



Effect of a training program on the knowledge and attitude of special education trainee-teachers on epilepsy and seizure disorders in Oyo, Southwest Nigeria

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Abstract

Background: Children with Intellectual disabilities are more likely to experience seizure disorder therefore, their teacher's knowledge about epilepsy is important in case a student experiences seizure in school. **Methodology:** This study was conducted among 40 trainee-teachers. After completing baseline questionnaires on knowledge, attitude and first aid management of epilepsy, the participants received training on epilepsy for 2 hours per week for three weeks. Post intervention data was collected one week after the last intervention session. **Results:** Fifty percent had heard about epilepsy, 17.5% knew someone who had epilepsy and 40% claimed to have witnessed an epileptic seizure. The intervention resulted in statistically significant improvements in participants' knowledge of epilepsy (Pre-Post Mean = 6.43 vs 10.89, $p = 0.001$), more positive attitude towards persons with epilepsy (Pre-Post Mean = 10.68 vs 15.16, $p = 0.001$), and more awareness of first aid management of seizure (Pre-Post Mean = 3.42 vs 4.61, $p = 0.001$). About 87% of the participants indicated they were very satisfied with the training, 90.9% were willing to come for further training, and 72.7% would recommend the training to others. **Conclusion:** The epilepsy training improved the trainee-teachers knowledge, attitude and awareness of first aid management of epilepsy. This emphasizes the potential benefit of incorporating an epilepsy tailored intervention programme into teachers' training curricula.

Keywords: Epilepsy, Intervention, Training, Teachers, Nigeria

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1. Introduction

Epilepsy is a chronic brain disorder characterised by intermittent, often unpredictable seizures with associated significant psychological and social consequences for everyday living (Fisher et al., 2005). Epilepsy is the most

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common non-infectious neurological disease of childhood in low and low-middle-income countries, and its incidence is highest in the first decade of life, a period during which children begin and complete a critical period of social and educational development (Bishop *et al.*, 2005). It is estimated that epilepsy affects approximately 50 mn people worldwide, 40 million of which live in low and middle-income countries (World Health Organisation, 2001).

In Nigeria, the prevalence of epilepsy is estimated to be 20.8/1000 in rural and 4.7/1000 in semi-rural areas (Osakwe *et al.*, 2014). Although little is known about the exact published prevalence of epilepsy among students in Nigeria, it is likely to be lower in comparison to high-income countries, because stigma arising from misconceptions about the condition keeps students with epilepsy away from school (Danesi *et al.*, 1981; cited in Eze *et al.*, 2015). Based on the World Report on Disability (2011), approximately 25 million Nigerians live with a disability (including people living with epilepsy) with 3.6 million of them having very significant difficulties in functioning (WHO, 2001). Across the population persons with special needs, epilepsy prevalence rate of 26% has been reported among those with ID as a whole, though this average figure obscures the fact that prevalence of epilepsy increases in line with increasing severity of ID (Ring, 2013). Amongst those with mild to moderate ID lifetime epilepsy prevalence has been reported at between 6 and 15%. In those with severe ID epilepsy occurs in around 25% whilst epilepsy is reported in more than 50% those with profound ID (IQ<20). Particularly high rates of epilepsy are reported in some specific ID syndromes (Ring, 2013). For instance, in Rett and Angelman syndromes prevalence rates for epilepsy of 80% or more are reported. Not only is epilepsy more common in those with ID than in the rest of the population: it tends to have a worse prognosis, with lower rates of seizure freedom and high rates of multiple antiepileptic drug use, incurring more side-effects and higher treatment costs (Pennington *et al.*, 2012).

Social discrimination, negative attitudes, and stigma against people with epilepsy are often more devastating and harmful than the disease itself (Eze *et al.*, 2015). These issues arise from misconceptions about the disease, with the public tending to be frightened about helping an individual having a seizure (Herrmann *et al.*, 2016). Although, the bill prohibiting discrimination against people living with disabilities in Nigeria has recently been signed into law after 9 years of relentless advocacy (Ewang, 2019). Teachers' knowledge about and attitudes towards epilepsy can have a direct impact on school children with epilepsy in terms of school performance, social skills development, and post-school success in employment, social skills, and social network development (Eze *et al.*, 2015).

Unfortunately, studies conducted in Nigeria have reported low knowledge and negative attitudes, poor first aid skills and management towards children with epilepsy among teachers in mainstream schools (Owolabi *et al.*, 2013). Special education training is still at the stage of infancy in Nigeria, the current study site is the only known institution in sub-Saharan Africa providing training for teachers of special needs students. Anecdotal reports and a needs assessment of the curriculum showed that it lacks training on important comorbidities such as epilepsy. Hence, the need to carry out this initial investigation on the effects of a training on the knowledge and attitude of undergraduates who are training to become teachers (hereafter referred to as trainee-teachers) who were attending a College of education in Oyo, South West Nigeria.

2. Methodology

2.1. Study location

The study was conducted at Federal College of Education (Special) Oyo, Oyo State, Nigeria. This is the only College of Education in sub-Sahara Africa that train teachers to cater for the educational needs of children with special needs. It is a 3 year program in areas such as intellectual disability, visual and hearing impairment, and communication disorders. A quick needs assessment of the curriculum revealed that there were no provisions for training on common comorbidities such as epilepsy.

2.2. Study design

The design was a pre-post intervention study, without a control group. Participants were 200 level (2nd year) trainee teachers in Intellectual Disability department who agreed to participate in the study, following a

detailed explanation about the study. Trainee teachers who are visually impaired, hearing impaired and those in 100 and 300 level were excluded from the study.

2.3. Sample

The sample size was calculated using the formula described by Wade (1999), based on this formula, a sample size of 32 was identified as sufficient to identify a pre-post difference of up to 0.5 standard deviation in knowledge about epilepsy with 80% power and 5% level of significance. The sample size was increased by 20%, to account for possible dropout rate, which may be due to academic demands on the trainee-students' time.

2.4. Study instruments

The following self-completed questionnaires were used for the study:

Socio-demographic Questionnaire: The socio-demographic questionnaire was used to elicit information on age, gender, marital status, close contact with persons with epilepsy.

The Knowledge of Epilepsy Questionnaire (KOEQ): This is a 16-item questionnaire adapted from other previous studies of epilepsy (Krishnaiah *et al.*, 2016; Teferi and Shewangizaw, 2015) including in Nigerian schools (Ani *et al.*, 2011). The questionnaire covers a series of factual statements about epilepsy such as the nature of seizures and the aetiology – including beliefs about whether the condition is caused by evil spirits or whether it is infectious. The students answered “yes” or “no” or “don’t know”. The results were analysed categorically in line with the latter answers. In addition, the correct responses were summed to create a “Knowledge Scale” such that a higher score indicated better knowledge. The Knowledge Scale was analysed as a continuous measure.

Attitudes towards Epilepsy Questionnaire (AEQ): The trainee-students' attitude towards epilepsy was assessed by a ten-item social distance questionnaire adapted from previous studies of attitude to epilepsy in Nigeria (Ani *et al.*, 2011; Adewuya *et al.*, 2006). The items had a “yes” or “no” or “don’t know” response format. The results were analysed categorically in the latter format. In addition, correct responses were summed to create an “Attitude Scale” such that a higher score indicates more positive attitude. The “Attitude Scale” was analysed as a continuous measure.

Awareness of first aid towards a child having seizures: This was measured with 7 questions to assess the participants' awareness of the appropriate first-aid procedures if they were to come across a child having an epileptic seizure. The questions were adapted from good practices recommended by World Health Organisation (https://www.who.int/mental_health/neurology/epilepsy/epilepsy_global_toolkit.pdf?ua=1) and Epilepsy Society (<https://www.epilepsysociety.org.uk/seizure-first-aid#.XCepm1X7TIU>) as well as other studies (Goel *et al.*, 2013). Respondents indicated “yes”, “no” or “don’t know”. The first aid questions were analysed categorically. In addition, the correct answers summed and analysed continuously.

Client satisfaction questionnaire: A 10 item client satisfaction questionnaire was adapted from Atkinson *et al.* (2004). Seven of the items were scored on a scale of 1-4 likert scale, while 3 questions were open ended to gather responses about what the participants liked, disliked and would recommend to be improved about the intervention.

2.5. Ethical considerations

Approval was obtained from the Oyo State Ministry of Health Ethical Review Committee, Ibadan, Oyo State. Permission was also obtained from the Head of Department of intellectual disability at Federal College of Education Special Oyo and only trainee teachers who gave written consent were included in the study.

2.6. Study procedure

The study was publicised among students in the second year of trainee ID Department. The first 40 volunteers who met the inclusion criteria and provided consent were selected. A baseline measure comprising the study questionnaires (except satisfaction questionnaire) was completed on the first day prior to start of the intervention. The intervention was delivered by the researchers as 2 hour sessions once a week, over three weeks. The

students were encouraged to attend all three sessions. The sessions were fitted into gaps in the students' timetable to ensure they did not miss out on their other studies. Post intervention measures comprising the study questionnaire and the satisfaction questionnaire were repeated a week after the last (third) intervention session. All 40 students attended the 3 intervention sessions but two were not present to complete the post-intervention measures.

2.7. Intervention

The intervention was adapted from existing training packages on epilepsy such as The World Health Organisation Epilepsy tool kit (https://www.who.int/mental_health/neurology/epilepsy/epilepsy_global_toolkit.pdf?ua=1) other epilepsy organisations such as Epilepsy Society (<https://www.epilepsysociety.org.uk/seizure-first-aid#.XCepm1X7TIU>) as well as manuals used in previous studies in Nigeria (Igbini, 2018). The intervention was delivered in a group format which the students are used to as their normal teaching format. The sessions included power point slides presentations, discussions, quiz, video demonstrations, and role play. The first session covered information about epilepsy such as seizure types, myths and beliefs associated with the condition. The second session covered first aid procedures for persons having a seizure, as well as a review of the information in the first session. The third and the last session reviewed the materials covered in the first two sessions and role play.

2.8. Data analysis

The data was cleaned and coded for analysis with Statistical Package for the Social Sciences (SPSS version 20) software. Socio-demographic details of the participants are presented with numbers and percentages for categorical variables (e.g., gender) and Mean and Standard Deviation for continuous measures (e.g., age). Comparison of the effect of the intervention was carried out using Paired T Tests comparing the "Knowledge of Epilepsy Scale" and "Attitude to Epilepsy Scale", and the "Knowledge of first aid Scale" at baseline, and post intervention. The satisfaction questions are presented with numbers and percentages while the qualitative comments were themed.

3. Results

Forty (40) Special education trainee teachers in the Department of Education for learners with Intellectual Disabilities participated in the study. Their ages ranged between 15 and 30 years (mean 21.08, SD 2.5), with 31(77.5%) were female and 9(22.5%) were male. Only 24(60%) stated that they had heard of epilepsy, 7(17.5%) had knowledge of someone who suffer from epilepsy and 2(5%) had a family member with epilepsy. The characteristics information of the participants are summarised in Table 1.

3.1. Knowledge and attitude about epilepsy

The Knowledge of Epilepsy Questionnaire (KOEQ) score of 6.43 at baseline significantly improved at 1 week post-intervention to 10.89 ($p = 0.001$) as shown in Table 2. Their AEQ score also improved from the baseline of 10.65 to a 1-week post-intervention score of 15.16 ($p = 0.001$) as shown in Table 3. Also, their first aid epilepsy awareness score improved from 3.42 at baseline to 4.61 ($p = 0.001$) at post intervention as shown in Table 4. There was no association between demographic information and baseline knowledge, attitude and first aid awareness skill.

3.2. Awareness of first aid towards a person having an epileptic seizure

The awareness of the respondents on first aids measures towards person having an epileptic seizure was assessed before and after the intervention. There were significant differences in the pre and post intervention in terms of awareness of first aid for people with epileptic seizure as shown in Tables 5 and 6. For example, Table 5 shows that at pre intervention, 32.5% knew that nothing should be placed in the child's mouth during seizure and this knowledge increased to 65.8% post intervention.

Pre-intervention, a majority of the respondent (70%) felt confident that could provide first aid to a child with seizure and even more (86.8%) felt confident about providing first aid post-intervention.

Table 1: Socio-demographics characteristics of respondents (N = 40)	
Variables	Frequency n (%)
Sex	
Male	9(22.5)
Female	31(77.5)
Marital status	
Single	39(97.5)
Married	1(2.5)
Age group (years)	
15-19	9(22.5)
20-24	29(72.5)
25 and above	2(5.0)
Ever heard of epilepsy	
Yes	24(60)
No	16(40)
Knowledge of someone who suffers epilepsy	
Yes	7(17.5)
No	33(82.5)
Has family member with epilepsy	
Yes	2(5)
No	38(95)
Ever seen/witnessed someone having an epileptic seizure	
Yes	16(40)
No	24(60)

Table 2: Comparison of pre-intervention and post-intervention knowledge scale scores						
Variables	Mean	T	df	P value	Lower	Upper
Knowledge before (N = 40)	6.43	-6.2	36	0.001	-5.918	-3.00
Knowledge after (N = 38)	10.89					

Table 3: Comparison of pre-intervention and post-intervention attitude scale scores						
Variables	Mean	T	df	P value	Lower	Upper
Attitude before (N = 40)	10.68	-4.86	37	0.001	-6.34	-2.61
Attitude after (N = 38)	15.16					

Table 4: Comparison of pre-intervention and post-intervention knowledge of first aid scores

Variables	Mean	T	df	P value	Lower	Upper
First aid before (N = 40)	3.42	-5.04	37	0.001	-1.66	-0.71
First aid awareness after (N = 38)	4.61					

Table 5: Respondents awareness of first aid towards a person suffering from epileptic seizure

First aid awareness variable	Correct answer	N = 40 Pre-intervention N (%)			N = 38 Post-intervention N (%)		
		Yes	No	Don't know	Yes	No	Don't know
Put something in the child's mouth to prevent him/her from choking with his/her tongue.	No	21 (52.5)	13 (32.5)	6 (15)	13 (34.2)	25 (65.8)	0 (0)
Hold the child tight so that he/she stops shaking	No	23 (59)	11 (28.2)	5 (12.8)	8 (21.1)	30 (78.9)	0 (0)
Lie the child on his/her back so you can see the face to make sure he/she is alright	No	30 (75)	6 (15)	4 (10)	28 (73.7)	9 (23.7)	1 (2.6)
Call for help from other people around	Yes	36 (90)	3 (7.5)	1 (2.5)	20 (52.6)	17 (44.7)	1 (2.6)
Move the child to an area where he/she cannot hurt him/herself while having seizure	Yes	31 (77.5)	8 (20)	1 (2.5)	34 (89.5)	4 (10.5)	0 (0)
Pour water on the child to cool him/her down	No	23 (57.5)	11 (27.5)	6 (15)	14 (36.8)	24 (63.2)	0 (0)
Overall, I feel confident that I will be able to provide first aid to a child in my class who starts to have seizure	Yes	28 (70)	8 (20)	4 (10)	33 (86.8)	3 (7.9)	2 (5.3)

Table 6: Comparison of pre-intervention and post-intervention knowledge of first aid scores

Variables	Mean		Df	p value	Lower (CI)	Upper (CI)
First aid before (N = 40)	3.42	-5.04	37	0.001	-1.66	-0.71
First aid awareness after (N = 38)	4.61					

The correct answers to the first aid questions were summed to create a scale which showed a significant improvement in knowledge of first aid from pre-intervention to post-intervention ($p = 0.001$).

For the client satisfaction questionnaire, majority of the participants indicated they were very satisfied with the programme, almost all the participants were willing to come for further training if offered, and majority would recommend the training to others.

4. Discussion

The study examined the effect of a training program on knowledge, attitude and first aid management skills of Special education trainee-teachers in Federal College of education special Oyo.

Knowledge about epilepsy at pre-intervention was low. This is in line with other studies in Nigeria although, majorities of these studies was among teachers and not trainee-teachers. However, studies from developed countries show better knowledge (Bishop and Boag, 2006). This might be due to factors such as public awareness about epilepsy and ease of accessing information in developed countries (Eze et al., 2015). In this study, there was no significant association between any of the socio-demographic variables such as gender

and knowledge at baseline. This is in contrast to other studies ([Al-Eryani *et al.*, 2015](#); [Bishop and Boag, 2006](#)) who found significantly higher knowledge among females compared to males in their studies. It is also somewhat surprising that the knowledge of epilepsy among those who have a family member who suffers from the condition was not significantly better than that of those who do not have an affected family member.

Generally, participant's attitude towards epilepsy was relatively more negative at pre intervention. Eze *et al.* (2015) opined that negative attitude of teachers towards epilepsy can be attributed to overall poor knowledge about epilepsy among teachers. Other studies in Nigeria report negative attitudes towards epilepsy. For example, Eze *et al.* (2015) conducted their training among trainee-teacher in Lagos and they reported poor attitude among their respondents. Similarly, studies conducted by Ojinnaka (2002) and Sanya *et al.* (2005) also reported a very high proportion of negative attitude among the teachers. Although, findings from this study are in line with other studies conducted among trainee-teachers and teachers in Nigeria, on the contrary, reports from developed countries indicated teacher's positive attitudes towards people with epilepsy ([Bishop and Boag, 2006](#)). The current study found no significant association between gender and attitude of the respondents at baseline and after intervention. This is in contrast to a study in Turkey among teachers which found female teachers had more negative attitude towards students with epilepsy than male teachers ([Bekiroglu *et al.*, 2004](#)).

Participants' first aid awareness was fair but improved further after the training. However, indicating on a questionnaire that a person knows what to do does not necessarily mean being able to do the right thing when the crisis arises. This is because there are still superstitious beliefs associated with epilepsy which may alter people's behaviour when faced with an actual seizure. This may lead to default behaviours that may include pouring water on the child, intensive prayer sessions as well as giving herbal concoctions. As majority (59%) at pre intervention in this study indicated that holding the child down can stop the shaking and 52.5% also admitted to putting something in the child's mouth during seizure. It is a commonly held belief in this part of the country that people should put spoon in the child's mouth to stop them from clenching their teeth and biting their tongue. All these can be related to erroneous beliefs associated with epilepsy in Nigeria. The findings of this study are similar to Ojinnaka (2002) and Eze *et al.* (2015) although both studies were conducted at different parts of the country. This may be attributed to the nation-wide culturally held-belief about how to manage epilepsy.

Majority of the respondents rated the training good (51.5%) and others thought the training was excellent. Most are very satisfied with the information they got (60.6%) and 72.7% would recommend the training to others. Overall 87.9% of the respondents were very satisfied with the training and 90.9% were willing to come for further training. Majority stated that the training has given them the opportunity to gain and build confidence in the management of epilepsy. This may be so because the respondents receive little or no training in the management of children with epilepsy during the course of their training. The participants' suggestion for improvements includes a wider training scope for mental health, regular training and longer duration.

This study found that there was an increase in respondent's knowledge, positive attitude and first aid management knowledge at post intervention. Eze *et al.* (2015) similarly reported an increased rate in knowledge, attitude and management skills at twelve weeks post intervention. This is also similar to findings in a study ([FERNANDES *et al.*, 2007](#)) conducted in Brazil among students studying health related causes. The study also involved the use of audio-visual aids and discussions which may have helped to sustain the interest of the participants and led to the improvement in knowledge, attitude and management skills at post intervention. Audio-visual presentation was also used in another study in Australia ([Roberts and Farhana, 2010](#)) and the authors reported increase in knowledge and attitude although the post intervention measure was immediately after the training.

However, the positive findings from this study need to be considered in the light of some important limitations. First, without a control group and with only trainee teachers in the department of ID used as the sample for this study, it is possible that some of the improvements may be explained by factors unrelated to the intervention and the sample size is a further limitation to the generalizability of the results among other departments in Special education.

5. Conclusion

The study showed that as few as three sessions of education on epilepsy has significant impact on knowledge

and attitude of epilepsy among trainee teachers. This suggests that inclusion of this training into the training special teachers will be beneficial. We also hope that the findings from this study will generate interest in further studies with a long term plan that it will inform policy to include training on epilepsy into the curriculum.

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