Original Article

Knowledge, Attitude, and Practice of Epilepsy in a Rural Community in Enugu, Southeast Nigeria

Birinus A. Ezeala-Adikaibe, Chinweike F. Ekochin[1], Mark S. Ezeme[1], Chigekwu N. Mbadiwe, Chibuzo C. Okwara, Monday U. Nwobodo[2], Paul C. Okoli[1], Cajetan C. Nganwuchi[3], Obumneme B. Anyim, Casmir Orjioke[2], Chidimma Orah-Okpala, Ngozi P. Ezeala-Adikaibe[5], Ijeoma B. Ndionuka, Chiamaka Okereke, Grace O. Eneh[2], Pauline N. Onodugo, Ikenwugwu T. Holyword[4]

Department of Medicine, University of Nigeria Teaching Hospital, Enugu, Nigeria, [1]Department of Medicine, Enugu State University Teaching Hospital, Enugu, Nigeria, [2]Department of Medicine, Alex Ekwueme Teaching Hospital Abakiliki, Abakiliki, Nigeria, [3]Department of Chemical Pathology, Abia State University, Abia, Nigeria, [4]Department of Biochemistry, University of Nigeria, Nsukka, Enugu, [5]Department of Community Medicine, University of Nigeria Teaching Hospital, Enugu, Nigeria

ABSTRACT

Background: Knowledge of epilepsy in rural communities is crucial in developing educational materials for epilepsy awareness, as most people living with epilepsy (PLWE) live in these communities. **Objectives**: This study aimed to determine the knowledge and attitudes of rural residents toward epilepsy and its treatment, identifying areas for developing educational materials to increase epilepsy awareness in Southeast (SE) Nigeria. **Materials and Methods**: This cross-sectional descriptive study was conducted in one of the rural communities near Enugu metropolis, Nigeria. A semi-structured validated questionnaire was used for data collection. **Results**: Almost half of the participants (49.6%) had seen someone convulsing in the past and 44% knew someone with epilepsy. The primary sources of information about epilepsy were from family members 166 (31.3%) and home environment 161 (30.4%). Eighty seven (16.4%) participants believed that epilepsy may be caused by witches or charms. The mean score in knowledge was low (30.8 ± 8.4). Significant differences in attitude were observed among participants who had witnessed seizures ($p < 0.01$), have relatives with epilepsy ($P = 0.045$), and have not had such experiences ($P = 0.01$). **Conclusion**: Knowledge and attitudes of epilepsy among rural residents are lacking and fraught with misconceptions. Both knowledge and attitude were worse among those closely associated with PLWE. Targeted educational programs for rural residents are important to improve epilepsy knowledge and attitudes in rural SE Nigeria.

KEYWORDS: *Attitude, epilepsy, knowledge, Nigeria, rural community*

INTRODUCTION

Epilepsy is a common neurological disorder in Nigeria,[1-5] frequently seen in neurology clinics.[2] The prevalence of active convulsive epilepsy in Nigeria varied widely depending on the setting, with higher rates being observed in rural communities.[1,3-5] A systematic review of door-to-door studies conducted in the country yielded a prevalence rate of 8/1000, which was higher in rural areas (15/1000) compared with urban areas (6/1000).[6] More recent studies reported prevalence rates ranging from 4.7/1000 to 6/1000 in semi-urban areas.[1,4] A study conducted in the northern part of the country gave a prevalence rate of 17.7/1000.[5] The prevalence of epilepsy in Southeast (SE) Nigeria is between 4.3/1000 and 6/1000.[1,4] Preux and Druet-Cabanac[7] estimated the median prevalence

Submission: 25-Oct-2023, **First revision:** 20-Dec-2023, **Accepted:** 21-Feb-2024, **Published:** 16-Apr-2024.

Access this article online

Quick Response Code:

Website:
www.ijmhdev.com

DOI:
10.4103/ijmh.ijmh_67_23

Address for correspondence: Dr. Birinus Adikaibe Ezeala-Adikaibe,
Department of Medicine University of Nigeria Teaching Hospital,
PMB 01129, Enugu, Nigeria.
E-mails: birinus.ezeala-adikaibe@unn.edu.ng;
birinusadikaibe@gmail.com

How to cite this article: Ezeala-Adikaibe BA, Ekochin CF, Ezeme MS, Mbadiwe CN, Okwara CC, Nwobodo MU, *et al.* Knowledge, attitude, and practice of epilepsy in a rural community in Enugu, Southeast Nigeria. Int J Med Health Dev 2024;29:77-87.

of epilepsy in sub-Saharan Africa (SSA) to be 15/1000 ranging between 0/1000 and 33.5/1000.

Epilepsy as a disease has been intertwined with the cultural and religious beliefs of people in SE Nigeria.[8-10] As seizures tend to occur periodically and are often paroxysmal, the disease has been given spiritual explanatory models. Despite the strong influence of Christian beliefs in the region, epilepsy is still shrouded in supernatural beliefs and myths, which may explain the shift from traditional healers to prayer houses for treatment. These beliefs tend to be stronger in rural settings, where conservation traditional inclinations remain very strong. Thus, explanatory models of the epileptic phenomenon may vary widely within the same region because of differences in cultural beliefs and the level of religious influence on individuals. Hence, addressing the gaps in knowledge, attitude, and practice (KAP) of epilepsy necessitates multifaceted and targeted approaches even in the same region.

In rural SE Nigeria and indeed in the country, the scarcity of qualified medical personnel means that the populace will continue to learn about epilepsy from different sources, which often fail to provide sufficient knowledge of the disease. It is not uncommon for dealers of local herbs to claim to have treatment for various neurological issues, including epilepsy. In doing so, they offer the victims erroneous and often harmful and stigmatizing explanations of epilepsy and its causes. Furthermore, because of the dearth of specialists in rural communities, people living with epilepsy (PLWE) may have other neurological, physical, and psychiatric co-morbidities (or complications), which may reinforce these explanations and beliefs about epilepsy.[11-13] Women and children experiencing cognitive difficulties or other limitations due to epilepsy or the side effects of anti-seizure medications (ASMs) may be regarded as lazy by their families, co-workers, and teachers.[13,14]

A study has demonstrated reduced health-related quality of life among children living with epilepsy in Enugu. The authors demonstrated a reduction in all domains of the pediatric quality of life instrument. Significant predictors documented in the study were age, gender, and socioeconomic class.[15] Other studies have shown that epilepsy-associated disability varied between rural and urban regions, with rural residents suffering greater disability. Furthermore, it has been shown that knowledge about epilepsy correlates with the attitude of the individual, and both influence the perceived social impact of the condition among affected persons.[16,17] However, we have demonstrated a dichotomy in attitude and knowledge in the community.[8] The understanding of the opinions of the rural community residents about epilepsy and its treatment is relevant to the reduction of the large treatment gap[18] and may offer novel educational approaches to reducing the impact of epilepsy in the community. Few studies have investigated the problems of understanding the knowledge and attitudes of the rural community residents toward epilepsy in SE Nigeria.[19] Health KAP may vary within the same region, hence the need for the index study.

It is not clear how the knowledge and attitude of rural residents toward epilepsy in SE Nigeria have changed over the years. The primary aim of this study was to determine the knowledge and attitude gap of rural community residents toward epilepsy. Related to this was the need to identify misconceptions about the disease that could constitute targets for community-based educational interventions.

MATERIALS AND METHODS

Study area

This study was conducted in Ugwuomu Village in Enugu South Local Government area of Enugu State. No reliable data on the population of the village were available at the time of the study. The village is located 20 km from the city center and about 4 km from the nearest semi-urban settlement. Ugwuomu has one primary school and one secondary school, which are also used by people from surrounding villages. There was a health center in the village at the time of the study. While most healthcare needs within the villages are addressed by auxiliary nurses, many people travel to the nearest semi-urban area for their healthcare needs. People can also access treatment from other government health institutions within the Enugu metropolis. Sources of drinking water are mainly well water or streams. A formal sewage disposal system is non-existent in the village, but several homes have either pit latrines or water closet systems. Ethical clearance was obtained from the ethics committee of the Enugu State University Teaching Hospital Enugu (ESUT/HREC/2018/07/542). A written informed consent was obtained from each participant before enrollment into the study, and the study was conducted according to the ethical principles of the Helsinki Declaration.

Study design and recruitment of participants

A house-to-house cross-sectional descriptive study was conducted to assess the KAP of epilepsy among the residents of the village [Figure 1]. The first phase of the study was community sensitization through meetings with elected community leaders. Additionally, announcements were made in churches and by the town announcer. The initial phase of the study lasted for 1

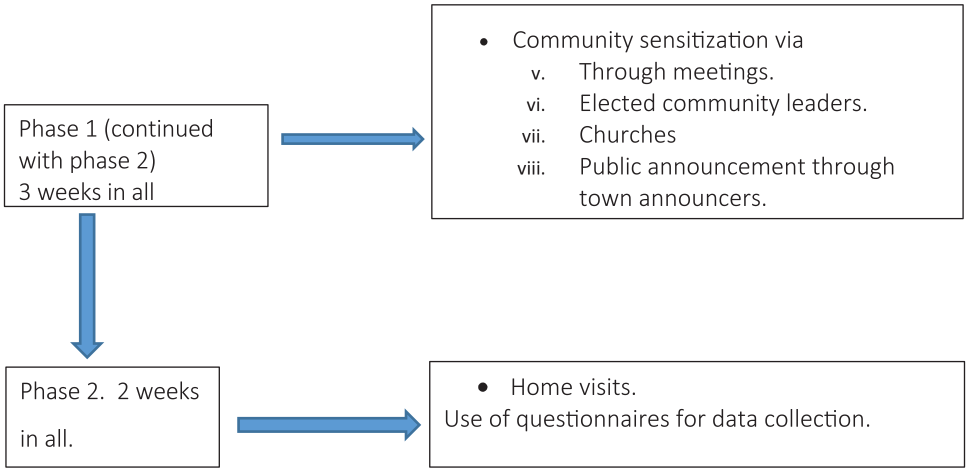

Figure 1 : Flow chart

week but continued into the second phase (3 weeks in total).

The second phase of the study involved visiting participants at their homes. Data collection was performed using a semi-structured questionnaire (mostly multiple-choice items). The questionnaire comprised three major sections: the first section contained general information about the respondents, such as age, sex, and related characteristics; the second section contained eight questions that dealt with general information on epilepsy, awareness, and perception of epilepsy; and the third section contained five questions that elicited responses to issues of treatment of epilepsy/seizures and attitude toward PLWE.[8,9] The questionnaire was designed in simple English to match the reading level of most persons who completed primary school. The level of education was defined as the last class completed by the subjects, with primary education being 6 years, secondary school 6 years, and tertiary education indicating 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 outpatient clinic of the Teaching Hospital. The average 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 "socialize," which may suggest going to pubs to drink in local parlance. The study 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 to them.

The section on knowledge had "YES" or "NO" options, and the attitude section had three response options consisting of "AGREE (A), DISGREE (D), AND UNDECIDED." For internal consistency of the instrument, Kuder–Richardson formula 20 (KR-20) and Cronbach's alpha were used. The reliability index was 0.7 (KR-20) and 0.87 (Cronbach's alpha). All the questionnaires were self-administered with guidance from the research assistants. All completed questionnaires were retrieved after they were filled. If the respondent could not read or write English, an Igbo translation was used. The items on the questionnaire were read out to the participants by the research assistants and their endorsed options were ticked. This questionnaire has also been validated and used previously in the region.[8,9]

Data analysis

Data were compiled, tallied, organized in frequency tables, and analyzed. Correct responses on knowledge were scored 1 and incorrect ones were scored 0. Total scores on knowledge were converted to percentages for further analysis. The average ages of men and women were compared using the *t* test statistic. Mean scores were compared using analysis of variance and *post hoc* analysis and the students *t* test where applicable. The knowledge gap was accessed by comparing the mean score in knowledge and attitude (practice). The level of significance was set at <0.05 in all analyses.

RESULTS

A total of 530 participants were interviewed and their data were analyzed. Most of them were females 332 (62.5%). The age range was 18–95 years (mean 43.6 ± 16.4 years). Females were slightly younger than males [males 45.2 ± 16.4 and females 42.6 ± 16.3 (*P*

Table 1: Gender distribution of the participants

Variable	Males	Females	Total	*P* value
Mean age	45.3 (16.4)	42.6 (16.3)	43.6 (16.4)	0.06
Median age	44.5	40	42.5	
Age group (years)				
18–29	37 (18.7)	72 (21.7)	109 (20.6)	
30–39	47 (23.7)	81 (24.4)	128 (24.2)	
40–49	36 (18.2)	80 (24.1)	116 (21.9)	
50–59	30 (15.2)	45 (13.6)	75 (14.2)	
60 and above	48 (24.2)	54 (16.3)	102 (19.2)	0.14
Level of education				
None/not indicated	24 (12.1)	28 (8.4)	52 (9.8)	
Primary	84 (42.4)	148 (44.6)	232 (43.8)	
Secondary	70 (35.4)	132 (39.8)	202 (38.1)	
Tertiary	20 (10.1)	24 (7.2)	44 (8.3)	0.29
Occupation				
Farming	52 (26.4)	127 (38.3)	179 (33.8)	
Business	26 (13.2)	59 (17.8)	85 (16.1)	
Teachers/civil servants	24 (12.2)	39 (11.7)	63 (11.9)	
Students	28 (14.2)	27 (8.1)	55 (10.4)	
Artisans	5 (2.5)	2 (0.6)	7 (1.3)	
Unemployed	62 (31.5)	78 (23.5)	140 (26.5)	
Total	198 (37.4)	332 (62.6)	530 (100)	<0.01

Table 2: Basic information on epilepsy

Questions	Yes
Have you heard about epilepsy before?	416 (78.5)
Do you know someone with epilepsy?	234 (44.2)
Do you have a relative with epilepsy?	184 (34.7)
Have you seen someone convulsing?	263 (49.6)
Sources of information	
Where did you get your information from?	
At home (family and relations)	166 (31.3)
At school (from teachers)	161 (30.4)
TV or radio or films	56 (10.6)
Books and newspapers	13 (2.5)
Hospital, doctors, or nurses	5 (0.9)
Not indicated	15 (3.8)
Not heard of epilepsy	129 (24.3)
Total	416 (100)

= 0.06)]. The gender distribution of age and other characteristics of the participants are shown in Table 1.

Most of the respondents (78.5%) had heard of epilepsy and most obtained this information at home 166 (31.3%) and at school 161 (30.4%). Only 5 (0.9%) of the respondents claimed that they got their information from health workers. Less than half of the respondents (44.2%) knew someone with epilepsy and 34.7% had a relative with epilepsy. Almost half of the participants had witnessed seizures in the past [Table 2].

Table 3: Knowledge about epilepsy[a]

Questions	Yes
In your opinion what should be done when someone is having a convulsion?	
Get the person away from harmful objects	290 (54.7)
Call a doctor or nurse	118 (22.3)
Put a spoon in his mouth	81 (15.3)
Hold him/her down to stop convulsing.	30 (5.7)
Do nothing but pray	10 (1.9)
Not indicated	1 (0.2)
What do you think is the cause of epilepsy?	
It is like any other diseases	376 (70.9)
It may be caused by witches or charms	87 (16.4)
It may be caused by injury to the brain	55 (10.4)
It is a type of madness	12 (2.3)
Which of the following may be a manifestation of convulsion?	
Loss of consciousness	270 (50.9)
Jerking of the body	179 (33.8)
Falls	42 (7.9)
Urinating on your body	32 (6)
Madness	6 (1.1)
Not indicated	2 (0.4)
Is epilepsy treatable?	
Yes	256 (48.3)
No	274 (52.7)
Who (where) do you think that people with epilepsy get treatment from?	
Doctors (hospital)	264 (49.8)
Herbalist	233 (44)
Churches	31 (5.8)
Others	1 (0.2)
Not indicated	1(0.2)

[a] Unanswered questions were counted as No

Knowledge of the actions to be taken when someone is convulsing is shown in Table 3. Most of the participants will either remove the person from harm 290 (54.7%) or call a health worker 118 (22.3%). About 23.3% would take wrong actions when they witness a seizure.

Regarding the participants' opinions on the causes of epilepsy, the majority 376 (70.9%) considered epilepsy as any other disease, 55 (10.4%) knew that epilepsy may be caused by a brain injury, and 87 (16.4%) thought that epilepsy may be due to charms [Table 3].

Participants' knowledge of manifestations and treatment of epilepsy is also presented in Table 3. Loss of consciousness 270 (50.9%) and jerking of the body 179 (33.8%) were the most recognized manifestations of epilepsy. Six participants (1.1%) believed that epilepsy may be manifested as madness. The views of the respondents on the treatability of epilepsy showed that less than half 256 (48.3%) knew that epilepsy is treatable, and almost the same proportion knew that epilepsy can be treated in hospitals. Herbalists 233

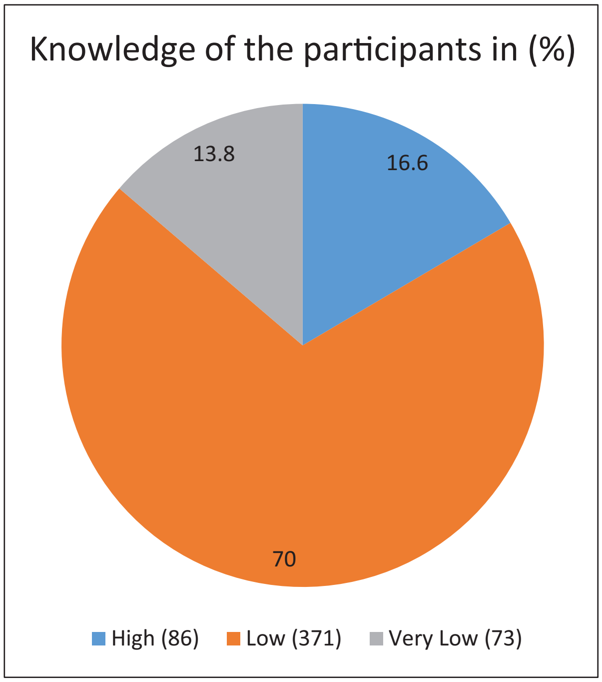

Figure 2: Distribution of the level of knowledge of the participants

(44%) and churches 32 (5.8%) are other places of treatment selected by the participants.

Figure 2 shows that the majority (70%) of the participants had a low level of knowledge, and another 13.8% had a very low level of knowledge. The mean score in knowledge in percentage points was low (35.5 ± 10.2%; range 0%–50%) [Table 4]. Knowledge was significantly higher in those aged 30–49 years ($P = 0.04$), those who have relatives suffering from epilepsy ($P < 0.01$), and individuals who have witnessed a seizure in the past ($P < 0.01$). There were no gender differences in their mean knowledge scores. Individuals who got their information from books/newspapers had the lowest score (33.1 ± 13.8%) [Table 4]. Furthermore, participants who have relatives with epilepsy and who have witnessed seizures in the past had higher levels of knowledge.

Attitude toward PLWE is shown in Table 5. About 63% agreed they would keep a friend with epilepsy, but only 41% would play with them and 32.8% agreed that they should have children. Generally, a positive attitude toward PLWE was less evident, with less than 50% showing positivity in all categories of questions asked, except in having PLWE as friends.

Most of the participants in this study had an acceptable attitude toward PLWE [very good attitude (14.2%) or a good attitude (41.9%); Figure 3 and Table 4]. The mean score of attitudes expressed in percentages was 51.9 ± 26.3% [Table 4]. Unlike the knowledge, the

Table 4: Mean scores in knowledge and attitude

Variables	Knowledge Mean (SD)	Attitude Mean (SD)
Males	35.7 (9.6)	48.9(23.1)
Females	35.4 (10.5)	50.6(24.2)
*P value	*0.44*	*0.36*
Age group(years)		
18−29	35.7 (9.8)	47.1 (24.7)
30–39	34.6 (10.9)	50.3 (22.4)
40–49	36.5 (10.7)	50 (22.1)
50–59	35.1 (9.1)	51 (26.2)
60 and above	35.7 (9.8)	51.8 (24.7)
**P value	*0.04*	*0.83*
Occupation		
Farming	32.8 (10.1)	52.6 (23.3)
Business	34.8 (11.4)	51 (23.1)
Teachers/civil servants	37.1 (9.1)	48.6 (25.1)
Students	38.2 (9)	52.2 (19.6)
Artisans	32.9 (11.1)	46.9 (22.4)
Unemployed	35.5 (10.1)	45.8 (25.7)
**P value	*0.13*	*0.95*
Level of education		
Primary	*36.1 (9.7)*	*50.3 (24.2)*
Secondary	*35.1 (10.3)*	*51.5 (23.5)*
Tertiary	*35.2 (11.1)*	*52.8 (15.9)*
Not indicated	*34.4 (10.7)*	*40 (26.8)*
P value	*0.63*	*0.04*
Source of information		
Home	35.1 (10.4)	50.6 (28.9)
Teachers	36.6 (9.4)	50.6 (21.4)
Television/radio/films	34.5 (11.6)	51.4 (22.6)
Books/newspapers	33.1 (13.8)	64.7 (18.4)
Hospital, doctors, and nurses	36 (5.5)	41.1 (11.1)
Not indicated	35.3 (9.8)	54.4 (30.5)
P value	0.74	0.34
I have heard of epilepsy	*35.9 (9.9)*	*49.2 (22.7)*
I have not heard of epilepsy	34.4 (10.7)	52.2 (26.6)
*P value	*0.17*	*0.12*
I know someone with epilepsy	36.5 (9.6)	49.2 (19.4)
I do not know someone with epilepsy	34.7 (10.5)	50.6 (26.8)
*P value	*0.1*	*0.12*
I have a relative with epilepsy	36.8 (9.1)	47.6 (18.9)
I do not have a relative with epilepsy	34.8 (10.6)	51.3 (25.9)
*P value	*<0.01*	*0.04*
I have witnessed a seizure in the past	36.6 (9.5)	47.6 (21.3)
I have not witnessed a seizure in the past	34.6 (35.5)	52.3 (25.8)
*P value	*<0.01*	*<0.01*
Total Mean (SD)	*35.5 (10.2)*	51.9 (26.3)

*T-test

**Kruskal–Wallis test

attitude was better among individuals who do not have relatives with epilepsy and those who have not witnessed seizures in the past. Females had a non-significant better attitude than males. Similarly, the attitude of older individuals was non-significantly higher. Attitude was worst among those who got information about epilepsy from healthcare workers [Table 4].

Table 6 shows Spearman's correlation and regression statistics of knowledge and attitude. Knowledge negatively correlated with witnessing a seizure in the past, while attitude correlated with having heard about epilepsy, having a relative with epilepsy, and witnessing a seizure in the past. Generally, knowledge of basic information about epilepsy positively correlated with attitude ($P < 0.01$). The important predictors of attitude in this study are shown in Table 6.

DISCUSSION

To the best of our knowledge, this is one of the few community-based surveys of KAP of epilepsy in a rural area in SE Nigeria. This study demonstrated unacceptable low levels of knowledge despite a positive attitude toward PLWE in the community. The index study showed a good representation of males and females, with even distribution across age groups and academic qualifications of the participants.

The rate of awareness of epilepsy was relatively low in this study (78.5%) compared with another study in the region where 90.3% of the respondents were aware of epilepsy as a disease.[19] In community-based studies in urban Nigeria, the awareness of epilepsy as a disease has remained relatively high, ranging from 73% to 100%.[8,19-21] Studies conducted among selected populations, such as teachers, secondary school, and undergraduate students, also revealed high rates of awareness of epilepsy as a disease.[9,10,19-23] In rural Ethiopia, Molla *et al*.[24] documented that 73% of the populace surveyed knew about epilepsy, similar to the index study. Knowledge of epilepsy in rural and urban areas appears to be similar, as suggested by some of the studies cited above. Reasons for this may include the nature of epilepsy, which is culturally entrenched in most communities. Furthermore, the widespread use of radio, the Internet, and other electronic media might have played some role.

Sources of information about epilepsy vary widely in studies conducted within Nigeria and other SSA countries.[9,18,24,25] Different sources of information tend to provide varying quality of knowledge about epilepsy. Even among healthcare workers, the quality of information may vary depending on the informant and the quality of training they have been exposed to. Thus, the information provided by healthcare workers may vary depending on the informant (doctor, nurse, or pharmacist).[26-28] Among teachers (who may also act as sources of information), knowledge of epilepsy tends to vary widely.[14,19,21] Obtaining information about epilepsy from different sources may be the reason for the discrepancy between knowledge and attitude seen in some studies.[8,9] Nevertheless, it offers a wide spectrum of opportunities for health educators to disseminate information about health-related issues, including epilepsy.[29] The KAP of epilepsy in a community may be related to their source of information.[30]

Using a similar questionnaire, we reported that 36% of students surveyed within the city obtained their information from the electronic media compared to 10.6% in the index study.[9] Other studies have also reported varying proportions of people obtaining their information about epilepsy from different sources.[16,24,25] In most studies, the majority of respondents claimed that they got their information from their families and friends.[8,9,25,31] Younger people were more likely to use modern means of communication than older individuals.[9]

In the index study, almost half of the participants had witnessed seizures in the past and 44.2% knew someone with epilepsy. This is rather smaller than expected, considering that febrile seizures and epilepsy are relatively common in the community.[32] In Uganda, about 84.9% of people interviewed said they had seen someone convulsing and 34.7% had acquaintances with epilepsy.[31] Other studies in the region reported higher rates of witnessing seizures compared with the index study.[8,9] The proportion of rural residents who knew someone with epilepsy was comparable to the proportion of secondary school students who knew someone with epilepsy in the same state.[9] Witnessing a seizure in the past may be related to high rates of family history of epilepsy as reported in previous studies from the area, although some believe this may be underreported.[33,34] Another possible reason for this high rate may be related to the cultural definition of who is a "relative," which may include anyone in your village.

Like the other studies conducted in the region, nearly 77% of the participants offered appropriate help [getting the person away from harm (54.7%) and calling a doctor or nurse (22.3%)]. This is similar to other studies where a good proportion of the people will offer some form of orthodox medical help to PLWE.[8,9,20,31] The need to stop putting objects into the mouth of someone convulsing should always be re-emphasized in public health education and lectures because of the possible negative consequences associated with them.

Most of the participants regarded epilepsy as a medical disorder (a disease). This contrasts with earlier studies that reported much lower proportions.[8,9,31] Acknowledging epilepsy as a medical disorder may be related to the proportion that has relatives with epilepsy.[11,25,26,35-37] The understanding of our respondents of the term "disease" should be taken with some caution, as cultural connotations and definitions of the term "disease" may vary. Thus, epilepsy as a disease may be attributed to bacteria, urinary tract infections, and even spiritual causes. For example, in SE Nigeria. epilepsy may also be regarded as a "family disease," hence the high levels of courtesy stigma associated with it.[13,38] The understanding that epilepsy is a medical disorder strongly agrees with the actions most respondents would take when they see someone convulsing, with 77% of them responding correctly.

This study confirms the persisting belief that epilepsy is from "spiritual forces" or a type of madness. The proportion of individuals with this belief varies in different studies.[3,8,37] For example, Kaddumukasa *et al.*[31] reported that 24.5% of their respondents believed that epilepsy was a type of madness. In this study, almost half of the respondents believed in treating PLWE in herbalist homes, churches, and other places. While this finding suggests a growing level of knowledge about epilepsy care among the populace in SE Nigeria, it also brings out the persisting poor knowledge. In rural areas, where the prevalence of epilepsy is presumed to be high, it is unacceptable that almost half of the adults will send PLWE for unorthodox treatment. The choice of unorthodox treatment in this study is lower than the 66% reported by Kabir *et al.*[37] in northern Nigeria. Among urban residents in Enugu, about 64.3% of adults would prefer unorthodox treatment or a mixture of both orthodox and unorthodox treatments.[8] Thus, the index study suggests some positive impacts of public health education in the community. This is also supported by the fact that loss of consciousness and jerking were rightly recognized as manifestations of seizures by most respondents. Although clinical manifestations of epilepsy were recognized by most of the respondents, considering the high prevalence of seizures, it is expected that signs like loss of consciousness and jerking of the body should have been known by all adults. As earlier suggested, this may be related to the source of information and the quality of information available to the populace. Our finding is similar to previous studies where most respondents knew at least one clinical manifestation of epilepsy; however, the proportion of respondents who recognized different symptoms varied widely.[8,24,37]

In Figure 1, 83.8% of the respondents had low (70%) or very low (13.8%) levels of knowledge. Unacceptable low levels of knowledge are almost universal in all community-based studies on knowledge attitude and practice of epilepsy in SSA[8,9,20,24,31] despite all these studies using different questionnaires and methodologies. In Ethiopia, Teferi and Shewangizaw[38] reported that 59.8% of their respondents had good knowledge of epilepsy; a proportion which in our opinion is still not acceptable considering the high prevalence of epilepsy in SSA.

In this study, the mean score in knowledge was only significantly different in people aged 30–49 years. Reasons for this may be beyond the scope of the index study; however, people within this age limit are likely to be more traveled, better educated (people with tertiary education had significantly better attitudes), and more likely to have access to better information about epilepsy. Factors like gender, occupation, and source of information did not affect the level of knowledge. If the mean score in knowledge did not differ with factors, such as the level of education and the source of information, it clearly shows the need to introduce formal health education in schools that will address both infectious and non-infectious diseases, such as epilepsy. Furthermore, proper public health awareness programs should involve a recognized professional workforce, such as teachers, health workers, and even farmers in rural areas. The quality of information disseminated should also be standardized by training stakeholders with standardized training manuals; otherwise, the low level of knowledge in the community will persist. Studies have shown that well-designed school, community, and media campaigns can be effective and efficient means of disseminating health information and advocating changes in attitudes and social policy.[39,40] Unless proper measures are taken, the quality of information disseminated in health programs may not necessarily be up to the required standard.[41] For example, teachers' knowledge about epilepsy has not always been consistently high in several studies.[42] Health workers without training will also become a source of wrong information about epilepsy, as they have been known to harbor misconceptions and stigmatize people with epilepsy.[27]

Participants who had witnessed seizures in the past had significantly higher scores in knowledge than those who did not. This is also true for those who

Table 5: Attitude toward epilepsy*

Questions	Strongly agree**	Agree	Disagree	Strongly disagree	No answer
I would like to keep a friend with epilepsy	**266 (50.2)**	**68 (12.8)**	57 (10.8)	67 (12.6)	72 (13.6)
I can play with someone with epilepsy	**92 (17.4)**	**125 (23.6)**	202 (38.1)	46 (8.7)	65 (12.3)
I believe people with epilepsy should marry	**102 (19.2)**	**151 (28.5)**	181 (34.2)	29 (5.5)	67 (12.6)
I would not employ or work with someone with epilepsy	137 (25.8)	121 (22.8)	**160 (30.2)**	**41 (7.7)**	**71 (13.4)**
I do not believe people with epilepsy should have children	133 (25.1)	144 (27.2)	**137 (25.8)**	**39 (7.4)**	**77 (14.5)**
I can marry someone with epilepsy if need be	**106 (20)**	**130 (24.5)**	182 (34.3)	46 (8.7)	66 (12.5)
I would like to help people with epilepsy	**116 (21.9)**	**124 (23.4)**	176 (33.2)	41 (7.7)	73 (13.8)
I would like to get more information about epilepsy	**133 (25.1)**	**122 (23)**	173 (32.6)	37 (7)	65 (12.3)

*Unanswered questions were considered as 'No'.

**Right attitude

Bold letter stands for right attitude

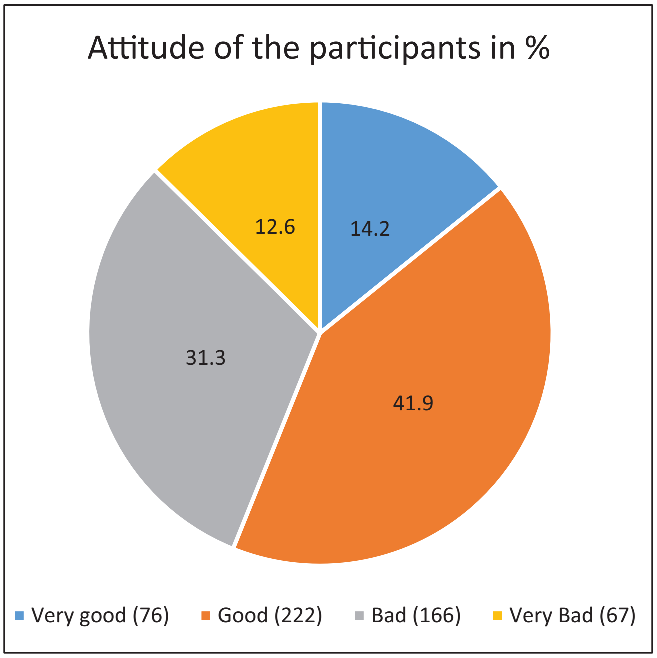

Figure 3: Distribution of the attitude of the participants toward PLWE

have relatives with epilepsy. It is possible that because of close involvement with PLWE, these respondents sought better information. Furthermore, in the quest to help their relatives, people are likely to be eager to seek accurate knowledge. This finding is similar to what we reported in a similar study among urban residents.[8,9] Because witnessing a seizure improved the knowledge of the respondents, demonstrative public health programs with audiovisuals and playlets should be part of public health education in fostering the right knowledge of epilepsy. This approach to public health education has been previously reported to be beneficial.[43,44] Developing such interventions to help bridge the knowledge gap in epilepsy is needed in rural Nigeria.

The mean score in attitude was 51.9%, just above the "poor attitude category." Overall, 43.9% had a very negative attitude toward PLWE. Like knowledge, attitude did not vary significantly within any group analyzed [Table 4], except among those who had been exposed to PLWE. Attitude was also better in those who attained tertiary education. As suggested earlier, because of exposure to the wider population, this group is more likely to have witnessed seizures. Studies from SSA have mostly reported that more people have a positive attitude toward PLWE in each community,[8,24,25,31,45] which contrasts with the level of knowledge of epilepsy within these communities, thus suggesting that in most people their behavior toward PLWE may be dictated by cultural and religious norms rather than accurate knowledge of the disease.[46] Teferi *et al.*[38] reported that 35.6% of their rural residents had a negative attitude toward PLWE in rural Ethiopia.

It is interesting to note that participants who did not have relatives living with epilepsy and who had not witnessed seizures in the past had better scores in attitude. Personal experiences have molded their attitude negatively. It has been documented that people with personal experience tended less to adopt an antipathetic and distancing attitude toward individuals suffering from mental disorders.[47] However, findings from the index study suggest otherwise. An explanation for this behavior may be linked to the responses of the participants to attitude questions posed in this study. Apart from those who accepted to befriend PLWE, more than 50% (63% of the participants) had a negative response in all categories of questions asked. Therefore, it seems that people exposed to PLWE might have developed repulsion to the challenges posed by caring for people with epilepsy or possibly to the sigma that they experienced. Whatever may be the reason, as long as the knowledge is poor, the attitude is not likely to be correct, cultural norms notwithstanding.

The correlation and regression statistics reflect the need to focus on awareness creation to improve the knowledge of epilepsy in our communities if meaningful changes in the attitude of the populace must be seen. As earlier

Table 6: Correlation statistics of knowledge and attitude

Variables	Knowledge		Attitude	
	r	***P* value**	*r*	***P* value**
Age	−0.08	0.85	0.05	0.23
Sex	−0.01	0.91	0.07	0.13
Level of education	−0.01	0.77	0.07	0.09
I have heard about epilepsy	−0.06	0.18	0.1	**0.02**
I know someone with epilepsy	−0.08	0.06	0.09	**0.04**
I have a relative with epilepsy	−0.08	0.08	0.14	**<0.01**
I have witnessed a seizure in the past	−0.09	**0.047**	0.15	**<0.01**
Attitude	0.32	**<0.01**	—	—
	Knowledge ($R^2 = 0.11$)		Attitude ($R^2 = 0.11$)	
	B	*P* value	*β*	*P* value
I have heard about epilepsy	—	—	0.37	0.28
I know someone with epilepsy	—	—	−0.75	0.09
I have a relative with epilepsy	—	—	0.89	**0.04**
I have witnessed a seizure in past	−0.19	**0.03**	5.18	0.07
Knowledge score	—	—	0.74	<0.01

Bold letters are significant values

suggested, demonstrative programs using audiovisuals will go a long way in improving the KAP of epilepsy in rural areas and the community in general.

Limitations

The present study has some limitations. The associations may not necessarily be causal. Furthermore, if the questionnaire was completed in front of the interviewers or a group, it might affect the responses given by the participants. Despite these limitations, this study has provided a baseline for comparison with future studies and a reason for clinicians to become more active in disseminating accurate information about epilepsy. It has also demonstrated the need to design focused educational interventions for public health educators in the community as well as for health policymakers.

CONCLUSION

The KAP of epilepsy may be just modest in rural SE Nigeria and is fraught with misconceptions. However, there have been modest improvements in some areas of knowledge and attitude compared with previous studies. Therefore, multifaceted educational interventions are needed to improve the awareness and understanding of epilepsy in the community, targeting public health educators, community leaders, and the masses.

Acknowledgements

We acknowledge, the help and support of the community leaders, church leaders, and nurses at Ugwuomu.

Authors contribution

BAE and FE conceptualized the study. CCO, OPN, and OBA were involved in data collection. BAE performed the statistical analysis and drafted the initial manuscript that was reviewed by all authors. All the authors revised the manuscript for intellectual content and gave final approval for its publication.

Ethical approval

Ethical clearance was obtained from the ethics committee of the Enugu State University Teaching Hospital Enugu (ESUT/HREC/2018/07/542).

Informed consent

A written informed consent was obtained from each participant before enrolment into the study.

Declaration of Helsinki

The study was conducted according to the principles of the Declaration of Helsinki.

Availability of research data

Authors are available and ready to supply the data upon any request through the corresponding author.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Ezeala-Adikaibe BA, Orjioke C, Ekenze O, Ijoma U, Onodugo O, Molokwu O, *et al.* Prevalence of active convulsive epilepsy in an urban slum in Enugu South East Nigeria. Seizure 2016;35:100-5.
2. Onwuekwe I, Ezeala-Adikaibe B. Prevalence and distribution of neurological disease in a neurology clinic in Enugu, Nigeria. Ann Med Health Sci Res 2011;1:63-7.

3. Osakwe C, Otte WM, Alo C. Epilepsy prevalence, potential causes and social beliefs in Ebonyi state and Benue state, Nigeria. Epilepsy Res 2014;108:316-26.
4. Nwani P, Nwosu M, Asomugha L, Enwereji K, Arinzechi E, Ogunniyi A. Epidemiology of active epilepsy in a suburban community in Southeast Nigeria: A door-to-door survey. Niger J Clin Pract 2015;18:527.
5. Watila MM, Balarabe SA, Komolafe MA, Igwe SC, Fawale MB, Otte WM, *et al*. Epidemiology of epilepsy in Nigeria: A community-based study from 3 sites. Neurology 2021;97:e728-38.
6. Paul A, Adeloye D, George-Carey R, Kolcic I, Grant L, Chan KY. An estimate of the prevalence of epilepsy in sub–Saharan Africa: A systematic analysis. J Glob Health 2012;2:20405. doi:https://doi.org/10.7189/jogh.02.020405.
7. Preux P-M, Druet-Cabanac M. Epidemiology and aetiology of epilepsy in sub-Saharan Africa. Lancet Neurol 2005;4:21-31.
8. Ezeala-Adikaibe BA, Achor JU, Nwabueze AC, Agomoh AO, Chikani M, Ekenze OS, *et al*. Knowledge, attitude and practice of epilepsy among community residents in Enugu, South East Nigeria. Seizure 2014;23:882-8.
9. Ezeala-Adikaibe BA, Achor JU, Onwukwe J, Ekenze OS, Onwuekwe IO, Chukwu O, *et al*. Knowledge, attitude and practice towards epilepsy among secondary school students in Enugu, Southeast Nigeria. Seizure 2013;22:299-302.
10. Anene-Okeke CG, Anosike C, Aluh DO, Odo LE. Secondary school students' knowledge, attitude, and practices towards epilepsy in Nsukka city, Enugu state. Epilepsy Behav 2020;112:107441.
11. Ezeala-Adikaibe B, Nwazor E, Onodugo O, Okoye I, Ekochin F, Ijoma U, *et al*. Pattern, frequency, and correlates of seizure-related headache in Enugu, Southeast Nigeria. Int J Med Health Dev 2022;27:143.
12. Ezeala-Adikaibe BA, Achor JU, Onwukwe J, Agomoh A. Seizure related injuries among outpatients in two tertiary hospitals in Southeast Nigeria. Ann Trop Med Public Health 2012;5:340-3.
13. Baskind R, Birbeck GL. Epilepsy-associated stigma in sub-Saharan Africa: The social landscape of a disease. Epilepsy Behav 2005;7:68-73.
14. Paschal A, Ablah E, Wetta-Hall R, Molgaard C, Liow K. Stigma and safe havens: A medical sociological perspective on African-American female epilepsy patients. Epilepsy Behav 2005;7:106-15.
15. Aronu AE, Uwaezuoke N, Chinawa JM, Bisi-Onyemaechi A, Ojinnaka NC. Health-related quality of life in children and adolescents with epilepsy in Enugu: Need for targeted intervention. Niger J Clin Pract 2021;24:517-24. doi:10.4103/njcp.njcp_457_20.
16. Akpan MU, Ikpeme EE, Utuk E. Teachers' knowledge and attitudes towards seizure disorder: A comparative study of urban and rural school teachers in Akwa Ibom State, Nigeria. Niger J Clin Pract 2013;16:365-70.
17. Millogo A, Ngowi AH, Carabin H, Ganaba R, Da A, Preux P-M. Knowledge, attitudes, and practices related to epilepsy in rural Burkina Faso. Epilepsy Behav 2019;95:70-4.
18. Nwani PO, Nwosu MC, Enwereji KO, Asomugha EO, Arinzechi EO, Oguniyi AO. Epilepsy treatment gap: Prevalence and associated factors in Southeast Nigeria. Acta Neurol Scand 2013;128:83-90.
19. Nnebue CC, Nwazor EO, Nwani PO, Ifezulumba CO, Nwani PO, Ewa EO, *et al*. Knowledge, beliefs and misconceptions about epilepsy and its treatment in a rural community in South-Eastern Nigeria. Orient J Med 2023;35:45-55.
20. Fehintola FO, Olowookere SA, Adegbenro CA, Afolabi TO, Oladapo V, Oladimeji AO, *et al*. Knowledge of and attitude towards epilepsy among women in Ile-Ife, Nigeria. Sudan J Med Sci2019;14:31-44.
21. Ojinnaka NC, Aronu AE, Ojinnaka GC, Uwaezuoke NA, Bisi-Onyemaechi AI. Health-seeking behavior of care-givers of children with epilepsy in a resource-poor country. Acta Sci Neurol 2019;2:1-5.
22. Mustapha AF, Odu OO, Akande O. Knowledge, attitudes and perceptions of epilepsy among secondary school teachers in Osogbo South-West Nigeria: A community based study. Niger J Clin Pract 2013;16:12-8.
23. Frank-Briggs AI. Perceptions of epilepsy among school teachers in Port Harcourt, Nigeria. Highl Med Res J 2013;13:94-7.
24. Molla A, Mekuriaw B, Habtamu E, Mareg M. Knowledge and attitude towards epilepsy among rural residents in southern Ethiopia: A cross-sectional study. BMC Public Health 2021;21:420.
25. Sidig A, Ibrahim G, Hussein A, Rahman AA, Yassien F, Hamad A, *et al*. A study of knowledge, attitude, practice towards epilepsy among relative of epileptic patients in Khartoum state. Sudan J Public Health 2009;4:393-8.
26. Cumbe VFJ, Greene C, Fumo AMT, Fumo H, Mabunda D, Gouveia LC, *et al*. Community health workers' knowledge, attitudes, and practices towards epilepsy in Sofala, central Mozambique. Int J Environ Res Public Health 2022;19:15420.
27. Vancini RL, Benedito-Silva AA, Sousa BS, Silva SG, Souza-Vancini MI, Vancini-Campanharo CR, *et al*. Knowledge about epilepsy among health professionals: A cross-sectional survey in São Paulo, Brazil. BMJ Open 2012;2:e000919.
28. Okoye EC. Knowledge and attitude of health science students towards epilepsy in a Nigerian University. Afr J Biomed Res 2019;22:151-6.
29. Burns DM. Use of media in tobacco control programs. Am J Prev Med 1994;10:3-7.
30. Dedeken P, Muhumuza SN, Sebera F, Umwiringirwa J, Bitunguhari L, Tierens H, *et al*. Long-term impact of single epilepsy training on knowledge, attitude and practices: Comparison of trained and untrained Rwandan community health workers. Int J Public Health 2021;66:645598.
31. Kaddumukasa M, Kakooza A, Kayima J, Kaddumukasa MN, Ddumba E, Mugenyi L, *et al*. Community knowledge of and attitudes toward epilepsy in rural and urban Mukono district, Uganda: A cross-sectional study. Epilepsy Behav 2016;54:7-11.
32. Tebeila ND, Dangor Z, Madhi SA, Cutland C, Groome MJ. Incidence of febrile seizures and associated factors in children in Soweto, South Africa. S Afr Med J 2021;111:796-802.
33. Ottman R, Barker-Cummings C, Leibson CL, Vasoli VM, Hauser WA, Buchhalter JR. Accuracy of family history information on epilepsy and other seizure disorders. Neurology 2011;76:390-6.
34. Dabilgou AA, Dravé A, Kyelem JMAW, Kinda F, Napon C, Millogo A, *et al*. Knowledge, attitudes and practices concerning epilepsy among nurses and midwives working in primary health care settings in Ouagadougou of Burkina Faso. Acta Epileptol 2023;5:12. https://doi.org/10.1186/s42494-023-00123-6.
35. Gedefa M, Wolde T, Solomon G. Knowledge, attitudes and practices with respect to epilepsy among preparatory school students in Mekelle city, Ethiopia. Int J Collab Res Intern Med Public Health 2012;4:203-15.
36. Shihata SS, Abdullah TS, Alfaidi AM, Alasmari AA, Alfaidi TM, Bifari AE, *et al*. Knowledge, perception and attitudes toward epilepsy among medical students at King Abdulaziz University. SAGE Open Med 2021;9:2050312121991248.

37. Kabır M, Iliyasu Z, Abubakar IS, Kabir AU, Farinyaro AU. Knowledge, attitude and beliefs about epilepsy among adults in a Northern Nigerian urban community. Ann Afr Med 2005;4:107-112.
38. Teferi J, Shewangizaw Z. Assessment of knowledge, attitude, and practice related to epilepsy: A community-based study. Neuropsychiatr Dis Treat 2015;11:1239-46. https://doi.org/10.2147/NDT.S82328.
39. Chukwuyere AE, Nwanneka OI, Chukwudebelu CC, Chidiebere EB. Librarians' use of social media in disseminating health information on COVID-19. Int J Res Rev 2020;7:443-54.
40. Musa EH, Agboola AK. Perception of social media use in disseminating health-related academic information in public health schools in Minna, Nigeria. Int J Electron Healthc 2020;11:170.
41. Ashoorkhani M, Gholami J, Maleki K, Nedjat S, Mortazavi J, Majdzadeh R. Quality of health news disseminated in the print developing countries: A case study in Iran. BMC Public Health 2012;12:627.
42. Jones C, Atkinson P, Helen Cross J, Reilly C. Knowledge of and attitudes towards epilepsy among teachers: A systematic review. Epilepsy Behav 2018;87:59-68.
43. Goad M, Huntley-Dale S, Whichello R. The use of audiovisual aids for patient education in the interventional radiology ambulatory setting: A literature review. J Radiol Nurs 2018;37:198-201.
44. Fitri R, Fitriani I. Effectiveness of health education using audio-visual media on changes in adolescent knowledge and attitudes about obesity in SMPN 1 Pekanbaru. In Proceedings of the Third Andalas International Public Health Conference, AIPHC 2019, 10-11th October 2019, Padang, West Sumatera, Indonesia; EAI: Padang, Indonesia, 2020.
45. Maze MJ, Bassat Q, Feasey NA, Mandomando I, Musicha P, Crump JA. The epidemiology of febrile illness in sub-Saharan Africa: Implications for diagnosis and management. Clin Microbiol Infect 2018;24:808-14.
46. Kahissay MH, Fenta TG, Boon H. Beliefs and perception of ill-health causation: A socio-cultural qualitative study in rural North-Eastern Ethiopia. BMC Public Health 2017;17:124.
47. Angermeyer MC, Matschinger H. The effect of personal experience with mental illness on the attitude towards individuals suffering from mental disorders. Soc Psychiatry Psychiatr Epidemiol 1996;31:321-6.