



## Knowledge, attitude and practice of epilepsy among community residents in Enugu, South East Nigeria



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### ABSTRACT

**Purpose:** The understanding of the opinions of the Nigerian public about epilepsy and its treatment is relevant to the reduction of the large treatment gap that exists in management of the condition. The major aim of this study was to determine the knowledge and attitudes of urban dwellers to epilepsy and its treatment and to identify the gaps in knowledge that could pose as barriers in the treatment and care of epilepsy patients within the community.

**Method:** This cross-sectional and descriptive study was carried out in one of the districts of Enugu metropolis, Nigeria. Data collection was by means of a semi-structured validated questionnaire.

**Results:** The mean score in knowledge was low,  $48.1 \pm 18.8\%$ ; higher in females ( $50.6 \pm 18.6\%$ ,  $p = 0.03$ ) and those who had witnessed seizures in the past  $49.7 \pm 18.8$ ,  $p < 0.01$ . On attitudes, 61.8% of the respondents accepted that it is right if sufferers married but most (93.2%) would not marry them and 87.2% would not allow them to have children or make a new acquaintance by working or playing with them (72.8%). There were no significant differences in the attitude scores of respondents with different levels of education.

**Conclusion:** The level of knowledge of epilepsy in among urban dwellers in SE Nigeria is low and fraught with misconceptions and gaps. There were no significant differences in the attitude scores of respondents with different levels of education. There is a need for a multi-faceted educational interventions directed at improving the awareness and understanding of the condition by all segments of the society.

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## 1. Introduction

Epilepsy is a common neurological disorder and one of the most prevalent disorders seen in general neurology clinics in South East (SE) Nigeria.<sup>1</sup> The prevalence of active convulsive epilepsy in sub-Saharan Africa (SSA) is high and ranges from 2.2 to 58 per 1000 affecting an estimated 4.4 million people.<sup>2</sup> Preux and Druet-Cabanac<sup>3</sup> estimated that the median prevalence of epilepsy in SSA to be 15/1000 ranging between 0/1000 and 33.5/1000. The prevalence of epilepsy in SE Nigeria is 4.3 per 1000.<sup>4</sup>

Knowledge and attitude of epilepsy is interwoven into cultural and religious practices in Africa. This is further complicated by diverse cultures and multiplicity of ethnic groups and the syncretic

amalgamation of indigenous traditions with Christian or Islamic doctrines which though have influenced popular attitudes towards epilepsy<sup>5</sup> but might have made it worse in some areas. Therefore, wide gaps still remain in the attitude of the populace.

In many Africa communities the lack of qualified medical personnel means that peoples living with epilepsy (PLWE) who have neurological, physical and psychiatric co-morbidities never get adequate care leading to increase in mortality and high rates of seizure related injuries.<sup>6</sup> Children experiencing cognitive difficulties due to the side effects of AED's or due to the severity of the condition itself may be regarded as lazy by both teachers and parents.<sup>7,8</sup> Added to these factors are the perception of epilepsy as a manifestation of supernatural forces, taboos, contagious and spread by body fluids<sup>9–11</sup> which lead to high levels of stigma in SSA.

Epilepsy-associated disability and vary between rural and urban regions, with rural residents suffering greater disability. There are indications that the level of public knowledge about epilepsy correlates with the attitudes of the community and both

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influence the perceived social impact of the condition among affected persons.<sup>12,13</sup> The understanding of the opinions of the Nigerian public about epilepsy and its treatment is relevant to the reduction of the large treatment gap<sup>4</sup> that exists in management of the condition in SE in Africa. Few studies have investigated the problems of understanding the knowledge and attitudes of the general public towards epilepsy in South East Nigeria.<sup>9,10,14</sup>

## 2. Objectives

The major aim of this study was to determine the knowledge and attitudes of urban dwellers to epilepsy and its treatment and to identify the gaps in knowledge that could pose as barriers in the treatment and care of epilepsy patients within the community. Related to this was the need to identify the socio-cultural perceptions of epilepsy that could constitute targets for community based educational interventions, and which could enhance treatment seeking behaviour.

## 3. Methods

### 3.1. Study area

This study was cross-sectional and descriptive in design carried out in an area of Enugu city, South East Nigeria called “Coal Camp” on the basis of its historical origin as the place of residence for newly arrived individuals prospecting for job opportunities in the coal mines.

Enugu is a city of approximately 564,000–500,000<sup>15</sup> inhabitants, predominantly of Igbo ethnic group. However all other tribes in Nigeria and expatriates are fairly represented. However, with the continued expansion of the city. Coal Camp has become a high density area and contains both residential and business communities. For instance, this area of Enugu is the major market for the sale of motor spare parts and engines of all kinds and sizes, and receives patronage from the entire metropolis and the adjoining rural areas. The original area designates as Coal Camp is approximately 1.5 km × 1.5 km, has a large cosmopolitan population that represents the ethnic mix and diversity of the entire metropolis. The area originally consists of three areas – Colliary, Mgbemena and Main Camp. Presently, Main Camp is referred to as Camp and is the area covered in the survey. Coal Camp has four banks, insurance companies, hotels, two secondary and primary school and many small scale industries and business. The population of adults who reside permanently in the area was estimated to be 3000–4000 based on 2006 census.<sup>15</sup> Most of the inhabitants are businessmen and women, public/civil servants as well as students and artisans who work in small scale industries. In the past, coal mining was of much economic importance. Though data on poverty and literacy rates in Coal Camp are not available but it may be similar to that of the whole state with a per capita of \$2290 and literacy rate of 61%.<sup>16</sup>

## 4. Study design

As a part of the study we undertook a house-to-house survey of at least 10% of the residents within the study area, to obtain a representative sampling of the community's views and attitudes towards epilepsy and its treatment. We surveyed the area using the number of streets (12); each having 10–25 buildings. The number of households in each house varied from 0 to 8 depending on the size of the building (number of apartments in a building) and whether it is also used for business purposes. Depending on the number of buildings in a street, 40–50 individuals were selected from consecutive consenting households. We selected one respondent aged 18 years or older from each household within the

sampled area. Where there was more than one person in the age group of interest in a household, only one was selected, on the basis of availability, older age or being the head of the household. Family heads may nominate anyone within the eligible age group to represent the family. The inclusion criteria were residency in Main Camp and age 18 years and above. The exclusion criteria were refusal to participate and residency less than 6 months. The sampled participants were interviewed in their homes or businesses.

## 5. Data collection

The data collection was by means of a semi-structured questionnaire, mostly multiple choice items, and consisted of three principal sections, including a (first) section on general information about the respondents such as age and sex and related characteristics; the second section contained eight questions that dealt with general information on epilepsy, awareness and perception of epilepsy; whereas the third section containing five questions elicited responses to issues of treatment of epilepsy/seizures and attitude towards people living with epilepsy (PLWE). The questionnaire was constructed in simple English to match the reading level of most persons that completed primary school. Level of education was defined as the last class completed by the subjects. Primary education is 6 years, secondary school 6 years and tertiary any other certified educational attainment after secondary school. The study questionnaire was designed by the authors from the neurology unit of the department of medicine from the University of Nigeria Teaching Hospital Enugu. It was forward- and back-translated into Igbo and reviewed by bilingual individuals for accuracy in the medical out-patient clinic of the Teaching Hospital. The mean time for filling out the questionnaire was 6 min. The word epilepsy or seizure was translated using the most accepted Igbo dialect (central Igbo). Culturally acceptable words were used such as “play” instead of to “socialize” which may suggest going to pubs to drink in local parlance. The study was protocol was reviewed by the ethics committee of the Teaching Hospital. All participants gave their informed consent after reading or having the consent form read for them.

The section on knowledge had ‘YES’ or ‘NO’ options and the attitude section had three response options consisting of ‘AGREE (A), DISAGREE (D), and UNDECIDED’. For internal consistency of the instrument Kuder-Richardson Formula 20 (KR-20) and Cronbach  $\alpha$  were used. The reliability index (KR-20) was 0.7 and 0.87 (Cronbach  $\alpha$ ) respectively.

All the questionnaires were self-administered with guidance from the investigators and the completed questionnaires were retrieved the same day. In cases where the respondent did not understand English, an Igbo translation was used. In such cases, the items on the questionnaire were read out to the respondents, and their endorsed options were ticked by the research assistant. A total of 500 questionnaires were distributed and retrieved but only 456(91.2%) were analyzed based on the inclusion and exclusion criteria. Nine (2%) of the analyzed questionnaire were collected in Igbo language. Thirteen (2.6%) questionnaires were rejected because of all the questions were not answered, 29(5.8%) were returned unanswered by the households primary because they did not have time to do so.

## 6. Data analysis

Data were assembled, tallied, put in frequency tables and analyzed. Correct responses on knowledge were scored 1 and incorrect ones 0. Total scores on knowledge were converted to percentages for further analysis. The mean ages of men and women were compared using *t*-test statistic. Mean scores were compared

**Table 1**  
Distribution of the respondents according to the level of education and occupation.

	Males	Females	Total
N (%)	281(61.6)	175(38.4)	456(100)
Mean age (SD)	31(10.5)	33.4(11.7)	32.8(11.4)
<i>Level of education</i>			
	N (%)	N (%)	N (%)
Primary	58(20.6)	21(12)	79(17.3)
Secondary	134(47.7)	73(41.7)	207(45.4)
Tertiary	89(31.7)	81(46.3)	170(37.3)
<i>Occupation</i>			
Business	114(40.7)	52(29.7)	167(36.7)
Student/job trainees	68(24.3)	56(32)	124(27.2)
Artisans	26(14.9)	59(21.1)	85(18.6)
Civil servants	35(20)	23(8.2)	58(12.7)
Unemployed	6(3.4)	6(2.1)	12(2.6)
Retired	8(2.9)	–	8(1.8)
Clergy	2(0.4)	–	2(0.4)

Primary education is defined as at least 6 years of elementary school. Secondary education is defined as at least 6 years of post primary education. Tertiary education is defined as any additional certified educational after secondary education (including vocational training).

using ANOVA and post hoc analysis and the Students *t*-test where applicable. In all the analyses, the level of significance was kept at <0.05.

## 7. Results

The participants consisted of 281(61.6%) males and 175(38.4%) females. The age range was 18–79 years (mean 32.8 ± 11.4 years). Males were significantly younger than the females (males 31 ± 10.5 versus females 33.4 ± 11.7 (*p* = 0.01)). The mean age and sex distribution of the sample is shown in Table 1. The distribution of the sample according to the occupation and levels of education is also shown in Table 1.

The majority of the respondents (99.8%) had heard of epilepsy as a disorder. The commonest sources of information about epilepsy were from family members (55.8%) and the electronic media (11.8%). A large proportion of the respondents (83.8%) had witnessed a seizure in the past but only 65.4% knew someone with epilepsy. Table 2 shows the data on level of awareness and sources of information on epilepsy. Regarding the symptoms of epilepsy known to the respondents, jerking (77.4%) and loss of consciousness (57.9%) were the most commonly recognized manifestations of epilepsy. Less than 20% of the respondents knew that epilepsy may manifest as brief episodes of abnormal behaviour. Table 3 shows the responses regarding the perception on the manifestations and causation of epilepsy.

Regarding the participants' opinions on the causes of epilepsy, 30.9% considered it an inherited disorder. Overall, 76.8% of the respondents made a wrong attribution in relation to the cause of epilepsy as a disorder (epilepsy was infectious, a psychiatric illness, spiritual attack, caused by old age or due to poisoning).

The views of the respondents on the treatability of epilepsy showed that 12.5% did not believe epilepsy is treatable, whereas, 13.4% stated that they did not know whether it can be treated. With regard to who should be consulted for epilepsy treatment, only 35.7% selected doctors (orthodox medicine) as the best mode of treatment, 38.8% advocated for alternative means of treatment, whereas, 25.9% advocated for both orthodox medicine and alternative treatment. On the best safety measures to take during seizures, 50.4% would move the person away from harm, 40.4% agreed that an object should be inserted into the mouth of the individual. About 44.6% would pray, apply olive oil, run away or take no action. Table 3 shows the full range of the opinions of the participants on the actions to take during a seizure episode.

**Table 2**  
The extent of the respondents' awareness of epilepsy and their sources of information.

<i>Have you heard of epilepsy before</i>		
	Yes N (%)	No N (%)
I have heard of epilepsy before	455 (99.8)	1(0.2)
<i>Awareness of epilepsy*</i>		
		Yes (%) N (%)
I have seen convulsions before		382(83.8)
I know someone with epilepsy		298(65.4)
<i>Sources of information about epilepsy*</i>		
	Frequency N (%)	
Family/friends	254(55.8)	
Radio/TV	64(11.8)	
School/teachers	23(5.1)	
Health staff	59(13)	
Books	30(6.6)	
Internet	7(1.5)	
Cannot remember	87(19.1)	

\* Multiple responses possible.

**Table 3**  
Knowledge of epilepsy.

<i>Clinical manifestations of epilepsy*</i>			
Number	Frequency (%)		
1 Jerking of the body	353(77.4)		
2 Loss of Consciousness	264(57.9)		
3 Abnormal behaviour	80(17.5)		
4 Urinating on oneself	67(14.7)		
5 Shouting (cry)	45(9.9)		
<i>I think Epilepsy is a*</i>			
	Frequency (%)		
Inherited disorder	141(30.9)		
Spiritual causes	104(23)		
Psychiatric disorder	93(20.4)		
Infectious disease	91(20)		
"Natural" causes (just like any other physical illness)	76(16.7)		
Poisoning	58(12.7)		
Old age	4(0.1)		
I do not know	91(20)		
<i>Do you consider epilepsy as a treatable illness</i>			
	Yes	No	I do not know
	338(74.1)	57(12.5)	61(13.4)
<i>Who do you think should treat epilepsy*</i>			
	Frequency (%)		
Doctors <sup>†</sup>	163(35.7)		
Doctors <sup>†</sup> and prayers	80(17.5)		
Prayers (churches)	107(23.5)		
Herbalists <sup>‡</sup>	55(12.5)		
Clergy and Herbalists	15(3.3)		
Doctors <sup>†</sup> and Herbalists <sup>‡</sup>	9(2)		
All the above	29(5.9)		
<i>What will you do if you see someone convulsing?</i>			
	Frequency (%)		
Move the person away from harm	230(50.4)		
Put something into the mouth	184(40.4)		
Call a doctor or a nurse ASAP <sup>**</sup>	110(24.1)		
Do nothing	86(18.9)		
Run away	54(11.8)		
Apply olive oil on the person	34(7.5)		
Start praying	29(6.4)		

\* Multiple responses possible.

\*\* ASAP: as soon as possible.

<sup>†</sup> Orthodox medicine.

<sup>‡</sup> Traditional healing methods.

**Table 4**  
Attitude towards people living with epilepsy.

	Agree	Disagree	Undecided
I would like to keep a friend with epilepsy	363(79.6)	39(8.6)	27(5.9)
PLWE should marry <sup>†</sup>	282(61.8)	130(28.5)	44(9.6)
I would play with PLWE	124(27.7)	261(57.2)	71(15.6)
PLWE should have children <sup>†</sup>	72(15.9)	195(42.8)	189(44.4)
I can marry someone with epilepsy <sup>†</sup>	31(6.8)	366(80.3)	59(12.9)

<sup>†</sup> PLWE: peoples living with epilepsy.

The mean score in knowledge was low, 48.1 ± 18.8 (range 0–100%) with females having a significantly higher mean score than males (females 50.6 ± 18.6% versus males 46.6 ± 18.7%, *p* = 0.03). There was no significant difference between the number of respondents with scores less than 50% and those whose scores were above (*N* = 227 versus 229) (*p* = 0.93). The mean score of those who had witnessed seizures was significantly higher than those of individuals who had not (49.7 ± 18.8 versus 39.9 ± 16.4 (*p* < 0.01)) (Table 4).

On attitudes towards individuals with epilepsy, 61.8% of the respondents accepted that it is ok if PLWE married but most (93.2%) would not marry them. About 87.2% stated that they would not support that person with epilepsy should have children. Furthermore, most respondents would keep a friend with epilepsy (79.6%), but would not make a new acquaintance by working or

playing with them (72.8%). The mean scores in knowledge among participants with different attitudes towards individuals with epilepsy are shown in Tables 5 and 6. The latter table also shows the results of the post hoc analysis of these scores. Respondents who maintained that PLWE should not have children (52.2%) and those who would play/work with them (51.4%) had better knowledge than those who felt otherwise. Knowledge was also significantly higher in those who have seen convulsions in the past. Notably, there were no significant differences in the attitude scores of respondents with different levels of education *p* = 0.55.

Post hoc analysis showed that the differences in knowledge among participants with different attitudinal responses were mostly between those who expressed agreement with the attitude items and those who expressed disagreement.

**8. Discussion**

This is the first community based study in SE Nigeria to investigate the knowledge and attitude of urban dwellers towards epilepsy. The predominance of women in the population may be because of the way the participants were selected; most women are likely to be at home during the day. Furthermore, men may ask their wives to represent their families if they were busy or less educated.

This study also demonstrated high rates of awareness of epilepsy as well as varying levels of knowledge in people with

**Table 5**  
Distribution of scores in knowledge.

Levels of knowledge and attitude	Frequency		Percentage	
	Mean (SD) scores of knowledge			
	Agree	Disagree	Undecided	<i>p</i> -Value
I would like to keep a friend with epilepsy	49.3 ± 18.2	39.5 ± 19.7	43.1 ± 22.5	<0.01
PLWE should marry	50.3 ± 18.2	43.8 ± 18.44	46.7 ± 21.1	<0.01
I would play/employ with PLWE <sup>†</sup>	51.4 ± 19.5	47.3 ± 18.7	45.3 ± 18.8	<0.06
PLWE should have children <sup>†</sup>	45.7 ± 20.9	52.2 ± 17.9	44.9 ± 18.1	<0.01
I Can marry someone with epilepsy	44.2 ± 21.1	49.5 ± 18.3	41.4 ± 18.4	<0.01
Awareness of epilepsy	Yes		No	
	Mean score		Mean score	
I have seen convulsions before	49.7 ± 18.8		39.9 ± 16.4	<0.01
I know someone with epilepsy	48.9 ± 18.7		46.8 ± 18.9	0.26
Level of education	Primary	SS <sup>#</sup>	Tertiary	
	49.0 ± 16.8	47.1 ± 17.8	49.0 ± 18.8	0.55

<sup>#</sup> SS: secondary school.

<sup>†</sup> PLWE: peoples living with epilepsy.

**Table 6**  
Mean and standard deviation of knowledge scores with (Post Hoc analysis) in attitudes towards PLWE<sup>†</sup>.

	Agree	Disagree	Undecided	
Mean scores of knowledge				
I would like to keep a friend with epilepsy	49.3 ± 18.2	39.5 ± 19.7	43.1 ± 22.5	<0.01
Disagree	<0.01	–	0.71	
Undecided	0.215			
PLWE epilepsy should marry <sup>†</sup>	50.3 ± 18.2	43.8 ± 18.44	46.7 ± 21.1	<0.01
Disagree	0.01	–	0.65	
Undecided	0.450			
I would play/employ with SLWE <sup>§</sup>	51.4 ± 19.5	47.3 ± 18.7	45.3 ± 18.8	<0.07
Disagree	0.12	–	0.68	
Undecided	0.074			
PLWE should have children <sup>†</sup>	45.7 ± 20.9	52.2 ± 17.9	44.9 ± 18.1	<0.01
Disagree	0.03	–	<0.01	
Undecided	0.944			
I Can marry sSLWE <sup>§</sup>	44.2 ± 21.1	49.5 ± 18.3	41.4 ± 18.4	<0.01
Disagree	0.27	–	<0.01	
Undecided	0.78			

<sup>†</sup> PLWE: peoples living with epilepsy.

<sup>§</sup> SLWE: someone living with epilepsy.

different attitude towards epilepsy see Table 5. Interestingly, people who witnessed convulsions in the past had significant higher scores in knowledge compared to knowing someone with epilepsy. Levels of education did not appear to influence the level of knowledge.

The high rate of awareness of epilepsy has been demonstrated by previous studies<sup>17,18</sup>. The reasons for this widespread level of awareness may not only be due to life experiences of the adults interviewed, but also the use of different mass media resources in the country. Some misperceptions and stigma related to epilepsy in the general public may be mitigated by developing educational interventions for the general public as well as for those with epilepsy. Coping with a chronic condition like epilepsy usually involves direct collaborative action of the affected persons, their families, kinship networks, friends as well the public and friends.<sup>19,20</sup>

In this study, teachers and health workers were the sources of information for a small proportion of respondents (18.1%). The desire of school teachers and general practitioners to participate in the care of children with epilepsy has been previously documented.<sup>14</sup> An earlier study has shown that a small proportion of the population get their information about epilepsy from health workers.<sup>9</sup> Getting more people involved in epilepsy care will necessitate the incorporation of every available resource that could help in demystifying epilepsy. This calls for inter-professional collaboration and partnership with multiple stakeholders.<sup>21</sup>

Although 99.9% of those interviewed claimed to have heard of epilepsy, the quality of the information they received about this condition gives cause for concern, especially since only 13% received such information from health professionals. Even though well designed media programs can be cost effective and efficient means of disseminating information and advocating changes in attitudes and social policy<sup>22,23</sup> the quality of medical information transmitted through the mass media may not be comprehensive and may sometimes be of poor quality or even misleading.<sup>24,25</sup> In fact, the media may help to perpetuate the common misconceptions the public holds about stigmatizing conditions.<sup>26</sup> Medical and health workers are recognized as the most reliable sources of authentic information on epilepsy.<sup>27</sup>

The majority of the participants attributed the cause of epilepsy mainly to genetic inheritance. In most African communities epilepsy is regarded as a “family disease”, hence the high levels of courtesy stigma associated with it.<sup>7</sup> The extent of misconception of the causal factors in epilepsy among the participants was very high (76.8%). In Nigeria, epilepsy as in many countries, is perceived as a manifestation of supernatural forces such as evil spirits, sorcery, or witchcraft.<sup>17,28,29</sup>

The reported high level of close contact (83.8% who witnessed seizures) among the participants and the cultural values of kinship and friendship prevalent in most African communities were expected to have influenced attitudes towards epilepsy favorably, leading to higher level of kindness, tolerance and sympathy towards individuals with epilepsy.<sup>18,28</sup> However, this expectation is not supported by the findings of this study; instead, the expressed unwillingness to play or work with person with epilepsy (57.2%), and the deduction that persons with epilepsy should neither marry (28.5%) nor have children (42.8%) cast doubt on the impact of contact with epileptic patients on public attitudes.

It is encouraging that 50.4% of the respondents stated that they would prevent harm during a convulsion. However, the traditional belief of inserting objects into the mouth of convulsing individuals still persists. Only about a quarter of the participants (24.1%) stated that they would call the attention of a health worker as soon as possible after observing a convulsing individual. This finding is probably related to the fact that only 55.2% stated that they considered doctors as the appropriate professionals to manage

epilepsy. Even though this study represents an improvement over previous studies, in suggesting a decreasing reliance on traditional and spiritual healing of epilepsy, it still shows the need for public educational interventions to disseminate knowledge about epilepsy and its causes. It is noteworthy that in this study only 27.9% of the participants endorsed traditional and spiritual healing approaches as the most appropriate for epilepsy management. The endorsement of pluralistic approaches for the management of this disorder by 25.9% of the participants is not an undesirable finding when construed from the perspective of doctors that advocate the integration of healing methods.<sup>29</sup> The endorsement of pluralism in this situation may probably reflect an affirmation of misconceptions about the causes of epilepsy and has within it a negative help-seeking implication which may result in delayed presentation for care, development of complications from the disorder, and prolonged disability and unmitigated suffering.<sup>11,30</sup> All these have the potential of further worsening the epilepsy treatment gap and the stigma for affected persons and their families.<sup>31</sup> It is however, the responsibility of concerned clinicians to educate the patients, their caregivers and the general public on the appropriate first response in the treatment of epilepsy. In this study, the mean score in knowledge was low, significantly higher in women than in men. Apart from having a greater likelihood of witnessing seizure in children, treatment of seizure especially febrile seizures is usually integrated in ante and post natal care services.

The participants who accepted that PLWE can be befriended, played or worked with and should marry had significantly higher levels of knowledge. Surprisingly however, the individuals with higher level of knowledge also stated that epileptic subjects should not have children. Most African societies and especially the Igbo society have strong family, kinship and social ties. In these cultures the family is regarded as the centre of every relationship and therefore concerted efforts are usually made to maintain the ‘purity’ and ‘integrity’ of the family. This scenario therefore results in resistance and fear when the prospect of an individual with a familial disorder like epilepsy or mental illness being married into the family is being considered. This may be the reason for the lack of support for epileptic subjects getting married expressed by the participants. The larger proportion of respondents with higher levels of knowledge among participants that agreed that PLWE should be befriended and be played with may stem from sympathy as earlier demonstrated in previous studies.<sup>18</sup> People may not play with, employ or work with PLWE due to fear of seizures which are unpredictable and may expose the victims to accidents in the workplace. Related to this, almost one-third of the participants (30.7%) stated that they would either do nothing or run away when they encounter someone convulsing. This is one of the indicators of the gross misconception the Nigerian people have about epilepsy as an infectious disease. Epilepsy is considered as a very contagious disease that is spread by the saliva or other body fluids excreted during a seizure.<sup>7,31,32</sup> This fear of being contaminated and “infected” makes certain individuals want to isolate and avoid epileptic persons.

The mean levels of knowledge did not differ with the level of education. This may be a consequence of the complete absence of planned systematic school health and community awareness programs that are geared towards promoting knowledge about chronic health disorders. Many studies had documented the observation that limited knowledge and misinformation about epilepsy breed negative attitudes and these contribute to the high level of stigma due to epilepsy.<sup>13,33</sup> Furthermore, when and where such programs exist they may be limited scope thus having little or no impact on the attitude of the hearers. Not all aspect of knowledge may effects attitudinal changes.<sup>34</sup> The fact that the mean knowledge scores of the participants who had witnessed seizures in the past were significantly higher suggests that

**Table 7**  
Knowledge of epilepsy from some studies in Nigeria.

I think Epilepsy is a <sup>a</sup>	Index study	Ojinnaka <sup>14</sup>	Students <sup>9</sup>	Kabir <sup>18</sup>
Causes of epilepsy	%	%	%	%
Inherited disorder	30.9	45.6	22.5	28
Spiritual causes	23	22.4	19	23.5
Psychiatric disorder	20.4	–	51.9	–
Infectious disease	20	28.8	40.6	–
“Natural” causes	16.7	53.6	6.8	–
Who do you think should treat epilepsy				
Doctors <sup>†</sup>	35.7	47.2	20.6	34
Herbalists <sup>‡</sup>	12.5	23.2	6.8	19
Prayers (spiritual healing)	23.5	–	0	47

<sup>a</sup> Personal belief of the cause of epilepsy.

<sup>†</sup> Orthodox medicine.

<sup>‡</sup> Traditional healing methods.

interventions that seek to foster knowledge through audio visuals may be desirable. This supports the use of multi-modal educational methods with full audiovisual support, drama, and appropriately selected films as needed to improve the knowledge and attitude of the public towards epilepsy and PLWE.<sup>35,36</sup> This kind of program has been found effective in improving public knowledge and attitudes in other settings.<sup>37,36</sup> Developing interventions to help meet this need is sorely needed in Nigeria and similar poorly resourced settings of the world.

It is notable that those with greater epilepsy related knowledge did not agree that people with epilepsy should have children or marry them. In resource poor settings like most African communities, chronic illness is not frequently treated and where this is done, it carries huge financial burden to the family. This may be one of the reasons that most PLWE in the community appear to have frequent seizures, uneducated or under-educated. Many causes of epilepsy in SSA are either central nervous system infections or birth injuries which apart from seizures may leave other severe neurological problems. It is not surprising therefore that many people still associated epilepsy with severe mental and neurological deficits hence their refusal to allow them to marry or have children. Furthermore, majority of the participants considered epilepsy primarily a genetic disorder which may translate to the attitude expressed.

In a survey of school teachers in Enugu, despite a fairly high level of education of the teachers, the mean overall score for correct response for knowledge was 59.2%.<sup>14</sup> Findings from some of the studies done within the zone<sup>9,14</sup> and the northern part of Nigeria are compared in Table 7. Looking at comparable questions, the answers by teachers elicited by Ojinnaka<sup>14</sup> was similar to that of the index study except on the proportion that believed that epilepsy is just like any other “natural” illness which have scientific explanations. The proportion of secondary school students who considered epilepsy as a psychiatric disorder, and an infectious disease were twice those from Camp. Fewer students believed epilepsy to be “natural” illness. Findings in the index study are similar to those from an urban community in Northern Nigeria.

On treatment, the opinion expressed in this study was different from those of the previous studies, however in all less than 50% of the respondents believed that orthodox medicine is useful. Between 6.8% (students<sup>9</sup>), 36% index study and 66%(Kabir et al.<sup>18</sup>) would choose either spiritual healing or herbal medicine for the cure of epilepsy.

## 9. Conclusion

It is apparent from the foregoing that this study suggests awareness of epilepsy may be high in south east Nigeria, even

though the understanding of the condition is fraught with misconceptions and gaps. These gaps in understanding of the condition appear to be major drivers of the negative attitudes and social stigma associated with the disorder. Particularly notable are the misconceptions related to the causal imputations which the participants made about epilepsy with their negative help-seeking and stigma sustaining implications. Level of knowledge was high despite persisting poor attitudes in the community. There is a need for a multi-faceted educational interventions directed at improving the awareness and understanding of the condition by all segments of the society. Both interpersonal and mass media delivered programs will be required for this process.

## 10. Limitations

The limitations of this study should be considered in the interpretation of our findings.

This study is a cross-sectional study and therefore the associations between variables described may not necessarily be causal or explain the change of knowledge and attitude over time in the source population. Some questionnaires were completed in front of the interviewers. There is a possibility that this might have affected the responses given by the participants. However, due explanations were provided to the participants that only their spontaneous responses were required and that there were no right or wrong choices amongst the options provided for each questionnaire item. Despite these limitations, one of the benefits of this study is that it has helped to provide a set of findings that could be considered as baseline for comparison with future studies and a reason for clinicians to become more active in disseminating accurate information about the disorder as well as design focused educational interventions for policy makers and key opinion leaders in communities.

## Ethical approval

We confirm that we have read the journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

## Conflict of interest statement

None of the authors has any conflict of interest to disclose.

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