Depression in Children with Epilepsy in a Teaching Hospital South/South Nigeria

ABSTRACT.

Background: Epilepsy affects over 50 million in the world with a life time prevalence of 7.6%. It is the commonest paediatric neurological disorder and about 80% of these children live in the developing countries. Depression is the most common psychiatric comorbid condition in children with epilepsy**. Objective**: To investigate the prevalence of depression among children aged 9-18yr with epilepsy and evaluate factors associated with depression. **Methods**: 380 children with epilepsy were interviewed using researcher designed questionnaire, the clinical version of DICA-IV in a 2nd stage design, after having been screened with CES-DC. The study was descriptive with psychometric evaluation. Data obtained were analysed using SPSS version 22.0. p-values<0.05 were statistically significant**. Results:** Using the CES-DC with a cut- off point of 15 and above, 117 (30.8%) of the respondents had significant scores for depression. All the 117 who were interviewed with DICA-IV met the DSM-IV criteria for major depression with 40 (10.5%) of them currently very depressed requiring urgent attention. Sociodemographic factors of; sex revealed that males were more depressed than females p=0.000, OR: 0.86, Age showed 9-11yr with a strong association p=0.001, OR:1.91. Marital status- Divorced or separated parents showed a higher association p=0.01 OR:2.233. Children with longer duration of illness had a strong association p=0,025, OR:1.203 and the more frequent the seizures, the stronger the association p=0.001, OR:1,411.

. **Conclusion:** There is relativelhjy high prevalence of depression in children with epilepsy in Port Harcourt. More health education is needed to provide a comprehensive care.

Keywords; Epilepsy, Paediatrics, CES-DC, DICA-IV, Sociodemographic factors.

INTRODUCTION:

Epilepsy is a group of chronic non-communicable neurological disorder characterized by epileptic seizures, caused by sudden abnormal discharges of neurones in the brain, related to transient brain dysfunctions. [1]. It affects over 50 million people in the world, without any boundaries, with a life time prevalence of 7.6%. [2]. Seizures are the most common paediatric neurological disorder with most children suffering at least one seizure before the age 16yr, and over 30% of them ending up with epilepsy. Epilepsy consists of at least two seizures within a 12month period, excluding predictable, and occasional seizures occurring during an acute illness, which resolves with the illness, [3] More than 10.5 million children < 18yr have active epilepsy accounting for > 25% of the global population.

It is estimated that about 80% of these children live in developing countries, with about an annual incidence rate of 61-124/100000. [4]. The prevalence rate of epilepsy in Africa is often under reported, several studies from Nigeria and Liberia have been hospital and defined community- based studies. Osuntokun et al. 1987 [5] reported a prevalence rate of 37/1000. In a review of neurological disorders in the paediatric neurology clinic in 1999, Izuora G et al [6] reported 60% of all neurological cases as epilepsy while it turned out as the 3rd major neurological disorder in another study by Asindi A. et al 1986 in Calabar [7].

Epilepsy is not just a clinical disorder, but a social label with attendant stigma, prejudice and the milieu of psychosocial problems. It is associated with significant negative impairment in most life endeavours. Psychiatric disorders have higher prevalence in children with epilepsy than others in same age bracket. [8], it is said to be more than five times higher in developed countries [9]. Depression is the most common psychiatric comorbid condition in patients with epilepsy of all ages. [10]. Despite the increased risk of depression in patients with epilepsy, it is most times ignored, unrecognised and untreated especially in children who may present with peculiar symptoms. Depression in children may manifest with mood swings, impulsivity, poor self- esteem, self-harm and suicide. These symptoms may go unrecognised in children with epilepsy because all attention is focused on seizures in these children. It has been recommended by the World Health Organization (WHO) and some authors that these children be subjected to routine psychological assessment. This study is designed to give more impetus to this recommendation by highlighting likely factors that may influence the high level of depression in children with epilepsy.

Materials and Methods:

Study Design: This is a cross- sectional study on the prevalence of depression and associated factors in children with epilepsy. The study was conducted at the paediatric neurology unit of the university of Port Harcourt teaching hospital (UPTH). UPTH is located in Port Harcourt, a cosmopolitan city in the South-South region of Nigeria. The clinic provides general paediatric care as well as specialist care to children and offers both inpatient and out- patient services.

Subjects:

The inclusion criteria for subjects of this study;

1. Clinical diagnosis of epilepsy by the neurologist at least 3 months before the date of study.
2. Children aged 9yr to <18yr

3 Ability to give informed consent by parents/guardians and child.

Exclusion criteria;

1. Patients and care givers who were unwilling to give consent, or unable to understand or fill out the questionnaire.
2. Comorbidities that were likely to affect emotions, including childhood developmental disorders

3. Patients with co-existing neurological disorders or who were too ill to participate.

Data collection; To collect the data, a three-phase case screening strategy was adopted. Eligibility was confirmed by a 5min oral interview before the sociodemographic and clinical characteristic protocol questionnaire is administered. The other two instruments were; centre for epidemiological scale for children (CES-DC) and diagnostic interview schedule for children-IV (DISC-IV).

The sociodemographic and clinical characteristics protocol was used to collect data on patients' demographics and seizure history.

Instruments;

The Centre for Epidemiological Depression Scale for Children (CED-DC) is used for screening for depression. [11]. It is a modification of the original version of CES-D developed by Lauric Radloff 1977. [12]. It has been validated [13, 14]. It is a 20-item questionnaire, for individuals aged 6-23yr. Questions are with a liker type scale response ranging from zero (not at all) to three (a lot), a score ranging from zero to sixty with a cut off score of 15. Scores higher than 15 are suggestive of depressive symptoms. CED-DC takes about 15min., it is a diagnostic tool, so patients who test positive for depression will need a confirmatory test for depression.

The Diagnostic Interview Schedule for Children (DISC) was created by John Seely in 1983 and has since been edited and updated. This study used DISC-IV which is a structured interviewer administered questionnaire that uses the Diagnostic and Statistical Manual (DSM-IV), and the International Classification of Diseases (ICD-10) criteria for the diagnosis of about 36 psychiatric disorders in children [15]. Diagnosis for each disorder is based on presence of symptoms within the past year and as currently as last four weeks. The questionnaires are structured to be interviewer administered, and coded No (0), and yes (1), not applicable (8) or don't know (9).

It has parents' version (DISC-P) for children 6-16yr and children' version (DISC-Y) for children 9-17yr. for this study, DISC-IV Y was used. It has been used and validated in Nigeria [16, 17].

Data Analysis; Using Statistical Package for Social Science SPSS 22.0, all relevant descriptive statistical variables were computed using student t-test and chi- squire. Tests and associations between mean of continuous variables and categorical variables were determined. Linear multiple regression analysis determined the predictors of depression at bivariate analysis of p=0.05.

Results:

Demographic Characteristics of the Patients.

Table 1 shows the socio-demographic characteristics of the patients.

A total of 380 patients participated, they all scaled through the first phase and were assessed with the CED-DC. 158 (41.6%) were males and 222 (58.4%) were females, the mean age of participants 13.9 (range from 9-17). 64% of the children lived with both parents, 26.6% lived with relations while 9.2% lived in boarding schools. 66% of mothers were married, 5.8% and 20.2% were single and widowed respectively. 84% of parents had formal education as against 16.2% with no formal education. 63.8% of parents were both actively employed as against 36.2% who were either retired, unemployed, or undergoing apprenticeship. About 69.2% of patients came from a relatively moderate size family with 2-4 siblings and only 10% of the admitted to a positive family history of epilepsy and only 5% confirmed a positive family history of mental illness. Of the 380 respondents, 54.7% had relatively adequate knowledge about the seizures which included date of onset, frequency of seizures and having their parents discuss the conditions with them. 65% of respondents were above average in academic performance and most them related well with their peers and were not discriminated against. 80.5% had systemic epilepsy, while 19.5% had focal/ partial epilepsy and were all on anti- epileptic drugs.

Variables	Frequency n=380		Percentage %		
GENDER					
Male	158		41.6		
Female	222		58.4		
AGE DISTRIBUTION (yr)					
9-11	32		8.5		
12-14	196		51.5		
15-17	152		40		
Living arrangements of patients					
With Relatives	101		26.6		
With Parents	244		64.2		
In Boarding houses	35		9.2		
STATUS MARITAL OF MOTHERS					
Widowed	77		20.3		
Single	22		5.8		
Married	251		66.1		
Divorced /Separated	30		7.9		
EDUCATIONAL LEVEL OF PARENTS	Mother	Father	Mother	Father	Average
Tertiary Education	210	224	55.3	58.2	57.1
Secondary Education	57	63	15	16.6	15.8
Primary Education	44	34	11.6	8.9	10.1

No Formal Education	69	54	18.2	14.2	16.2
EMPLOYMENT STATUS OF PARENTS					
Unemployed	107	82	28.2	21.6	24.9
Employed	224	258	59.7	67.9	63.8
Apprentice /Others	46	40	12.1	10.5	11.3
FAMILY SIZE (siblings)					
0-1	73		19.3		
2-4	263		69.2		
>4	44		11.5		

Table 1 the socio-demographic characteristics of the patients

Prevalence of Depression

The prevalence of depression was assessed from the scores on the CE S-D, scores above 15 was an indicator of depression. 117 (30.8%) of the respondents screened with CES-D had significant scores for depression. All the 117 with depressive symptoms were further assessed in the second phase of the study with the Major Depressive module of the Diagnostic Interview Schedule for Children (DICA-IV) and computer algorithm was used to generate a DSM-IV diagnosis. All the 117 patients except for few who did not complete, met DICA-IV criteria for major depression with 40 (10.5%) of them currently depressed, requiring urgent attention and conferring a very high validity to CES-DC.

Factors Associated with Depression Among the Study Group

Table 2 shows some of the factors associated with depression among the patients.

Males tended to be more depressed than females p=0.000, OR;0.862. Patients aged 9-11yr had the highest proportion of depression, showing very strong association on multivariate analysis p=0.000, OR;1.911. Depression was more common in respondents who lived in boarding school compared with those who lived with their parents. Patients with divorced or separated parents turned out more depressed, conferring marital status with a high predictive association on multivariate analysis p=0,001, OR;2.373. Positive family history of epilepsy and mental illness showed significant association p=0.001 and 0.002 respectively. Respondents suffering from complex partial seizures showed higher association with depression p=0.002 and patients who had longer duration of illness p=0.025, OR;1.203, and more frequent seizures p=0.0001, OR;1.411 showed strong association with depression.

Table 2 factors associated with depression.

VARIABLES	Depressed	Not Depressed	p-value

GENDER			
MALE	73 (46.2%)	85 (53.8%)	P=0.000, OR;0.86
FEMALE	44 (19.8%)	178 (78.2%)	P=0.225
AGE GROUPS			
9-11yr	21 (65.6%)	11 (34.4%)	P=0.000, OR;1.91
12-14yr	43 (21.9%)	153 (78.1%)	P=0.16, OR;0.28
15-17yr	53 (34.9%)	99 (65.1%)	
MARRITAL STATUS OF MOTHERS			
DIVORCCED	24 (80%)	6 (20%)	P=0.000, OR;2.373
MARRIED	59 (23.5%)	192 (76.5%)	
SINGLE//WIDOWED	34 (29.9%)	65 (70.1%)	
FAMILY HISTORY OF SEIZURES			
No	39 (19.5%)	161 (80.5%)	
Yes	29 (74.4%)	10 (25.6%)	P=0.001 OR; 0.321
Don't know	49 (34.8%)	92 (65.2%)	
FAMILY HISTORY OF MENTAL ILLNESS			
No	40 (19.8%)	162 (80.2%)	P=0.002 OR;0.421
Yes	15 (78.9%)	4 (21.1%)	
Don't know	62 (39%)	97 (61%)	
SEIZURE TYPES			
Absence seizures	0	11 (100%)	
Complex partial with secondary seizures	29 (46%)	34 (54%)	P=0.002
Generalised tonic-clonic seizures	88 (28.8%)	218 (71.2%)	
DURATION OF ILLNESS			
1-3yr	45 (22.4%)	156 (77.6%)	
4-6yr	66 (38.8%)	104 (61.2%)	
➢ 6yr	6 (66.7%)	3 (33.3%)	P=0.025, OR;1.203
FREQUENCY OF SEIZURES			
Once or more in a week	19 (33.3%)	38 (66.7%)	P=0.001, OR;1.411
Once in a month	2 (1.6%)	125 (98.4%)	
LIVING ARRANGEMENTS OF PATIENTS			
In Boarding houses	25 (71.4%)	10 (28%)	P=0.001
With Parents	79 (32.4%)	165 (67.6%)	

With Relatives	13 (12.9%)	88 (87.1%)	

Discussion

We conducted a cross-sectional study to assess the depression status of children with epilepsy and factors related to depression. The two- stage study used CED-DC as a screening tool and DICA-IV as a diagnostic scale. Both instruments confirmed a prevalence rate of 30.8% among 308 children with epilepsy and 10.5% as currently very depressed requiring urgent attention. This rate is in keeping with earlier studies from various centres in Nigeria and other countries [14, 16,18,30, 31]. Unlike the frequently reported female-male ratio of 2:1 in the general population [19] and in children (1), this study reports a male-female ratio of 1.7:1. This is in keeping with other studies [20,21]. Preadolescent children 9-11yr had a significantly higher association with depression p=0.000, OR;1.91 than the older group as also reported by Yang et al. 2020, but different from other studies [22,23, 30,32]. Children with epilepsy who live with relations or in boarding schools, are said to be more exposed to abuse, neglect and loss of parental influence than those who live with their parents. Our study reports a higher rate of depression in children living in boarding schools as also reported by Hankin BL 2012 [24] and Jemel Seid and Kalayu 2022 [33] The boarding school increases the exposure to abuse, neglect and loss of parental influence, it could also be associated with peer problems and negatively impact on children who are not academically proficient. [34]

Mothers' marital status had an impact on the risk of depression, with married mothers having lower rates of depression. A stable family background appears to offer protection against depression in the study group. Divorced motherhood impacted negatively on the respondents, showing a strong predictive association with depression p=0,000, OR;2.373. family history of epilepsy and mental illness were significantly associated though not predictive. A bidirectional relationship has been reported between them [25,26], as was found in this study. Kannor and Balabanov [25] found a genetic predisposition to depression, as evidenced by the frequent family history of mood disorders in these patients. In this study, seizure type showed a strong association with depression, while generalised tonic-clonic seizures were most common, respondents with complex partial seizures were more depressed p=0.002, in keeping with other studies [27,28].

This study gives a collaborative support data to the fact that the more chronic the seizure, the higher the rate of depression in patients [29]. Patients with seizure duration more than 6yr showed strong association with depression p= 0.025, OR;1.203. we also report that the more frequent the seizures the greater the chance of developing depression.

Respondents who had at least one seizure every week, turned out more depressed than the rest p=0.001, OR; 1.411.

Conclusion

There is a relatively high prevalence of depression in children with epilepsy in this part of Africa. Considering the scarcity of qualified psychiatrists and very few child-psychiatrists among them, medical staff at every level should pay more attention to patients with comorbidities and urgently provide the needed care. Children with epilepsy are more at risk of developing major depression than others and should be so managed.

Limitations of the study

Cross-sectional studies always fall short of causal relationships between predictors and the disorders. Hospital based samples may never represent the whole population of children with epilepsy and the information from children was not collaborated.

Consent

All the respondents and mothers/caregivers signed a written consent and all relevant authorities consented to the study

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