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Psychosocial correlates of depression in paediatric patients with epilepsy in a teaching hospital in Nigeria

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ABSTRACT

Background: Seizures are the most common paediatric neurological disorder with most children suffering at least one seizure before the age 16yr. The psychosocial comorbidities which adversely affect quality of life especially depression, are often neglected. This study sorts to highlight the psychosocial correlates of depression among these children

Methods: Recruitment was in a paediatric neurology clinic in a tertiary-level hospital. Children were eligible for recruitment if aged 9-18 and had a diagnosis of epilepsy as confirmed by a neurologist, in care for a period of more than 3 months, and parents gave consent. Children who met the study inclusion criteria were subjected to a two- stage interview process using CES and DICA-1V tools, designed to screen and confirm depression. These instruments have previously been validated on a Nigerian population. The study was cross section and descriptive, with psychometric evaluation p-values<0.05, statistically significant.

Results: A total of 400 children were offered participation, and 380 were recruited, among them, 117 (30.8%) met the clinical criteria for major depression with 40 (10%) of them in need of urgent medical attention. Males were more depressed, p=0.000, OR: 0.861, respondents aged 9-11yr showed a strong association with depression p=0.001, OR: 1.911. Living arrangements of patients, p=0.001, OR: 0.632, family size (siblings), p=0.004, marital status of mothers, p=0.001, OR: 2.373, turned out significant with mothers' marital status showing a strong association. Duration of illness and frequency of seizures, showed a very strong association with depression p=0.023, OR:1.203, and p=0.001, OR:1.411 respectively.

Conclusions: The study highlights a strong association between effects of epilepsy and psychosocial wellbeing of children and the high risk posed by unstable family settings on children's health.

Keywords: CES-DC, DICA-IV, Epilepsy, Paediatrics, Psychosocial variables

INTRODUCTION

Epilepsy is one of the most common neurological disorders in children, two unprovoked attacks more than 24 hr apert, could indicate epilepsy. Traditionally, the physicians focus on treating the physical aspect of

epilepsy, neglecting the social and psychological facets which affect the health- related quality of life. 1-3 More than 10.5 million children <18 yr have active epilepsy accounting for >25% of the global population. It is estimated that over 80% of these children live in developing countries. The prevalence rate of epilepsy in Africa is often under reported, and most of the studies are

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hospital and defined community based. Prevalence rates ranging from 37% to 60% have been reported in various researches and reviews. ⁶⁻⁸ confirming that epilepsy is a common childhood neurological disorder in Nigeria. The recent shift from traditional believes in epilepsy, which largely influenced it's management in Africa, has led to more hospital attendance and care. Affected children can now live normal life in the African continent if the epilepsy is properly managed. ⁹

Recent studies have posited that psychological comorbidity, child characteristics and environmental factors influence epileptic outcomes more than epilepsy specific variables. ¹⁰ Studies have shown high prevalence rates of behavioural problems in children with epilepsy, Nageh et al reported behavioural and cognitive problems as strongest predictive factor of quality of life in children with epilepsy. Ogun et al, reported that children with epilepsy experience more emotional problems than others and that in Nigeria, the prevalence of psychiatric disorders in children with epilepsy rages between 30%-90%. ^{11,12} Depression is the most common psychiatric disorder in epileptic children with a prevalence rate ranging from 5.2 to 48.3%. ¹³⁻¹⁵

Despite the high prevalence of depression in epileptic children, it is most times ignored and unrecognized possibly due to the peculiar presentation in children.

Research has also shown a bidirectional interaction between epilepsy and depression, suggesting that even newly diagnosed epileptics were seven times more likely to have depression preceding the epilepsy than the control. 16,17 Akinsure et al, after reviewing 48 relevant studies stated that epileptic children suffer social deprivation, discrimination in education, employment, housing and mental life. Other studies have reported low grades at school, lower cognitive functions, being bullied, stigmatization, lower quality of life. 18,19 Poor adjustment in adult life. All these are regarded as negative impact of epilepsy on children compounded with depression. As obvious as they appear to be, they have remained a subject of debate to researchers. This project was aimed to identify the influence of the sociodemographic variables of life on epileptic children with depression.

METHODS

Study design and subjects

This is a cross-sectional study to determine the psychosocial correlates of depression in children with epilepsy attending the paediatric neurology clinic of the university of Port Harcourt teaching hospital (UPTH), from April 2014 to December 2014. UPTH a referral hospitals in Nigeria. Epileptic children aged 9yr to less than 18yr who met the study inclusion criteria formed the target population. The study inclusion criteria included all children in the clinic diagnosed as epileptic by the neurologists at least three months before the date of

study, and whose parents or guardians were in position to give consent to the study. Patients within the age brackets whose parents or care givers refused consent, who could not fill out the research forms, or patients with coexisting neurological disorders or comorbidities that could affect emotions were all excluded from the study

Data collection

Data collection involved a three phased case screening method. Eligibility was confirmed by a 5min sampling A sample size of 380 was statistically technique: determined, using purposive sampling technique, every consecutive patient in the sample frame was chosen as a study subject. In the event consent was not given, or patient did not meet other inclusive criteria, then the next patient was selected. Having received approval from the ethics committee of the hospital, the eligible patients were then interviewed using the socio-demographic and clinical characteristic protocol questionnaire. The other two instruments included; Centre for epidemiological scale for children (CES-DC) and Diagnostic Interview Schedule for Children-IV (DISC-IVy). The sociodemographic and clinical characteristics protocol was used to collect data on patient's demographics and seizure history.

Instruments

The centre for Epidemiological Depression Scale for Children (CED-DC) is used to screen for depression, it is a modified version of CES-D, developed by Lauric Radloff 1977, and has been validated. A 20 item questionnaire with a liker-type scale response from zero (not at all) to three (a lot) and score ranging from zero to sixty with a cut- off point of 15. Scores more than 15 are suggestive of depression. CED-DC takes about 15min. being a screening instrument, patients who test positive may need a confirmatory test.

The Diagnostic Interview Schedule for Children (DISC) was created by John Seely in 1983 and has been updated. This study used DISC-IV, a structured interviewer administered questionnaire. It uses the Diagnostic and Statistical Manual (DSM-IV) and the International Classification of Diseases (ICD-10) criteria for diagnosis of about 36 psychiatric disorders in children. ²³. Diagnosis for each disorder is based on presence of symptoms within the last 12 months. The questionnaires are coded No (0), and yes (1), not applicable (6) or don't know (9). It has parents' version (DISC-P) for children 6-16yr and children's version (DISC-y) for children 9-17. This study used DISC-IVy which has been used and validated in Nigeria. ^{24,25}

Data analysis

Using statistical package for social science SSPS 22.0, all relevant descriptive statistical variables were computed using student t-test and chi-square. Tests and associations

between means 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

A total of 380 patients out of the 400 that were offered recruitment slots, were screened and they all qualified for the second phase with the CED-DC. One hundred and fifty eight (41.8%) were males and 222 (58.4%) were females. The age distribution, living arrangement of

patients and marital status of mothers are as shown in table 1. Eighty four par cent (84%) of parents had formal education while 16.2% had no formal education. The employment status of parents, number of siblings, family history of epilepsy and mental illness are as shown in Table 1. Two hundred and fifty (65.8%) confirmed lack of knowledge of illness from neither their parents nor their doctors, while 58 (15.3%) admitted having knowledge from either parents or doctors. Sixty five par cent (65%) of respondents had above average academic records and 53.4% related well with their peers and the public, and were not discriminated against. More than par cent (80.5%) of the respondents had systemic epilepsy while 19.5% had focal/partial epilepsy.

Table 1: Socio-demographic characteristics of the patients.

Variables		Frequency		Percentage (Percentage (%)	
Sex						
Male	158			41.6		
Female	222		58.4			
Age distribution (year))					
9-11		32		8.6		
12-14		196		51.5		
15-17		152		40		
Living arrangements of	f patients					
With relatives	101		26.6			
With parents		244		64.2		
In boarding houses		35		9.2		
Marital status of mothe	ers					
Widowed		77		20.3		
Single		22		5.8		
Married		251	251 66.1			
Divorced/separated		30 7.9				
Educational level of pa	rents					
•	Mother	Father	Mother	Father	Average	
Tertiary education	210	224	56.3	58.2	57.1	
Secondary education	57	63	16	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	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		
Family history of epiler	psy and mental i	llness				
Epilep		Mental illness	Epileps	sy	Mental illness	
Yes 39		19	10.3		5.0	
No 200		202	52.6		53.2	
Don't know 141		159	37.1		41.8	
Patients knowledge of i	llness from pare	nts and/or doctors				
Yes 58		15.3				
No		250		65.8		
Can't remember 72			18.9			

Continued.

Variables	Frequency	Percentage (%)				
Patients academic performance						
Outstanding	9	2.4				
Above average	40	10.5				
Average	247	65.0				
Below average	84	22.1				
Discrimination by peers and public						
Yes	100	26.3				
No	203	53.4				
Uncertain	77	20.3				

Prevalence of depression

Patients who scored above 15 on CES-D were screened out as depressed. Total of 117 (30.8%) of the respondents had a significant score of depression and were all further assed 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 respondents met the DICA-IV criteria for major depression with 40 (10.5%) requiring urgent attention (Figure 1).

Factors associated with depression among study group

Table 2 shows some of the factors associated with depression among the patients. Males were more depressed than females p=0.000, OR:0.861. Respondents aged 9-11yr were more depressed with a strong association on multivariate analysis p=0.000, OR:1.911. living arrangement of patients p=0.001,OR:0.632, family size (siblings) p=0.004, OR:0.372, marital status of mothers p=0.00°, OR: 2.373 showed strong predictive

association with depression (Table 2). Positive family history of epilepsy and mental illness showed strong association=0.001 and 0.002; respectively. Age at onset of seizure p=0.001, OR: 0.463, respondents academic performance p=0.002, OR:0.467 showed significant association but not of predictive value. Patients with complex partial seizure showed significant association with depression p=0.002, but patients with longer duration of illness showed stronger and predictive association with depression p=0.025, OR:1.203, p=0.001, OR: 1.411; respectively.

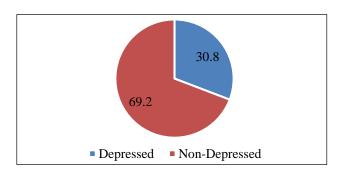


Figure 1: Showing the prevalence of depression.

Table 2: Factors associated with depression.

Variables	Depressed, 117 (%)	Not depressed, 263 (%)	P values
Sex			
Male	73 (46.2)	85 (53.6)	P=0.000, OR:0.086
Female	44 (19.8)	178 (78.2)	
Age groups			
9-11yr	21 (65.6)	11 (34.4)	P=0.000, OR:1.911
12-14yr	43 (21.9)	153 (78.1)	
15-17yr	53 (34.9)	99 (65.1)	
Living arrangements of children			
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)	
Family size (siblings)			
0-1	16 (22.0)	57 (78.0)	
2-4	81 (30.8)	182 (69.2)	
>4	20 (45.5)	24 (54.5)	P=0.004 OR:0.372
Marital status of mothers			
Divorced	24 (80)	6 (20)	P=0.000, OR:2.373
Married	59 (23.5)	192 (76.5)	

Continued.

Variables	Depressed, 117 (%)	Not depressed, 263 (%)	P values
Single/widowed	34 (29.9)	65 (70)	
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)	
Age at onset of seizure (yr)			
<6	8 (20)	32 (80)	
6-10	77 (41.2)	100 (58.8)	P=0.001 OR:0.463
>10	32 (20.9)	121 (79.1)	
Patients academic performance			
Outstanding	2 (22.2)	7 (77.8)	
Above average	9 (22.5)	31 (77.5)	
Average	66 (26.7)	181 (73.3)	
Below average	40 (47.6)	44 (52.4)	P=0.002 OR:0.467
Seizure types			
Absence seizures	0	11 (100)	
Complex partial seizures	29 (46)	34 (54)	P=0.002
Generalised tonic-clonic seizures	88 (28.8)	218 (71.2)	
Duration of illness (yr)			
1-3	45 (22.4)	156 (77.6)	
4-6	66 (38.8)	104 (61.2)	
>6	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 week	2 (1.6)	125 (98.4)	

DISCUSSION

This study revealed depression to be present in 30.8% of children with epilepsy. This is less than 52% reported by Kiyumi et al, 40.4% by Ogun et al, 48% by Nnajekwu et al, in Nigerian children from different centres. 16,11,15 It is more than 28.4% reported by Adewuya and Ola, 23% by Dunn et al and Harsha et al.^{24,26,28} It is closely related to reports from several studies in Nigeria and other countries. 14,18,27,29 The differences across borders could be due to environmental and cultural differences, and may also be due to methodological and instrumental variations. This study was a two stage study using both screening and diagnostic tools. Males appeared more depressed than females, with a ratio of 1.7:1. Some earlier studies may have supported this, it is at variance with recent studies. 30,31,15,16,18,2 Preadolescent age 9-11yr had a significant association with depression p=0.000, OR:1.912. Yang et al. reported a similar finding in 2020, but this finding though predictive, is not in keeping with other. 32,15,16,18,29 Patients who became epileptic before the age of 10 were more depressed p reports 1,11=0.001, but on multivariate analysis did not show strong association OR:0.463 in keeping with other studies. 15,16,18,23,27

Seyfhashemi et al, in a review article, reported that early onset of epilepsy in children is more likely to cause behavioural problems and Yang et al posited that younger age of seizure onset predicted depression comorbidity. Epileptic children who live in boarding schools or with people other than their parents are said to be more abused, neglected, and emotionally deprived. This study reports a higher rate of depression in children living in boarding schools, p=0.001, this is in keeping with other recent studies. 18,27 This study reports an association between family size and depression, patients from families with more than four siblings were more depressed p=0.004 OR:0.372. More than 47% of patients whose academic records fall below average performance were depressed p=0.002, OR:0.463, contrary to findings from Akinsulore et al where 36% of epileptic children were out of school, Julia Dortman et al where 38% of the students repeated a grade at school and 13% received educational support system and Ogun et al where 43.9% of the patients had major academic issues, this study did not show any such association. Majority of the students were happy with their academic programs. Fifty three par cent (53%) of the patients did not feel discriminated at school. Though 65% felt they lacked adequate

information about the illness, there was no noticeable association between patient's knowledge about epilepsy and depression.

Mothers marital status impacted on the patients, a stable family background appeared to offer protection against depression in the study group. Divorced motherhood negatively impacted on the patients, showing a strong predictive association with depression p=0.000, OR:2.373. A positive family history of epilepsy and mental illness may have increased the risk of depression in these patients, but they did not show strong association p=0.001. p=0.002, OR:0.421 respectively. This study confirms a bidirectional relationship between them as reported earlier by Hesderffer et al.¹⁷. Kannor and Balabanov found a genetic.33 Predisposition to depression, because of the frequent family history of mood disorders in these patients. This study reports an association between seizure type and depression p=0.002 (15) and a collaborative support data to the fact that the more chronic the seizures, the higher the rate of depression in patients. Patients with seizure duration more than 6yr showed a strong association p=0.025. OR:1.203.^{2,18} We also report a strong association between frequency of seizures and depression p=0.001. OR:1.411, in agreement with other studies. 1,18,18,32

This study has some limitations. This was a cross-sectional study and must have fallen short of the actual expected outcome. The study included children attending the clinic for the first time and those on follow-up visits. Children in the community must have been missed by this teaching hospital based study.

CONCLUSION

This study has provided more information on the prevalence of depression in children with epilepsy in Nigeria. It has revealed a strong association between the high risk posed by unstable family setting on the children's health and the negative effect of epilepsy on the psychosocial wellbeing of children. Closer attention is needed by caregivers to these children to improve their psychosocial wellbeing.

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