A.O. Ogunniyi, 2013. Illness Concept among People with Epilepsy and their Caregivers and Preferred Treatment Methods in a Suburban Community in Southeast Nigeria. *WAJM*, 32(1): 26–30.
8. Ekeh, B.C. and U.E. Ekrikpo, 2015. The Knowledge, Attitude and Perception towards Epilepsy amongst Medical Students in Uyo, Southern Nigeria. *Advances in Medicine*, ID 876135 doi: 10.1155/2015/876135.
9. Fatoye, F., K.S. Mosaku, M. Komolafe and A.O. Adewuya, 2006. Interictal anxiety and depression symptoms in Nigerians with epilepsy: a controlled study. *Epilepsy Behav*, 9(2): 312-326.
10. Adewuya, A.O. and B.A. Ola, 2005. Prevalence and risk factors for anxiety and depressive disorders in Nigerian adolescents with epilepsy. *Epilepsy Behaviour*, 6: 342-347.
11. Mirowsky, J. and C.E. Ross, 2002. Selecting outcomes for the sociology of mental health: issues of measurement and dimensionality. *Journal of Health and Social Behaviour*, 43: 152-170.
12. Drapeau, A., A. Marchand and D. Beaulieu – Prevost, 2012. Epidemiology of psychological distress. In *Mental Illnesses- Understanding, Prediction and Control*, Ed., LAbate, L. Rijeka, Croatia: In Tech., pp: 105-134.
13. Asibong, U.E, N.E. Udonwa, A.N. Gyuse, I.B. Okokon, T. Aluka and E.E. Ekpe, 2011. Recognition of mental health problems by primary care physicians in a tertiary care hospital in Nigeria. *Niger Postgrad Med. J.*, 18(4): 266-271.
14. Shafer, P.O. and C. DiIorio, 2004. Managing life issues in epilepsy. *Continuum: Lifelong Learning in Neurology – Epilepsy*, 10: 138-156.
15. Furukawa, T.A., R.C. Kessler, T. Slade and G. Andrews, 2003. "The performance of the K6 and K10 screening scales for psychological distress in the Australian National Survey of Mental Health and Well-Being." *Psychological Medicine*, 33: 357-362.
16. Okokon, I.B., U.E. Asibong, E.E. Ekpe, N.E. Udonwa, T.M. Aluka and E. Monjok, 2012. Use of the General Health Questionnaire as a screening tool for geriatric patients in Calabar, Nigeria. *Niger J. Med.*, 21(4): 432 -441.
17. Coker, A.O., A.P. Adebola and O.O. Coker, 2011. Co-morbid psychological pain and distress among patients receiving treatment for hypertension in Lagos state, Nigeria. *Nigerian Medical Practitioner*, 60(3-6): 50-55.
18. Makanjuola, V.A., M. Onyeama, F.T. Nuhu and O. Gureje, 2014. Validation of short screening tools for common mental disorders in Nigerian general practices. *General Hospital Psychiatry*, 36(3): 325-329.
19. Shevlin, M. and G. Adamson, 2005. "Alternative factor models and factorial invariance of the GHQ-12: a large sample analysis using confirmatory factor analysis." *Psychological Assessment*, 17(2): 231-236. doi: 10.1037/1040-3590.17.2.231.
20. French, D.J. and R.J. Tait, 2004. "Measurement invariance in the General Health Questionnaire-12 in young Australian adolescents." *European Child and Adolescent Psychiatry*, 13(1): 1-7. doi: 10.1007/s00787-004-0345-7.
21. Anyangwe, S.C.E. and C. Mtonga, 2007. Inequities in the Global Health Workforce: The Greatest Impediment to Health in Sub-Saharan Africa. *Int. J. Environ Res Public Health*, 4(2): 93-100.
22. Adebayo, O., A. Labiran, C.F. Emerenini and L. Omoruyi, 2016. Health Workforce for 2016-2030: Will Nigeria have enough? *International Journal of Innovative Healthcare Research*, 4(1): 9-16.
23. Owolabi, M.O., J.H. Bower and A. Ogunniyi, 2007. Mapping Africa's Way into Prominence in the Field of Neurology. *Arch Neurol.*, 64(12): 1696-1700.
24. Omideyi, A.K., 2007. Poverty and development in Nigeria: trialing the MDGs? *African Journal of Infectious Diseases*, 1(1): 3-17.
25. National Population Commission, 2010. 2006 Population and Housing Census: Priority Table volume III, "Population distribution by Age, Sex & Type of Household (State & Local Government Area). Available from: <https://catalog.ihnsn.org/index.php/catalog/3340/download/48524> Accessed on 26th August 2020.
26. Araoye, M.O., 2003. Subjects selection. In *Research Methodology with Statistics for Health and Social Sciences*, Ed., Araoye, M.O. Ilorin: Nathadex Publishers, pp: 115-129.
27. Berg, A., 2008. Risk of recurrence after a first unprovoked seizure. *Epilepsia*, 49(suppl 1): 13-18.
28. Newton, C.R. and H.H. Garcia, 2012. Epilepsy in poor regions of the world. *Lancet*, 380(9848): 1193-1201.
29. Okubadejo, N.U., M.A. Danesi, O.F. Aina, F.I. Ojini, J.D. Adeyemi and D.A. Olorunshola, 2007. Prospective case- control study of interictal depression and suicidal ideation in Nigerians with epilepsy. *Niger Postgrad Med. J.*, 14(3): 204-228.

30. Khalid, A. and N. Aslam, 2011. Psychological distress among patients living with epilepsy. *Indian J. Psychol. Med.*, 33: 45-48.
31. Blum, D., M. Reed and A. Metz, 2002. Prevalence of major affective disorders and manic/ hypomanic symptoms in persons with epilepsy: a community survey. *Neurology*, 58(suppl 2): A174.
32. Jacoby, A., G.A. Baker, N. Steen, P. Potts and D.W. Chadwick, 1996. The clinical course of epilepsy and its psychosocial correlates: findings from a UK community study. *Epilepsia*, 37: 148-161.
33. Sahar, N., 2012. Assessment of Psychological Distress in Epilepsy: Perspective from Pakistan. *Epilepsy Research and Treatment*, ID 171725. doi: 10.1155/2012/171725.
34. Nuhu, F.T., A.J. Yusuf, M.D. Lasisi and S.B. Aremu, 2013. Emotional distress among people with epilepsy in Kaduna, Northern Nigeria. *Annals of Tropical Medicine and Public Health*, 6(1): 42-46.
35. Fisher, R.S., 2000. Epilepsy from the patient's perspective: Review of results of a community-based survey. *Epilepsy and Behavior*, 1(4): S9-S14.
36. Singh, A.J., I. Walia and D. Sohi, 1995. Seizure management practices adopted by the families of epileptics in North India. *Ind. Med. Gaz.*, 129: 29-32.
37. Eyong, K.I., E.E. Ekanem, A.A. Asindi, T. Chimaeze and E. Brown-Abang, 2018. The impact of an enlightenment program on community perception towards children with epilepsy. *Int. J. Res. Med. Sci.*, 6(3): 729-733.