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Quality of Life and Psychological Comorbidities in Adolescents with Epilepsy in Nigeria: A Comparative Cross-Sectional Study

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ABSTRACT

Background: Adolescents with epilepsy (AWE) often experience psychosocial challenges that impair their health-related quality of life (HRQOL). This study assessed HRQOL and psychological morbidity among Nigerian AWE and explored their association.

Objectives: To determine HRQOL and psychological comorbidities in adolescents with epilepsy, compare findings with matched healthy controls, and identify predictors of poor HRQOL.

Methods: A comparative cross-sectional study was conducted among 240 adolescents (120 with epilepsy and 120 matched healthy controls) in two tertiary hospitals in Abeokuta, Nigeria. HRQOL was measured using the PedsQL™ 4.0 and psychological morbidity with the Strengths and Difficulties Questionnaire (SDQ). Data were analyzed with SPSS v23.0. Group differences were tested with t-tests/Chi-square, correlations with Spearman's rank, and predictors of HRQOL with linear regression.

Results: Adolescents with epilepsy scored significantly lower than controls in overall HRQOL (65.00 ± 23.24 vs. 82.08 ± 16.26; $p < 0.001$) and across all domains (physical, psychosocial, emotional, social, school; $p \leq 0.01$). Psychological morbidity was significantly higher in adolescents with epilepsy (median SDQ total score: 12.50 vs. 8.00; $p < 0.001$), especially in emotional and peer domains. Internalising symptoms exceeded externalising symptoms. Total psychological difficulty score was inversely correlated with HRQOL ($\varrho = -0.27$; $p < 0.001$). Regression analysis identified seizure frequency, duration of epilepsy, and psychological difficulty as independent predictors of poor HRQOL.

Conclusion: Adolescents with epilepsy in Nigeria experience significantly poorer quality of life and increased psychological comorbidities compared to their healthy peers.

Keywords: Adolescents, Epilepsy, HRQOL, Psychological comorbidity, Strengths and Difficulties Questionnaire, Nigeria

How to cite this article

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INTRODUCTION

Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures, and by the neurobiological, cognitive, psychological, and social consequences of this condition.[1] It is one of the world's most prevalent neurological disorder and it is the most common non-communicable neurological disease in developing countries including Nigeria.[2-5] It affects about 50 million people worldwide with about 40 million of those affected residing in developing countries where the condition remains largely untreated.[2-4] Quality of Life (QOL) is an individual's perception of his or her position in life, in the context of the culture and value system in which he or she lives, in relation to his or her goals, expectations, standards and concerns.[5-8] It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationship to salient features of their environment.

Adolescents remain the most neglected age group in the quest for universal health coverage and they are faced with the peculiar challenge of adjustment to different inherent changes than are younger children.[11] In countries where adolescent health and medicine has developed, paediatricians have been in the lead and adolescent health services is increasingly espoused within the scope of contemporary paediatrics.[12]

Epilepsy has significant impact on all the domains and the overall QOL of its sufferers with most studies suggesting a poorer QOL of affected individuals.[3,5,9,13] People with Epilepsy (PWE) face uncertainties over the diagnosis of the disease, its nature as it relates to the likelihood of seizure recurrence, its control or complete remittance.[6,7] These clinical uncertainties, the stigmatising nature of the disorder and the psychological co-morbidities make the impact of epilepsy on a person's QOL quite significant.[6,7,13]Children especially adolescents are likely to bear a larger burden of the impact of epilepsy because the development of a healthy self-identity is a core developmental task and it is influenced directly by the development of successful peer relationships and appropriate levels of autonomy.[8] Stigma attached to the disease is therefore more pronounced during adolescence. Linked to their hormonal and neurodevelopmental changes are psychosocial and emotional changes and increasing cognitive and intellectual capacities. This critical period of psychosocial development makes this age group particularly vulnerable to the impact of epilepsy and its treatment.[14]

Previous studies[3,5-9,13,14,17,18] revealed that the HRQOL in paediatric epilepsy is significantly impaired in the cognitive, psychological and social domains. The compromised HRQOL is more pronounced among the adolescents who have also been reported to be at a greater risk of behavioural and psychiatric disorders.[17,19-26] These disorders are common but often unrecognised. Early identification using a screening tool that is easy to administer, score and interpret would improve care and reduce the impact of these behavioural problems on the HRQOL of the adolescents with epilepsy (AWE). Documenting the views of the adolescents themselves have implications for care. Proxy informants have been shown to underestimate the HRQOL of the adolescents because parents/teachers perceive domains of HRQOL that are abstract differently.[27] Given these gaps, this study sought to determine the impact of epilepsy on the health-related quality of life (HRQOL) of adolescents with epilepsy in Abeokuta, Nigeria, and to explore the burden of psychological comorbidities in this population. In addition, the study compared HRQOL and psychological morbidity between adolescents with epilepsy and matched healthy controls and further examined the relationship between psychological morbidity and HRQOL in order to identify factors associated with poorer outcomes.

METHODS

Study Design

The study was a hospital-based cross-sectional comparative study.

Study area

The study was carried out in the two tertiary hospitals in Abeokuta. These hospitals are Federal Medical Centre Abeokuta (FMCA) and Neuropsychiatric Hospital (NPH) Aro, Abeokuta. Ethical approval was obtained from the federal medical centre, Abeokuta health research ethics committee with the protocol number **FMCA/243/HREC/03/2016/23**. The hospitals in addition to providing specialist care also cater for significant primary and secondary health care needs of the residents of Ogun State and its environs in southwest Nigeria. These centres have dedicated neurology clinics that are run by consultants. A hospital-based

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comparative cross-sectional study was conducted at the Federal Medical Centre Abeokuta (FMCA) and the Neuropsychiatric Hospital, Abeokuta, Nigeria. The hospitals in addition to providing specialist care also cater for significant primary and secondary health care needs of the residents of Ogun State and its environs in southwest Nigeria. These centres have dedicated neurology clinics that are run by consultants

Study population

The study population comprised consecutive AWE drawn from the neurology clinics of FMCA and CAC of NPH. Equal number of age, sex and socioeconomic status matched controls receiving care for minor acute illnesses at the outpatient clinics of FMCA and the NPH were also recruited. Ages 11 to 17 years was utilized for adolescents in this study.

Study Instruments

The study instrument consists of three questionnaires which were administered to all consenting participants. The questionnaires are the sociodemographic and seizure history questionnaire, the PedsQL™[115] and the SDQ

Health-Related Quality of Life (HRQOL): PedsQL™ 4.0: HRQOL was assessed using the self-report version of the Paediatric Quality of Life Inventory 4.0 Generic Core Scale (PedsQL™ 4.0). The 23-item instrument covers four subscales: physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items). Responses were scored on a 5-point Likert scale (0 = never to 4 = almost always), reverse-coded, and linearly transformed to a 0–100 scale, with higher scores indicating better HRQOL. The instrument was adopted and culturally adapted using the Yoruba translation and back-translation method validated by Atilola and Stevanovic. Previous studies have reported good psychometric properties in Nigerian populations, with Cronbach's alpha coefficients consistently >0.70 for all domains, indicating good internal consistency and construct validity. To ensure clarity, the questionnaire was pretested on 20 adolescents prior to data collection.

Psychological Morbidity: Strengths and Difficulties Questionnaire (SDQ): Psychological morbidity was measured using the self-report version of the Strengths and Difficulties Questionnaire (SDQ), a 25-item validated tool with five subscales: emotional symptoms, conduct problems, hyperactivity/inattention, peer problems, and prosocial behavior. Each item was rated on a 3-point Likert scale (0 = not true to 2 = certainly true). A total difficulties score (0–40) was generated by summing the first four domains, while the prosocial domain was scored separately. An additional impact supplement assessed functional impairment across peer, home, school, and leisure domains. The SDQ was adopted without modification. It has demonstrated acceptable reliability in Nigerian samples, with Cronbach's alpha ranging from 0.73 to 0.81 across subscales, and validity with sensitivity (63–94%) and specificity (88–98%). The tool was also pretested on 20 adolescents for comprehension in this setting.

Sample Size Determination

The sample size was calculated thus:

$$n_{125} = \frac{\{u\sqrt{[\pi_1(1-\pi_1)+\pi_o(1-\pi_o)]} + v\sqrt{[2\pi(1-\pi)]}\}^2}{(\pi_o-\pi_1)^2}$$

The above formula was utilized for this study in which 2 proportions were compared. The two groups were equal in number, and a two-tailed statistical analysis was used.

n = minimum sample size for of each group.

v = standard normal deviate corresponding to the level of significance of 0.05, this is 1.96

u = standard normal deviate corresponding to a statistical power of 0.99 = 2.33

π_1 = pre-study estimates of AWE with psychiatric morbidity[58]

= [65.1%]

π_o = pre-study estimates of healthy school adolescents with probable psychiatric morbidity[126]

= [35.4%]

Sampling Method

Consecutive adolescents were recruited from the participating institutions provided they fulfilled the inclusion criteria. The number of AWE selected from each of the participating tertiary hospital was proportionately determined according to the number of AWE receiving care in the hospitals using the formula below;

$$\text{AWE from each institution} = \frac{\textit{No of AWE from each centre x sample size}}{\textit{Total no AWE receiving care from both institution}}$$

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Data Collection

Prior to the commencement of the study, the questionnaires were pre-tested among AWE receiving care at a community mental health clinic in Abeokuta. Twenty subjects completed the questionnaires, and no difficulty was observed among the subjects in interpreting and answering the questions.

Data Management and Analysis

The completed questionnaires were checked, and coded manually, and then entered into the computer. Data was analysed using the International Business Machine Statistical Package for the Social Sciences version 23.0 computer program (IBM SPSS Chicago, IL, USA). Data cleaning was done by running a frequency distribution to detect incorrect entries which were then corrected. Categorical variables between AWE and control subjects were presented as number and percentage (frequency distributions) while quantitative variables were presented as means and standard deviation. Continuous data were presented as means and standard deviations (mean ±SD), data that were not normally distributed were presented using the median with their interquartile range, median (1st quartile – 3rd quartile). The Chi-square test was used for the comparison between the categorical variables. The independent Student t-test and nonparametric tests were used for comparing the numerical data. The relationship between psychological morbidity and HRQOL was determined using the Spearman's rank correlation coefficient. The predictors of poor HRQOL among the AWE was tested using linear regression analysis with the level of statistical significance set at p-value of less than 0.05 and Confident Interval (C.I) at 95%.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committees of both the FMCA and the NPH. The study was at no cost or risk to the participants and the content of the questionnaires utilised was unlikely to generate emotional distress among the participants. The questionnaires were also translated into Yoruba language, another language widely spoken and understood by a large proportion of the inhabitants of Abeokuta. Emergency AEDs (injection diazepam, phenobarbitone and phenytoin), medical consumables (gloves, fluid giving set, needle and syringes, 21G cannula, sterile water, resuscitative fluids (normal saline, 10% dextrose water, 50% dextrose water) were made available by the investigator on each clinic day. The study was explained to the participants and they were made to understand that participation in the study was voluntary and they reserved the right to withdraw at any time from it. Informed consent was obtained from the parents/guardians and matured minor 14 years or greater, verbal assent was obtained from the other adolescents before enrolment into the study.

Anonymity of the participants was ensured by coding the questionnaires to ensure safe keeping of the identities of the adolescents involved in the study.
All the participants with suboptimal examination findings including those with impaired HRQOL and or those with "possible" or "probable" psychological impairments were discussed with their managing consultants for further evaluation and management.

RESULTS

The mean age of the all the adolescents (cases and controls) was 13.84 ± 2.09 years with a range of 11-17 years. Sixty- nine (58.5. %) of the 120 AWE were early adolescents aged 11 - 14years of age. Among the participants, 112 (46.7%) belonged to the low socioeconomic class and 130 (54.2%) were females with a male to female ratio of 1: 1.18. One hundred and fourteen (95.0%) of the AWE and 112 (93.4%) of the comparison group were from Yoruba tribe. Sixty-two (51.7%) of the 120 AWE were Christians, compared to 90 (75.0%) of the controls. Table 1 shows the demographic characteristics of the participants. Forty-seven (49.2%) of the AWE have impairment in their peer relationship compared with 12 (10.0%) of the adolescents that served as controls. The proportion of those with impaired peer relationship was significantly higher among the AWE ($p < 0.001$). Table II shows educational and social characteristics of the adolescents.

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Table I: Demographic characteristics of the adolescents

Variables	Cases N = 120 f (%)	Controls N = 120 f (%)	χ^2	p-value
Age				
11 – 14 years	69 (58.5%)	69 (58.5%)	0.00	1.00
15 – 17 years	51 (42.5%)	51 (42.5%)		
Mean age ± SD	**13.84 ± 2.09**	**13.84 ± 2.09**		
Sex				
Male	55 (45.8%)	55 (45.8%)	0.00	1.00
Female	65 (54.2%)	65 (54.2%)		
Religion				
Christianity	62 (51.7%)	90 (75.0%)	14.06	<0.001*
Islam	58 (48.3%)	30 (25.0%)		
Tribe				
Yoruba	114 (95.0%)	112 (93.4%)	0.36	0.95
Igbo	3 (2.5%)	4 (3.3%)		
Hausa	1 (0.8%)	1 (0.8%)		
Others	2 (1.7%)	3 (2.5%)		

Table 2 shows the frequency and degree of seizure control attained by the AWE based on their last seizure. Eighty-eight of the AWE (73.3%) reported the frequency of seizure prior commencement of treatment of at least once or twice per month, 72 (60.0%) had inactive epilepsy within the 6months (their most recent seizure occurred over 6 months) preceding enrollment

Table 2: Seizure frequency of the adolescents with epilepsy

Variables	Cases N = 120
Frequency of seizure prior to the commencement of treatment	
Daily or greater than four times per week	16 (13.3%)
One to four times per week	35 (29.2%)
One to three times per month	37 (30.8%)
Once in two months	20 (16.7%)
Three to five times per year	5 (4.2%)
Once or twice per year	7 (5.8%)
Longest seizure free period while on AEDs	
Less than 6 months	48 (38.5%)
Between 6-12 months	40 (34.1%)
Greater than 12 months but less than 18 months	24 (19.8%)
Greater than 18 months	8 (7.6%)

Table 3 shows the degree of the psychological morbidity of the adolescents. A significantly higher proportion of the AWE had scores in the "borderline" and "abnormal" range in the total psychological difficulties score as well as in the emotional, conduct, hyperactivity and peer problems domain, ($p < 0.001$). The AWE also reported significantly greater proportion of impairment of the psychological problems on their home life, friendships, classroom learning and leisure activities (impact), ($p < 0.001$),

Though the AWE showed strengths in their prosocial behaviour, with only 12 (10%) of them reporting different degrees of impairment in this domain. However, significantly greater proportion of the AWE have impairment in this domain, as only 3 (2.5%) of the controls obtained scores in the impaired range (borderline and abnormal) of their prosocial functioning, ($p < 0.001$).

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Table 3: Degree of psychological morbidity of the adolescents

Psychological co-morbidities	Epileptic N = 120 n (%)	Control N = 120 n (%)	χ^2	*p-value
Total difficulties				
Normal	77 (64.2%)	119 (99.2%)	49.13	<0.001
Borderline	29 (24.1%)	1 (0.8%)		
Abnormal	14 (11.7%)	0 (0.0%)		
Emotional Problems				
Normal	78 (65.0%)	110 (91.7%)	26.01	<0.001
Borderline	22 (18.3%)	7 (5.8%)		
Abnormal	20 (16.7%)	3 (2.5%)		
Conduct Problems				
Normal	83 (69.2%)	105 (87.5%)	14.17	<0.001
Borderline	17 (15.0%)	10 (8.3%)		
Abnormal	19 (15.8%)	4 (3.2%)		
Hyperactivity				
Normal	90 (75.0%)	119 (99.2%)	31.21	<0.001
Borderline	20 (16.7%)	1 (0.8%)		
Abnormal	10 (8.3%)	0 (0.0%)		
Peer Problems				
Normal	79 (65.8%)	109 (90.8%)	22.46	<0.001
Borderline	29 (24.2%)	9 (7.5%)		
Abnormal	12 (10.0%)	2 (1.7%)		
Prosocial				
Normal	108 (90.0%)	117 (97.5%)	6.96	<0.001
Borderline	7 (5.8%)	3 (2.5%)		
Abnormal	5 (4.2%)	0 (0.0%)		
Impact				
Normal	86 (71.7%)	106 (88.3%)	11.08	<0.001
Borderline	10 (8.3%)	6 (5.0%)		
Abnormal	24 (20.0%)	8 (6.7%)		

*Significant at $p < 0.05$

Table 4 presents the psychological assessment scores, where higher values indicate greater difficulties. Adolescents with epilepsy (AWE) had significantly higher median total difficulty scores compared to controls ($p < 0.001$), as well as higher scores across all domains emotional, conduct, hyperactivity, and peer problems. AWE also reported more internalising (median: 7.00 [3.00–10.00]) and externalising problems (6.00 [3.00–8.00]) than controls (4.00 [3.00–6.00] and 4.00 [2.00–5.00] respectively; $p < 0.001$). While prosocial behaviour scores were higher in the control group, the difference was not statistically significant ($p = 0.32$). Additionally, a significantly larger proportion of AWE reported that these difficulties caused distress and Interfered with home life, friendships, learning, and leisure activities ($p < 0.001$).

As shown in Table 5, the total psychological difficulty score demonstrated a weak but significant inverse correlation with overall HRQOL ($\varrho = –0.27$; $p < 0.001$). Similar negative correlations were observed across all QOL domains: psychosocial ($\varrho = –0.22$; $p = 0.01$), physical ($\varrho = –0.24$; $p = 0.01$), school ($\varrho = –0.22$; $p = 0.02$), social ($\varrho = –0.25$; $p = 0.01$), and emotional functioning ($\varrho = –0.22$; $p = 0.01$). When psychological morbidity was stratified into internalising and externalising domains, internalising problems also showed significant inverse correlations with overall HRQOL ($\varrho = –0.26$; $p = 0.04$), psychosocial ($\varrho = –0.21$; $p = 0.02$), physical ($\varrho = –0.28$; $p = 0.001$), school ($\varrho = –0.19$; $p = 0.04$), social ($\varrho = –0.25$; $p = 0.01$), and emotional functioning ($\varrho = –0.20$; $p = 0.03$). Externalising problems had weaker associations, with significant negative correlations limited to overall QOL ($\varrho = –0.19$; $p = 0.04$), psychosocial ($\varrho = –0.15$; $p = 0.04$),

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and school functioning (ϱ = –0.19; p = 0.03). These results suggest that greater psychological difficulties are consistently associated with poorer HRQOL among AWE

DISCUSSION

This study confirms that adolescents with epilepsy (AWE) face significant psychosocial challenges, even when receiving antiepileptic drug (AED) therapy and achieving partial seizure control. The findings align with previous studies showing reduced health-related quality of life (HRQOL) and elevated psychological morbidity in this population [17, 27–30, 31].

The mean HRQOL score observed in this study closely matches the results from Haneef et al., 2010 who found major impairments in emotional and school functioning. The lower HRQOL scores seen here, compared to studies that included larger seizure-free populations[32, 33, 34] likely reflect the higher seizure frequency in this cohort.[31] Notably, older adolescents had poorer HRQOL, consistent with literature showing increasing psychological vulnerability, stigma perception, and social awareness in older age groups[14, 35, 36].

The psychosocial, emotional, and school domains were more impaired than physical functioning, echoing findings from other research on epilepsy and chronic illness[31, 35, 32, 33, 34–37]. The percentage of AWE reporting psychosocial and emotional difficulties was lower than that reported by Monir et al., 2013 but higher than in the study by Bansal et al., 2019 possibly due to cultural or clinical differences.[5,33.]

Compared to studies in similar African populations [5, 13], this study found slightly lower HRQOL impairment. This may be attributed to differences in seizure control, AED exposure, or comorbid conditions. In our analysis, high seizure frequency and longer epilepsy duration were significant predictors of lower HRQOL, consistent with prior findings [5, 13, 17, 32, 35].

Psychological disorders were also prevalent, with patterns similar to those reported by Taylor et al., 2011, Alfstad et al., 2011 and Caplan et al., 2005. However, the burden was lower than in studies involving children with severe physical or mental disabilities [14, 38, 39, 40, 42]. Compared with Tanabe et al., 2013 and Novriska et al., 2014 this study found a higher prevalence, likely due to the inclusion of both "borderline" and "abnormal" SDQ scores, which may capture subtler mental health difficulties [38, 41-43]

Variations in psychological morbidity across local studies [19, 28, 44] reflect different inclusion criteria and patient profiles. For instance, studies with higher polytherapy use and poorly controlled seizures [19, 28] reported worse outcomes. Our lower proportion of polytherapy and seizure-active participants may partly explain the lower psychological morbidity observed.
The finding of more internalising than externalising symptoms is in line with previous self-reported studies [24, 28, 38, 39, 43], while contrasting with proxy-reported findings that emphasized externalising behaviours [19, 21]. Adolescents may be better at reporting internal emotional states than external observers.

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Table 4: Psychological morbidity score of the adolescents

Psychological dysfunction	AWE Median (I.R)	Controls Median (I.R)	*p-value
Total difficulties score	12.50 (7.00 - 17.00)	8.00 (6.00 - 11.00)	<0.001
Emotional Problems Score	3.50 (2.00 - 6.00)	2.50 (1.00 - 4.00)	<0.001
Conduct Problems Score	2.00 (0.25 - 4.00)	2.00 (0.00 - 3.00)	<0.001
Hyperactivity Score	3.00 (1.00 - 6.00)	2.00 (1.00 - 3.00)	<0.001
Peer Problems Score	2.00 (7.00 - 10.00)	2.00 (8.00 - 10.00)	<0.001
Prosocial Score	8.00 (7.00 - 10.00)	9.00 (8.00 - 10.00)	0.32
Impact Score	0.00 (0.00 - 1.00)	0.00 (0.00 - 0.00)	<0.001
Externalising score	6.00 (3.00 - 8.00)	4.00 (2.00 - 5.00)	<0.001
Internalising score	7.00 (3.00 - 10.00)	4.00 (3.00 - 6.00)	<0.001

Table 5: Correlation between psychological co-morbidities and HRQOL using Spearman's correlation test

Psychological co-morbidities	Total HRQOL Score		Psychosocial HSS		Physical HSS		School FS		Social FS		Emotional FS	
	Rho	p- value	Rho	p-value	Rho	p-value	Rho	p-value	Rho	p-value	Rho	p-value
Total difficulties score	-0.27	<0.001*	-0.22	0.01*	-0.24	0.01*	-0.22	0.02*	-0.25	0.01*	-0.22	0.01*
Emotional Problems Score	-0.31	<0.001*	-0.26	0.01*	-0.32	<0.001*	-0.23	0.01*	0.30	<0.001*	-0.22	0.01*
Conduct Problems Score	-0.09	0.31	-0.12	0.19	-0.14	0.13	-0.07	0.46	-0.09	0.29	-0.09	0.35
Hyperactivity Score	-0.21	0.02*	-0.12	0.18	-0.07	0.45	-0.23	0.01*	-0.13	0.15	-0.12	0.21
Peer Problems Score	-0.14	0.22	-0.18	0.31	-0.27	0.19	-0.21	0.49	-0.14	0.19	-0.19	0.31
Prosocial Score	-0.20	0.19	-0.19	0.11	-0.09	0.41	-0.21	0.18	-0.24	0.11	-0.19	0.27
Impact Score	-0.22	0.02*	-0.23	0.01*	-0.15	0.11	-0.19	0.04*	-0.19	0.04*	-0.22	0.02*
Externalising score	-0.19	0.04*	-0.15	0.04*	-0.13	0.17	-0.19	0.03*	-0.15	0.11	-0.13	0.17
Internalising score	-0.26	0.04*	-0.21	0.02*	-0.28	0.001*	-0.19	0.04*	-0.25	0.01*	-0.20	0.03*

*Significant at $p < 0.05$

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Compared to controls, AWE demonstrated significantly poorer HRQOL in all domains, especially psychosocial and school functioning ($p < 0.001$), aligning with other global studies [5, 14, 17, 31, 33]. Studies showing better QOL outcomes often included well-controlled or seizure-free patients [41-47].

Psychological difficulties were also significantly higher in AWE across all SDQ domains, including distress and functional impact ($p < 0.001$). These results agree with previous work across different settings [13, 21, 24, 28, 38-46].
Some studies reported mixed or limited SDQ differences between AWE and controls. These inconsistencies may stem from cultural factors or sample characteristics.
A core finding of this study is the inverse relationship between psychological morbidity and HRQOL, confirming that greater emotional and behavioural distress is associated with lower well-being [18, 27]. Regression analysis further identified psychological difficulties, seizure frequency, older age, and illness duration as independent predictors of poor HRQOL. This is consistent with another study, which supports the hypothesis that epilepsy-related psychological distress is intrinsic to the disorder [9, 37]

Importantly, psychological morbidity appears to be more modifiable than seizure type or duration. This suggests that addressing mental health could substantially improve life quality for AWE. Interventions such as counselling, psychosocial support, and school-based programs may reduce the burden of epilepsy-related impairment.

This study's strength lies in its matched-control design and use of validated self-report instruments. However, it is limited by its cross-sectional design and hospital-based sample, which may affect generalizability.

Limitations

This study has several limitations. Firstly, a longitudinal design would have been more appropriate than the cross-sectional approach employed, as it would have allowed for the assessment of causal relationships and the tracking of health-related quality of life (HRQOL) and psychological dysfunction trajectories over time among adolescents with epilepsy (AWE). Secondly, the reliance on self-report questionnaires rather than clinical diagnoses to assess psychological morbidities may limit the diagnostic accuracy of the findings. Thirdly, the use of a generic HRQOL tool, though useful for comparing AWE with their healthy peers, may not fully capture epilepsy-specific issues; incorporating epilepsy-specific quality of life domains could have provided more sensitive and clinically relevant data. Lastly, the study sample, drawn from two tertiary hospitals in Abeokuta, may not be representative of the broader adolescent epilepsy population in the region; a population-based study would enhance the generalizability of the results.
This study contributes new knowledge by going beyond the well-established finding that adolescents with epilepsy have poorer health-related quality of life (HRQOL). Specifically, it provides contextually relevant evidence from a Nigerian adolescent population, where research has been limited. Importantly, the study demonstrates that psychological morbidity particularly internalising symptoms such as emotional distress and peer difficulties is not only more common in adolescents with epilepsy but also serves as an independent predictor of poor HRQOL. The identification of seizure frequency, illness duration, and psychological difficulties as significant predictors offers practical clinical insights into the factors most closely associated with reduced quality of life. By relying on self-report measures, the study captures adolescents' own perspectives and highlights the prominence of internalising over externalising problems, which adds nuance to the understanding of comorbidities in this age group.

Despite its limitations, including the cross-sectional design, use of generic rather than epilepsy-specific HRQOL tools, and recruitment from hospital-based settings, the study has notable strengths. These include the use of a well-matched control group, application of validated and culturally adapted instruments, and reliance on adolescents' self-reports rather than proxy assessments, which enhances the validity and contextual relevance of the findings. The robust comparative design and multivariate analysis further strengthen the conclusions. Collectively, the study underscores the need to integrate psychological assessment and support into epilepsy care for adolescents, emphasizing the modifiable role of mental health in improving HRQOL outcomes.

Implications of findings

Based on the findings of this study, it is recommended that routine psychological screening using validated tools be incorporated into the clinical care of adolescents with epilepsy (AWE), given the strong association

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between psychological morbidity and reduced quality of life. A multidisciplinary approach involving neurologists, psychiatrists, psychologists, and educational counselors is essential for holistic management. The addition of epilepsy-specific QOL instruments in future assessments is advised to better capture condition-related challenges. Longitudinal, population-based studies are needed to determine causal relationships and monitor HRQOL trends over time. Public health campaigns targeting stigma reduction and increased awareness among caregivers, teachers, and peers are also necessary. Finally, adolescent-focused epilepsy and mental health services should be strengthened through supportive health policies and capacity building within existing healthcare frameworks.

The findings from this study point to several important recommendations for clinical practice, research, and policy. First, routine psychological screening should be incorporated into the care of adolescents with epilepsy, given the clear association between psychological morbidity and poorer HRQOL. The use of brief, validated tools such as the SDQ can facilitate early identification of at-risk adolescents. Second, a multidisciplinary model of care involving neurologists, psychiatrists, psychologists, and educational counselors is strongly recommended, as addressing psychological morbidity may represent a modifiable target to improve overall wellbeing, even where seizure control is only partial. Third, future research should adopt longitudinal and population-based designs to clarify causal relationships, capture trajectories of HRQOL, and improve generalizability beyond hospital-based populations. Incorporating epilepsy-specific quality of life instruments in subsequent studies will also provide a more sensitive measure of condition-specific challenges. Finally, public health interventions aimed at stigma reduction, school-based support, and caregiver education should be prioritized to enhance the social environment of adolescents living with epilepsy.

CONCLUSION

This study demonstrates that epilepsy significantly impairs the quality of life and psychological wellbeing of adolescents. Affected individuals experience a high burden of psychological comorbidities, particularly internalising difficulties such as emotional distress and peer-related challenges. Epilepsy also negatively affects all domains of functioning psychosocial, school, emotional, social, and physical with the greatest impact observed in school functioning. Compared to their healthy peers, adolescents with epilepsy report significantly poorer HRQOL and higher levels of psychological distress across all domains. Importantly, psychological morbidity was found to be an independent predictor of poor HRQOL, highlighting the need for integrated mental health assessment and support within epilepsy care frameworks.

REFERENCES

1. Fisher RS, Cross JH, French JA, et al. Operational classification of seizure types by the International League Against Epilepsy: Position Paper of the ILAE Commission for Classification and Terminology. *Epilepsia.* 2017;58(4):522-530. doi:10.1111/epi.13670
2. Scott RA, Lhatoo SD, Sander JW. The treatment of epilepsy in developing countries: where do we go from here? *Bull World Health Organ.* 2001; 79: 344-51.
3. Ogundare T, Adebowale TO, Okonkwo OA. Quality of life among patients with epilepsy in Nigeria: predictors and barriers to routine clinical use of QOLIE-31. *Qual Life Res.* 2021;30(2):487-496. doi:10.1007/s11136-020-02643-x
4. Watila MM, Balarabe SA, Komolafe MA, et al. Epidemiology of Epilepsy in Nigeria: A Community-Based Study From 3 Sites. *Neurology.* 2021;97(7):e728-e738. doi:10.1212/WNL.0000000000012416
5. Saleh SHA, Mohammed MEH, Abounaji OA. Health related quality of life in Egyptian children and adolescents with epilepsy. Egypt J Hosp Med. 2021;85(2):3772-3777. doi:10.21608/ejhm.2021.194605
6. Shakir M, Al-Asadi JN. Quality of life and its determinants in people with epilepsy in Basrah, Iraq. *Sultan Qaboos Univ Med J.* 2012; 12: 449-57.
7. Gbiri CA, Akingbohungbe AD. Determinants of Quality of Life in Nigerian Children and Adolescents with Epilepsy: A Hospital-based Study. *Disabil CBR Incl Dev.* 2011; 22: 89-96.
8. Rozensztrauch A, Koltuniuk A. The Quality of Life of Children with Epilepsy and the Impact of the Disease on the Family Functioning. Int J Environ Res Public Health. 2022 Feb 17; 19 (4):2277. doi: 10.3390/ijerph19042277. PMID: 35206465; PMCID: PMC8871959.

Print ISSN: 0189-9287 Online ISSN: 2992-345X

9. Bragatti JA, Torres CM, Isolan GR, Bianchin MM. Psychiatric comorbidities of epilepsy: A review. *J Neurol Neurophysiol.* 2011; S2: 002.
10. WHO 2014. Health for the world adolescents: A second chance in the second decade. *http://wwwwhoint/maternal_child_adolescent/topics/adolescence/second-decade/en/* Accessed 11th, April 2016.
11. Patton GC, Sawyer SM, Santelli JS, Ross DA, Afifi R, Allen NB et al. Our future: a Lancet commission on adolescent health and wellbeing. *Lancet.* 2016; 387: 2423-78.
12. Sawyer SM, McNeil R, Francis KL, Matskarofski JZ, Patton GC, Bhutta ZA, et al. The age of paediatrics. *Lancet Child Adolesc Health.* 2019; 3: 822-30.
13. Aronu AE, Uwaezuoke N, Chinawa JM. Health-related quality of life in children and adolescents with epilepsy in Enugu: Need for targeted intervention. Niger J Clin Pract. 2021; 24 (4):518-25.
14. Taylor J, Jacoby A, Baker GA, Marson AG. Self-reported and parent-reported quality of life of children and adolescents with new-onset epilepsy. *Epilepsia.* 2011; 52: 1489-98.
15. Ronen GM, Streiner DL, Rosenbaum P. Health-related quality of life in childhood epilepsy: moving beyond 'seizure control with minimal adverse effects'. *Health Qual Life Outcomes.* 2003; 1: 36. doi:10.1186/1477-7525-1-36
16. Wiesmüller L, Strauch D, Schönberger J, et al. Sleep disturbances and health-related quality of life in children with epilepsy: A caregiver survey. *Epilepsy Behav.* 2025;171:110613. doi:10.1016/j.yebeh.2025.110613
17. Lagunju IA, Bella-Awusah TT, Takon I, Omigbodun OO. Mental health problems in Nigerian children with epilepsy: associations and risk factors. *Epilepsy Behav.* 2012; 25: 214-8.
18. Otero S. Psychopathology and psychological adjustment in children and adolescents with epilepsy. *World J Pediatr.* 2009; 5: 12-7.
19. Burton KJ, Rogathe J, Hunter E, Burton MJ, Swai M, Todd J, et al. Behavioural co-morbidity in Tanzanian children with epilepsy: a community-based case-controlled study. *Dev Med Child Neurol.* 2011; 53: 1135-42.
20. Bailet LL, Turk WR. The impact of childhood epilepsy on neurocognitive and behavioral performance: a prospective longitudinal study. *Epilepsia.* 2000; 41: 426-31.
21. Mandelbaum DE, Burack GD. The effect of seizure type and medication on cognitive and behavioral functioning in children with idiopathic epilepsy. *Dev Med Child Neurol.* 1997; 39: 731-5.
22. Leite E Silva, M. H., Lima, J. V. S., da Silva Lopes, I. P., da Silva, A. C. V., Lucchi, I. M., Oliveira, G. P., Vieira, L. A. M., Bruno, G. O. M., & de Paula França Resende, E. (2025). Stigmas in Epilepsy: Systematic Review and Meta-Analysis. *Journal of epilepsy research*, *15*(1), 23–32. https://doi.org/10.14581/jer.25003
23. Gruen MD, Gopaul MT, Jimenez AD, et al. Quality of life over time after new onset refractory status epilepticus. *Epilepsia.* Published online September 13, 2025. doi:10.1111/epi.18635
24. Sah B, Khatiwada B, Agarwal S, Paudel P, Kafle S. Behavioral problems in children with epilepsy and its association with types of seizure: A cross-sectional observational study. Nepal Med J. 2025;8(1):45-52.
26. Fatoye F, Mosaku KS, Komolafe M, Adewuya AO. Interictal anxiety and depression symptoms in Nigerians with epilepsy: a controlled study. *Epilepsy Behav.* 2006; 9: 312-16.
27. Fombonne E. The use of questionnaires in child psychiatry research: measuring their performance and choosing an optimal cut-off. *J Child Psychol Psychiatry.* 1991; 32: 677-93.
28. Haneef Z, Grant ML, Valencia I, Hobdell EF, Kothare SV, Legido A, et al. Correlation between child and parental perceptions of health-related quality of life in epilepsy using the PedsQL.v4.0 measurement model. *Epileptic Disord.* 2010; 12: 275-82.
29. Jovanovic M, Jocic-Jakubi B, Stevanovic D. Adverse effects of antiepileptic drugs and quality of life in pediatric epilepsy. *Neurol India.* 2015; 63: 353-9.
30. Bansal D, Azad C, Gudala K, Dasari A. Predictors of health-related quality of life in childhood epilepsy and comparison with healthy children: findings from an Indian study. *Turk J Med Sci.* 2017; 47: 490-8.
31. Karnavar PK, Hedge AU, Kulkarni S. Quality of Life in Children with Epilepsy in Private and

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Public Tertiary Care Centers in India. *Int J Epilepsy*. 2018; 5: 28-37.
32. Devinsky O, Westbrook L, Cramer J, Glassman M, Perrine K, Camfield C. Risk factors for poor health-related quality of life in adolescents with epilepsy. *Epilepsia*. 1999; 40: 1715-20.
33. Nadkarni J, Jain A, Dwivedi R. Quality of life in children with epilepsy. *Ann Indian Acad Neurol*. 2011; 14: 279-82.
34. Austin JK, Haber LC, Dunn DW, Shore CP, Johnson CS, Perkins SM. Children with new onset seizures: A prospective study of parent variables, child behavior. problems, and seizure occurrence. *Epilepsy Behav*. 2015;53:73-77. doi:10.1016/j.yebeh.2015.09.019
35. Ali LI, Farhan AH, Elshafey E, Elsayed HM, Abouzeid SM. Association between psychiatric symptoms, vitamin D serum level and parental stress in children and adolescents with epilepsy. Zagazig Univ Med J. 2025;31(2):120–9.
36. Nemati H, Nematollahi M, Dehbozorgi S, Asadi-Pooya AA. Substance use, depression, and anxiety: A cross-sectional study comparing adolescents with epilepsy and diabetes. *Epilepsy Behav*. Published online June 28, 2025. doi:10.1016/j.yebeh.2025.110555
37. Salayev KA, Sanne B, Salayev R. Psychiatric and Behavioural Problems in Children and Adolescents with Epilepsy. *East Asian Arch Psychiatry*. 2017; 27: 106-14.
38. Novriska D, Sutomo R, Setyali A. Behavioral problems in children with epilepsy. *Pediatr Indones*. 2014; 54: 324-9.
39. Alfstad KA, Clench-Aas J, Van Roy B, Mowinckel P, Gjastad L, Lossius MI. Psychiatric symptoms in Norwegian children with epilepsy aged 8-13 years: effects of age and gender? *Epilepsia*. 2011; 52: 1231-38.
40. Tanabe T, Kashiwagi M, Shimakawa S, Fukui M, Kadobayashi, K, Azumakawa K, et al. Behavioral assessment of Japanese children with epilepsy using SDQ (strengths and difficulties questionnaire). *Brain Dev*. 2013; 35: 81-6.
41. Gureje O. Interictal psychopathology in epilepsy prevalence and pattern in a Nigerian clinic. *Br J Psychiatry*. 1991; 158: 700-5.
42. Kim HJ, Kim MJ, Kim EA, et al. Childhood-onset epilepsy: Longitudinal seizure outcomes in a large single-center cohort. *Epilepsy Res*. Published online July 10, 2025. doi:10.1016/j.eplepsyres.2025.107622
43. Norrby U, Carlsson J, Beckung E, Nordholm L. Self-assessment of well-being in a group of children with epilepsy. *Seizure*. 1999; 8: 228-34
44. Widjaja E, Puka K, Speechley KN, Ferro MA, Connolly MB, Major P, Gallagher A, Almubarak S, Hasal S, Ramachandrannair R, Andrade A, Xu Q, Leung E, Snead OC 3rd, Smith ML. Trajectory of Health-Related Quality of Life After Pediatric Epilepsy Surgery. JAMA Netw Open. 2023 Mar 1;6(3):e234858. doi: 10.1001/jamanetworkopen.2023.4858. PMID: 36972050; PMCID: PMC10043749.
45. Stevanovic D, Tadic I, Novakovic T. Health-Related Quality of Life in Children and Adolescents with Epilepsy: A Systematic Review. In: Gadze ZP(ed.). *Epilepsy in Children- Clinical and Social Aspects Rijeka, Croatia*. 2011: 161-86.
46. Choi HY, Kim SE, Lee HW, Kim EJ. Social Behavioral Problems and the Health-Related Quality of Life in Children and Adolescents with Epilepsy. *Psychiatry Investig*. 2016; 13: 488-95.

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