Research Article

Health-Related Quality of Life and its Determinants in Adult Nigerians with Epileptic Seizures

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Abstract

Background: Despite epilepsy being the commonest neurological disorder in Africa, there are extremely few studies on its impact on patients' quality of life especially in sub-Saharan Africa. There is as yet no data on this for the South East region of Nigeria.

Aim: This cross-sectional descriptive study evaluated the health related quality of life of a cohort of Nigerian patients with epilepsy and determined factors that impact on it.

Methods: Consecutive epilepsy patients aged ≥16 years attending the neurology out-patient clinic of the University of Nigeria Teaching Hospital, Enugu, and who had no progressive neurological or psychiatric condition were recruited over a 6-month period (October 2013 – March 2014). Informed consent as well as sociodemographic data was obtained and each patient completed the World Health Organization Quality of Life Questionnaire (WHOQOL-BREF).

Results: A total of 66 patients (40 males and 26 females) aged 16-75 years (mean 32.12 ± 14.00) were studied. All were Christians and had a minimum of primary school education. Most had generalized seizures, had been epileptic for less than a decade and lived in urban areas. The quality of life scores were reduced across the four domains. Good seizure control was significantly associated with a higher quality of life. Psychological wellbeing had a positive correlation with education level but correlated negatively with duration of epilepsy.

Conclusion: Adult Nigerian patients with epilepsy have significant quality of life issues. Greater emphasis on holistic patient evaluation is imperative. Larger multicentre studies are required for more elucidation of the scope of impairment in quality of life.

Keywords: Epilepsy; Quality of life; Nigeria; WHOQOL-BREF

Abbreviations

PWE: People with Epilepsy; QOL: Quality of Life; WHOQOLBREF: World Health Organization Quality of Life BREF Questionnaire; WHOQOL-100: World Health Organization Quality of Life – 100 Questionnaire

Introduction

Epilepsy, the tendency to have recurrent a febrile seizures, is the commonest neurological disorder presenting to medical clinics in South East Nigeria and much of Africa [1,2]. Of the millions of People with Epilepsy (PWE) worldwide, the developing countries of Africa, Asia and South America are home to the vast majority [1].

In the last decade or two renewed interest has been focused on the Quality of Life (QOL) of PWE. Across several countries in Europe, United States and Asia, multiple studies have identified that quality of life is impaired in PWE [3-10]. Sociodemographic variables (such as gender, marital status, education and employment status) as well as clinical parameters (such as seizure type, frequency, duration and treatment) are well recognized to influence patients' QOL [10-13].

There are few studies from sub-Saharan Africa examining epilepsy and quality of life and from Nigeria there are much fewer [14-17]. Studies from the South West region, where all Nigerian studies to date have emanated, utilized a separate instrument from that employed in this study. No study has examined the quality of life and its determinants in PWE in South East Nigeria. This area of research remains relevant. Patients' assessment should not only focus on the evaluation of seizures but also other domains such as emotional, cognitive, socio-occupational functioning, health perceptions and general satisfaction with life [18].

Differences in culture, beliefs and socioeconomic factors may make findings from other regions not applicable to local populations. This study assessed the overall quality of life and its determinants using the physical health, psychological, social relationships and environmental domains in PWE attending the Neurology clinic of the University of Nigeria Teaching Hospital, Ituku-Ozalla, and Enugu in South East Nigeria

Methods

Study area

The University of Nigeria Teaching Hospital Ituku-Ozalla, Enugu, is the prime tertiary health care provider in the South East

region of Nigeria. The adult Neurology clinic is run once a week by the Consultant Neurologist and PWE make up about a third of the more than 750 patients seen annually [1].

Study population

This was a descriptive cross-sectional study of adult patients (16 years and above) with epilepsy attending the Neurology outpatients clinic between October 2013 – March 2014. All types of epilepsy were included; the subjects had to be seizure free for at least 24 hours and gave informed written consent. Normally all patients with epilepsy are requested to have an Electroencephalogram (EEG) done as part of the routine work-up. Patients with prior or existing psychotic disorder, stroke, mental retardation, brain tumour or surgery were excluded.

Sampling technique

Total sampling was employed in recruiting patients into the study.

Ethical approval was obtained from the hospital ethical review board.

Instruments

Socio-demographic data (age, gender, marital status, educational attainment, employment status) and clinical variables (seizure type, frequency, onset and duration, treatment) were collected using a structured questionnaire completed in the presence of a witness. Seizure frequency was defined as the number of seizures that occurred one month prior to presentation.

Quality of life scores were determined using the WHOQOL-BREF [19]. The WHOQOL-BREF contains 26 questions arranged in domains 1 – 4 (domain is on physical health; domain 2 is on psychological well-being; domain 3 is on social relationship; domain 4 is on environment). These four domain scores denote an individual perception of quality of life in each particular domain. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100. The generic WHOQOL-BREF (26 items) satisfies the key properties of a QOL questionnaire i.e. reliability, psychometric validity, responsive to clinical change and being culturally valid [20].

Data analysis

Data obtained were analyzed using SPSS version 16.0. Descriptive statistics were used to compute means and standard deviations for numerical variables as well as frequencies for nominal and ordinal variables. Significance of association between various variables and QOL was tested using the Chi square test (χ^2). Inferential statistics applied included an independent samples t-test for the hypothesis and in comparing numerical socio-demographic variables. Analysis of Variance (ANOVA) was used in comparing mean QOL scores and a stepwise (forward) regression analysis to determine variations in mean QOL as explained by the joint predictive power of the variables. A $p < 0.05$ was considered statistically significant.

Results

A total of 66 PWE satisfied the inclusion/ exclusion criteria and

Table 1: Socio-demographic variables of respondents.

Variables	Frequency	Percent
Age range (in years)		
16 – 25	29	43.9
26 – 35	22	33.3
36 – 45	3	4.5
46 – 55	4	6.1
56 – 65	6	9.1
66 – 75	2	3.0
Gender distribution		
Male	40	60.6
Female	26	39.4
Marital status		
Single	47	71.2
Married	16	24.2
Widow	3	4.5
Employment status		
Unemployed	30	45.5
Employed	36	54.5
Educational status		
Primary	20	30.3
Secondary	30	45.5
Tertiary	16	24.2
Religion		
Christian	66	100
Place of residence		
Urban	41	62.1
Rural	25	37.9

participated in the study. Age range of the respondents was 16-72 years with mean (SD) 32.12 (14) years. More than half were males (60.6%), single (71.2%), employed (54.5%) and lived in the urban areas (62.1%). All respondents were Christians and had at least primary school education Table 1.

Generalized seizures were the commonest type seen (86.4%) while for most respondents, both seizure duration and use of anticonvulsant medications were for <10 years (62.1% and 80.4% respectively). Majority of the PWE had no childhood seizures (68.2%) and utilized orthodox medical treatment (90.9%). Good seizure control (defined as no seizures in the last one month) was recorded in 42.4% of the subjects. Only 38 (57.6%) of PWE had Electroencephalographic (EEG) assessment, of which an abnormal record was evident for 22 (57.9%).

In terms of empathy and support from family and friends, 62 respondents (93.9%) acknowledged these while 18 (27.3%) reported suffering stigma and discrimination.

As seen in Table 2, the mean domain scores on the WHOQOL-BREF were maintained for physical health QOL 67.33 (95% CI 64.31 – 70.36), psychological QOL 65.31% (95% IC 61.51 – 69.12), social relationships QOL 70.37% (95% CI 66.20 – 74.54) and environmental QOL 64.40% (95% CI 61.83 – 66.97) with mean overall QOL score of 94.03 (95% confidence interval 91.38 – 96.68)

PWE who had achieved seizure control had significantly higher

Table 2: Domain scores and overall quality of life score.

Domains	Number	Range	Mean	Standard deviation	95% Confidence Interval
Domain 1	66	31 – 100	67.33	12.29	64.31 – 70.36
Domain 2	66	25 – 88	65.31	15.23	61.51 – 69.12
Domain 3	66	25 – 100	70.37	16.82	66.20 – 74.54
Domain 4	66	44 – 100	64.40	10.37	61.83 – 66.97
Overall QoL	66	63 – 120	94.03	10.61	91.38 – 96.68

Table 3: Relationship between epilepsy status and domain scores.

Domains	Epilepsy status						T test (P value)
	Controlled seizures			Uncontrolled seizures			
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	
Domain 1	28	70.75	11.86	38	64.82	12.14	1.98 (0.05)
Domain 2	28	71.93	9.56	36	60.17	16.87	4.24 (<0.01)*
Domain 3	28	72.75	14.55	37	68.57	18.33	1.09 (0.28)
Domain 4	28	64.75	11.05	37	64.14	9.97	0.23 (0.82)
Overall QoL	28	98.18	8.72	36	90.81	10.93	2.92 (0.01)*

Table 4: Bivariate Pearson correlations between the demographic variables and domain scores.

Domains	Age	Level of education	Duration the respondent has had epilepsy	Duration respondent has been on anticonvulsant
	Correlation coefficient (P value)			
Domain 1	-0.04 (0.73)	0.10 (0.41)	-0.15 (0.24)	-0.09 (0.49)
Domain 2	-0.06 (0.62)	0.32 (0.01)*	-0.29 (0.02)*	-0.09 (0.47)
Domain 3	-0.25 (0.25)	0.19 (0.14)	-0.09 (0.48)	-0.01 (0.92)
Domain 4	-0.03 (0.82)	0.12 (0.34)	-0.11 (0.38)	-0.05 (0.68)
Overall QoL	-0.12 (0.34)	0.22 (0.07)	0.24 (0.06)	-0.14 (0.29)

QOL scores for domain 2 (psychological wellbeing) as well as overall total QOL scores (p ≤ 0.01 in both instances) than respondents with as yet uncontrolled seizures, as depicted in Table 3. As seen in Table 4, correlation of QOL scores with sociodemographic and clinical data of respondents reached statistical significance only for domain 2 (psychological wellbeing) where there was a positive correlation for level of education (p = 0.01) and a negative correlation for seizure duration (p = 0.02). No significant correlation was found for age and duration of drug treatment.

Tables 5, 6 and 7 demonstrate that no significant relationship was

established between QOL scores and the variables of gender, marital status, place of residence, educational status and type of treatment used across the domains and overall.

Table 8 identifies the predictors of the status of epilepsy in the respondents and predictors of quality of life with respect to domain 2 (psychological well-being).

Discussion

There has been limited evaluation of QOL in Nigerian PWE. The few studies available have been from principally South West Nigeria, home to the Yoruba ethnic group with its distinctly different socio-cultural and religious beliefs. None of these studies were conducted using the WHOQOL-BREF. This study is the first from South East Nigeria.

Quality of life

The mean QOL of PWE in this study (94.03%) is considerably higher than the scores obtained in similar respondents from Kenya (49.90%), India (61.49%) and Sudan (50.6 – 60.8%) as well as higher than the hypothesized mean of 75 ±2.5% using the same instrument, WHOQOL-BREF [15,21-23]. While it is possible that the difference could be accounted for by the varying study population sizes (Kenya n=137, India n=91 and Sudan n=276 patients with epilepsy), the influence of other variables such as cultural and environmental factors cannot be overlooked.

Higher QOL tend to be associated with younger age, being married, higher educational attainments and employment [12,24]. It can be posited that these factors (present to a great extent in our patients) increase the potential for social support, awareness of disease and support and the use of positive coping methods [23]. On the contrary poor QOL scores are notably associated with chronicity of the illness, social under-achievement, effect of stigma and financial difficulties in assessing care– an effect accentuated by weak/absent

Table 5: Relationship between domain scores to sex and employment status.

Domain	Sex					Employment Status				
	Male		Female		T test (P value)	Employed		Unemployed		T test (P value)
	No	Mean ± SD	No	Mean ± SD		No	Mean ± SD	No	Mean ± SD	
Domain 1	40	68.78 ± 11.80	26	65.12 ± 12.93	1.19 (0.24)	36	68.75 ± 12.60	30	65.53 ± 11.90	1.06 (0.29)
Domain 2	38	67.50 ± 13.93	26	62.12 ± 16.64	1.40 (0.17)	35	66.34 ± 15.88	29	64.07 ± 14.58	0.59 (0.56)
Domain 3	39	72.26 ± 15.19	26	67.54 ± 18.95	1.11 (0.27)	36	70.47 ± 16.45	29	70.24 ± 17.55	0.05 (0.96)
Domain 4	39	64.85 ± 9.45	26	63.73 ± 11.78	0.42 (0.67)	35	63.86 ± 9.33	30	65.03 ± 11.59	0.45 (0.65)
OverallQoL	38	95.39 ± 9.72	26	92.04 ± 11.69	1.25 (0.22)	35	94.31 ± 10.98	29	93.69± 10.31	0.23 (0.82)

Table 6: Relationship between domain scores and place of residence and type of treatment used.

Domain	Place of residence					Type of treatment				
	Urban		Rural		T test (P value)	Orthodox		Herbal and Orthodox		T test (P value)
	No	Mean ± SD	No	Mean ± SD		No	Mean ± SD	No	Mean ± SD	
Domain 1	41	67.76 ± 10.19	25	66.64 ± 15,33	0.36 (0.72)	60	66.97 ± 12.23	6	71.00 ± 13.52	0.76 (0.45)
Domain 2	41	65.17 ± 16.30	23	65.17 ± 16.30	0.00 (1.00)	58	64.41 ± 15.40	6	74.00 ± 10.92	1.48 (0.14)
Domain 3	40	72.83 ± 17.11	25	66.44 ± 15.89	1.50 (0.14)	59	70.42 ± 17.27	6	69.83 ± 12.66	0.08 (0.94)
Domain 4	41	65.34 ± 10.30	24	62.79 ± 10.51	0.96 (0.34)	59	64.17 ± 10.44	6	66.67 ±10.21	0.56 (0.58)
Overall QoL	41	94.49 ± 9.85	23	93.22 ± 12.03	0.46 (0.65)	58	93.52 ± 10.59	6	99.00 ± 10.26	1.21 (0.23)

Table 7: Relationship between domain scores to type of seizure and marital status.

| Domain | Type of seizure | | | | | | Marital status | | | | |
| | Focal | | Generalized | | | | Single | | Married | | |
	No	Mean ± SD	No	Mean ± SD	T test (P value)		No	Mean ± SD	No	Mean ± SD	T test (P value)
Domain 1	9	66.89 ± 10.88	57	67.40 ± 21.05	0.11 (0.91)		47	66.57 ± 12.80	19	69.21 ± 11.02	0.84 (0.41)
Domain 2	9	62.78 ± 14.26	55	65.78 ± 14.26	0.59 (0.56)		46	63.80 ± 16.29	18	69.17 ± 11.62	1.27 (0.21)
Domain 3	9	77.78 ± 16.95	56	69.18 ± 16.64	1.42 (0.19)		46	70.37 ± 17.94	19	70.37 ± 14.16	0.00 (1.00)
Domain 4	9	63.33 ± 10.97	56	64.57 ± 10.36	0.33 (0.74)		47	64.15 ± 10.89	18	65.06 ± 9.13	0.31 (0.75)
Overall QoL	9	93.78 ± 94.07	55	94.07 ± 10.32	0.08 (0.94)		46	93.54 ± 11.44	18	95.28 ± 8.25	0.59 (0.56)

Table 8: Binary regression for predictors of status of epilepsy and quality of life (Domain 2).

Predictors	B (coefficient of regression)	Constant
Binary regression for predictors of status of epilepsy		
Domain 2	-0.064	4.490
Overall Quality of Life	-0.078	7.607
Binary linear regression on predictors of quality of life (Domain 2)		
Level of education	1.066	11.385
Duration of seizures	-0.007	15.304

family and friend support (factors not significantly present in our respondents).

Depression is an under-recognized factor in PWE that can contribute to poor QOL scores [25,26]. Though depression was not assessed for in this study, a previous study of PWE in this same centre had shown a low prevalence of moderate to severe depression, suggesting it may not be a significant contributor to morbidity [27].

Seizure burden

PWE who had uncontrolled seizures had poorer QOL scores in domains as well as in overall QOL and this association was particularly significantly associated for domain 2 (psychological wellbeing) and for total QOL. Seizure severity is noted to be an inverse predictor of QOL in PWE. These findings are similar in several other studies [12,15-17,28-30].

In this study only domain 2 QOL (psychological wellbeing) correlated negatively with duration of seizures. This was similar to the finding from India but was not present in the Sudan and Malaysian studies [22,23,31]. Longer duration of seizures is a predictor for poor QOL in PWE and this is typically related to greater complications and disabilities [31].

Baker et al reported that seizures frequency was the most important clinical predictor of psycho-social dysfunction and emotional maladjustment in PWE [10]. However it has been noted that even infrequent seizures can be a significantly impaired QOL in older PWE [32]. Not knowing whether a seizure will occur at inappropriate places or times can lead to severe restrictions in the life of PWE.

Risk factors known to be associated with higher seizure frequencies include inappropriate anticonvulsant therapy, early age of onset, previous head injury, long duration, low income status, not being married and low scores in the Mini Mental State Examination [15].

PWE had more generalized than partial seizures in this study as was the case for the Malaysian study. In both instances there was no significant association between seizure type and QOL but in a study from Ibadan, South West Nigeria, generalization of seizures was significantly associated with poorer QOL scores [16,31].

Level of education

This study showed that all PWE had primary school education and nearly 50% with secondary education. There was a significant positive correlation between the level of education and QOL as indicated by psychological wellbeing (domain 2).

Level of education had the most important effect on explaining varying QOL scores in the Kenyan study [15]. Higher educational attainment (reasonably present in our study) is known to enhance earning via more gainful employment and offers the PWE better options in accessing health services and better social choices.

Strategies to eliminate social stigma and thus greater access to education will definitely yield higher QOL for PWE across Africa.

Employment status

Unlike the findings in most other studies where PWE had high levels of unemployment [15,22,31,32] in this case, majority of our respondents were gainfully employed (54.5%). This pattern is consistent with a previous study in the same locality [33].

In this study PWE who were unemployed scored less in overall QOL as well as in all but one of the domains though there was no significant relationship established.

Unemployment in PWE is multifactorial in nature and may be related directly or indirectly to seizure control, age of seizure onset, frequency and severity of seizures, type of medications used and level of educational attainment. The latter is itself a marker of employability potential. Employers are less likely to employ PWE if they are experiencing seizures liable to affect job performance [31, 34,35].

Conclusions and Recommendations

This study has demonstrated that adult PWE living in Nigeria have impaired QOL across the domains of the WHOQOL-BREF. Overall QOL score for all the PWE is not hampered, but those with uncontrolled seizures have significantly reduced total QOL as well as reduced psychological well-being when compared to patients with good control. Psychological well-being has a significant positive correlation to educational attainment and an inverse correlation to epilepsy duration.

There is a need for further larger multicentre studies from the various regions of Nigeria using the WHOQOL-BREF instrument, in order to enhance comparative analysis.

Strategies to enhance access to educational opportunities and medical services, especially with multidisciplinary action, for PWE are to be encouraged. Continued public enlightenment to reduce stigma and discrimination in the society will lead to greater confidence and cooperation towards self-empowerment amongst PWE in Nigeria.

Limitations

The instrument used (WHOQOLBREF) though validated in Nigeria was not translated into the language of South East Nigeria, Igbo. Though none of the respondents reported any difficulty in comprehending the questionnaire, such a translation may have enhanced more complete grasp.

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Authors' Contributions

All authors participated in the conceptualization of the study and collaborated in the design. IO and NU collected the data while NU and EN did data analysis. IO wrote the manuscript while all authors reviewed and approved the final draft. Funding was provided by all the authors. IO is the guarantor of the manuscript.

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