

NIGERIA MEDICALASSOCIATION Print ISSN 0300-1652 E-ISSN 2229-774X

Original Research

Quality of life in children with epilepsy: Effect of sociodemographic factors and Parental awareness of seizure action plan in Eastern India

Aishwarya Senapaty¹, Preeti Srivastava², Shikha Swaroop², Roshan Mohanty², Adyasha Mishra²

¹Department of Paediatrics, AIIMS, Bhubaneshwar, India, ²Tata Main Hospital, Jamshedpur, India

Abstract

Background: Epilepsy is a chronic neurological disorder that disrupts daily life and negatively impacts quality of life (QOL). While most medical approaches focus on seizure control, there is limited attention to the QOL of children with epilepsy (CWE) in eastern India. This study aimed to assess QOL among CWE and examine the influence of sociodemographic factors, seizure characteristics, and parental awareness of a seizure action plan (SAP).

Methodology: This cross-sectional study was conducted in the Department of Paediatrics at a tertiary care teaching hospital in eastern India from December 2020 to May 2022. Eighty children aged 5-15 years, all diagnosed with epilepsy and on antiepileptic medication for at least six months, participated. Approval was obtained from the Institutional Ethics Committee of the hospital concerned. The participants were interviewed using a structured pre-tested schedule. The QOL of the participants was evaluated using the Quality of Life in Childhood Epilepsy (QOLCE-55) questionnaire. Parental awareness of SAP was assessed based on their knowledge of essential seizure management actions. Kruskal Wallis test was used to identify factors associated with QOL.

Results: The mean age in the study population was 9.37 ± 3.57 years, with 56.45% males. The mean QOL scores in cognitive, emotional, social, and physical domains were 59.41, 55.11, 56.40, and 65.11, respectively. QOL steadily declined with age, with emotional and social domains more impacted on older children. Maternal illiteracy, low socioeconomic status, and earlier onset of epilepsy were significantly associated with poorer QOL (p<0.001). Only 21.25% of parents had complete awareness of SAP, and the children of these parents had relatively better QOL scores.

Conclusion: QOL was better in CWE who were younger, had late-onset epilepsy, belonged to the upper socioeconomic class, and whose mothers were educated. Interventions enhancing parental awareness about SAP may lead to improvement in the QOL of CWE.

Keywords: Epilepsy; Quality of Life; Seizure; Parental Awareness; QOLCE-55.

*Correspondence: Aishwarya Senapaty. Department of Paediatrics, AIIMS, Bhubaneshwar, India. Email: aishwaryasenapaty@gmail.com.

How to cite: Senapaty A, Srivastava P, Swaroop S, Mohanty R, Mishra A. Quality of life in children with epilepsy: Effect of sociodemographic factors and Parental awareness of seizure action plan in Eastern India. Niger Med J 2025; 66 (1):225-234. https://doi.org/10.71480/nmj.v66i1.690.

Quick Response Code:



Introduction

Epilepsy is a prevalent, chronic neurological condition affecting children and adolescents. Its episodic and unpredictable nature often disrupts daily activities, impacting a child's normal routine.[1] Epilepsy can substantially diminish the quality of life (QOL), not only due to its chronic nature and the necessity of ongoing medication—which may have side effects—but also because of societal prejudices and stigmas that exist around the condition.[2] In the Indian subcontinent, epilepsy still remains a social taboo,[3] which along with the associated psychological, social, behavioural, and academic challenges significantly influences both patients and their families.[1]

Traditionally, medical treatment for epilepsy has focused primarily on controlling seizures while minimizing or avoiding adverse effects from medication,[2] with limited attention given to assessing QOL.[4] QOL is a multidimensional concept that reflects an individual's overall well-being across various domains, including physical health, psychological state, social relationships, and environmental factors. It provides a holistic measure of how individuals perceive their health and adapt to their circumstances. In chronic conditions like epilepsy, assessing QOL is essential to understanding the broader impact of the disease on daily life and overall functioning. QOL can be assessed using standardized tools such as the Quality of Life in Epilepsy Inventory (QOLIE-31), and the European Quality of Life 5 Dimensions inventory (EQ-5D).

Studies from Northern, Central, and Southern states of India have reported that CWE experience compromised QOL due to factors such as socio-demographic characteristics, seizure frequency, type of seizures, and duration of epilepsy. [3-7] These studies have demonstrated associations between lower parental education, higher seizure frequency, and reduced QOL in CWE.

Despite these findings, there is limited research on the QOL of CWE in Eastern India, where unique socio-economic and cultural factors may contribute to different outcomes. Therefore, the present study was conducted with the primary objective of assessing the QOL comprehensively in CWE and the secondary objective of determining parental awareness of seizure action plan (SAP) in a tertiary care centre in Eastern India. By addressing this gap, the study aims to provide a comprehensive understanding of the factors influencing QOL in this population.

Methodology

Study design and setting

The present research was designed as a hospital-based cross-sectional study carried out on both the outpatients and inpatients of the Department of Paediatrics of a tertiary care teaching hospital during the period 1st December 2020 to 31st May 2022. The study protocol was approved by the Institutional Ethics Committee of the concerned hospital (vide reference no. TMH/AC/IEC/NOV/029/2020 dated 20/11/2020) and informed written consent from the parents and verbal assent from the children was obtained prior to enrolment in the study.

Study participants

The study included 80 children aged 5 to 15 years who had a confirmed diagnosis of epilepsy. The diagnosis was established clinically based on their medical history, with or without confirmation by electroencephalogram (EEG), as determined by a paediatric neurologist or paediatrician. All participants were on anti-seizure medication (ASM) for a minimum duration of 6 months before inclusion in the study. Children either visiting the outpatient department (OPD) or getting admitted in children's ward (inpatient department, IPD) were all included. The eligibility criteria also extended to children who were ambulatory and were able to do age-appropriate basic activities of daily living (ADL).

The exclusion criteria were: (i) Children with severe motor disabilities like spasticity/ dystonia/ quadriparesis/ hemiplegia with Gross Motor Function Classification System (GMFCS) Grade III or more; (ii)Children dependent on caregiver for basic ADLs; (iii) Children suffering from other chronic disorders like Thalassemia, diabetes, severe asthma, chronic renal failure, etc. (iv) Children with unreliable caregivers who are unable to answer satisfactorily.

Method of data collection

The 80 patients were recruited into the study consecutively from OPD and IPD based on inclusion and exclusion criteria. A pre-designed, study proforma was prepared after reviewing available literature. The following demographic factors were recorded, which included demographic parameters (age, sex, mother's education, socioeconomic status, and place of residence), family history of epilepsy, and clinical factors (in terms of age at onset of seizure, seizure type, seizure frequency over preceding 6 months, and number of ASMs prescribed). The seizure type was classified broadly as generalized seizures, focal seizures, and unclassified as per the ILAE 2017 classification.[8] Seizure frequency was determined as per the history recalled by parents in the previous year. Socioeconomic status was finally determined as per the modified Kuppuswamy scale.[9]

For primary objective: QOL in CWE

QOL of the study participants was evaluated using the Quality of Life in Childhood Epilepsy (QOLCE)-55 questionnaire.[10] It has already been validated by Puka et al,[11] and Conway et al. [12] and deemed as a reliable and valid instrument to assess health-related quality of life (HRQOL) in children with epilepsy. The questionnaire was administered by the primary researcher attending to the patient along with his/her parents. The QOLCE-55 was translated into Hindi by two qualified independent translators, both native speakers of Hindi and proficient in English. The questionnaire was back translated to English and was found to be similar.

The QOLCE was filled and coded as per the standard instructions available with the questionnaire. QOLCE-55 contains 55 items, allocated to assess four subscales of QOL, namely, Cognitive functioning (22 items), Emotional functioning (17 items), Social functioning (7 items), and Physical functioning (9 items). Each sub scale has a number of items or questions with responses as excellent, very good, good, fair, and poor. The pre-coded numeric values of items were converted to a 0–100-point scale, (recoded as 0, 25, 50, 75, 100) with higher converted scores always reflecting better quality of life. An overall QOL score was computed by adding each subscale score for each individual and then dividing by a respective number of items.

For secondary objective: Parental awareness of SAP

Parental awareness was evaluated with reference to SAP.[12] It is a plan that provides information on how to respond to a seizure and keep someone safe. All parents of children with epilepsy are routinely informed and explained the various essential aspects of a seizure, such as how to recognize a seizure, and what measures to take to decrease the risk of aspiration, prolonged seizures, mortality, or the need for rescue medications.

Five questions were framed from this pre-validated action plan. The responses were noted in the form of "Yes" "No" or "I don't know". The following questions were asked:

- a. When a seizure occurs, should the child be turned to one side?
- b. During an active seizure, should any object /spoon /finger be put in the child's mouth?
- c. During a seizure, should the child be placed in a clear area away from furniture or any other dangerous object?
- d. Should the seizure be timed, or duration noted?

e. Should the child be given any medication (intranasal or per rectal), if the seizure lasts for more than 5mins?

The above questions were asked to the mother or guardian and a "yes" response to questions a, c, d, and e; and a "no" response to question b were considered correct. Any other response was taken as incorrect. Each correct response was scored 1 and an incorrect response was given a score 0. Parents with a total score of 1 or 2 were considered to have poor awareness, those with scores 3 or 4 had partial awareness and a total score of 5 indicated complete awareness of SAP.

Statistical analysis

The data entry and analysis were done using Statistical Package for Social Sciences (SPSS) version 26.0. The normal distribution of the data was analysed. Continuous variables with normal distribution are presented as mean \pm standard deviation. A median (minimum-maximum) value was used where a normal distribution was absent. Quantitative variables are given as numbers (percentages). Since the data had a skewed distribution, the Kruskal Wallis test was used to compare the mean QOLCE-55 score across variables with more than two categories. A p<0.05 was considered as statistically significant.

Results

Socio-demographic characteristics of the participants

Of the 80 study participants, 36 (45.0%) were between 5-8 years of age; the ages of the participants ranged between 5 years and 15 years, with a mean age of 9.37 ± 3.57 years. More than half of the patients were males (n=45, 56.25%) and the male-to-female ratio was 1.3:1. The proportion of patients whose mothers were illiterate was 18.75% (n=15); while 16.25% (n=13) belonged to upper lower class and 11.25% (n=9) were from lower class families (according to Modified Kuppuswamy Scale, 2020) (Table 1).

Parameters	Frequency (%)
Age	
5-8 years	36 (45.00)
9-12 years	22 (27.50)
13-15 years	22 (27.50)
Gender	
Male	45 (56.25)
Female	35 (43.75)
Mother's education	
Illiterate	15 (18.75)
Until high school	46 (57.50)
Above high school	19 (23.75)
Socioeconomic status	
Upper class (1)	18 (22.50)

Table 1: Demographic characteristics of the study participants (N=80)

Upper middle class (2)	9 (11.25)
Lower middle class (3)	31 (38.75)
Upper lower class (4)	13 (16.25)
Lower class (5)	9 (11.25)

Seizure characteristics

The mean age of onset of epilepsy was 5.06 ± 3.24 years, which ranged from birth to 12 years of age. The largest proportion of patients (47.50%) were diagnosed with the condition before 5 years of age. A positive family history of epilepsy was given by the parents of 27 children (33.75%). Of the total, 60% of patients had generalized seizures (n=48), 30% had focal seizures (n=24), and 10% had unclassified seizures (n=8). The proportion of participants who reported episodes of seizures almost daily was 6.25% (n=5). Most of the patients (n=33, 41.25%) required one drug for their treatment, but around 8.75% (n=7) needed four drugs or more for their treatment (Table 2).

Parameters	Frequency (%)
Age at the onset of seizure	
<5 years	38 (47.50)
5-10 years	37 (46.25)
11-16 years	5 (6.25)
Family history of epilepsy	
Present	27 (33.75)
Absent	53 (66.25)
Type of epilepsy	
Generalized seizure	48 (60.00)
Focal	24 (30.00)
Unclassified	8 (10.00)
Frequency of seizures in the past year	
Almost daily	5 (6.25)
Monthly	7 (8.75)
Yearly	23 (28.75)
More than a year	45 (56.25)
Number of ASMs	
1 medication	33 (41.25)
2 medications	25 (31.25)

 Table 2: Seizure characteristics among study participants (N=80)

3 medications	15 (18.75)
4 medications	7 (8.75)

QOL and its associated factors

The mean QOLCE-55 scores were 59.41 ± 5.550 , 55.11 ± 4.889 , 56.40 ± 5.681 , and 65.11 ± 4.747 for cognitive functioning, emotional functioning, social functioning, and physical functioning respectively. In the age group of 5-8 years, emotional function was worst affected, and physical functioning was least affected; a similar condition was seen in the age group of 9-12 years. However, in the age group of 13-15 years, social functioning was the worst affected domain, but physical functioning was least affected (Table 3).

Domains of the QOLCE-55 questionnaire	Mean ± SD QOLCE-55 Score	Mean Score in 5-8 years	Mean Score in 9-12 years	Mean Score in 13-16 years
Cognitive functioning	59.41 ± 5.55	63.75	57.82	53.91
Emotional functioning	55.11 ± 4.89	58.28	53.77	51.27
Social functioning	56.40 ± 5.68	61.03	54.36	50.86
Physical functioning	65.11 ± 4.75	68.94	63.59	60.36

Table 3: Quality of life of study participants QOLCE-55 questionnaire (N=80)

Overall QOL scores steadily declined with an increasing age of study participants (p<0.001). Also, maternal education and socioeconomic status were significantly associated with improved QOL among the study participants (p<0.001). A younger age of onset of seizure was associated with poorer QOL (p<0.001) (Table 4).

Table 4: Quality of life of study participants according to important characteristics (N=80)

Parameters	Mean ± SD QOLCE-55 Score	p-value [#]
Age		
5-8 years	63 ± 2.19	< 0.001*
9-12 years	57.39 ± 3.11	
13-15 years	54.1 ± 1.75	
Mother's education		
Illiterate	53.53 ± 1.24	< 0.001*
Until high school	59.78 ± 3.57	
Above high school	61.47 ± 4.77	

Socioeconomic status		
Upper class (1)	65.89 ± 1.04	< 0.001*
Upper middle class (2)	63.27 ± 0.37	
Lower middle class (3)	59.6 ± 2.45	
Upper lower class (4)	55.28 ± 0.36	
Lower class (5)	53.35 ± 1.3	
Age at onset of seizure		
<5 years	54.81 ± 1.72	< 0.001*
5-10 years	60.71 ± 3.62	
11-16 years	66.5 ± 1.05	

[#] p-value was calculated from the Kruskal Wallis test, * Significant at p<0.05

Parental awareness of SAP and its association with QOL

The parents of only 17 out of 80 patients (21.25%) had complete awareness of SAP and the subgroup of patients had relatively better QOL scores. Concomitantly, patients with poor parental awareness of epilepsy had the worst QOL score. A statistically significant association was observed between parental awareness and QOL of their children with epilepsy (Table 5).

Table 5: Parental awareness of seizure action plan (SAP) and its association with QOL of children with epilepsy (N=80)

Parental awareness of seizure action plan (SAP)	n (%)	Mean ± SD QOLCE-55 Score	p-value [#]
Poor (Score 1 or 2)	24 (30.00)	55.82 ± 3.08	<0.001*
Partial (Score 3 or 4)	39 (48.75)	58.46 ± 3.71	
Complete (Score 5)	17 (21.25)	64.78 ± 1.42	

[#] p-value was calculated from the Kruskal Wallis test, *Significant at p<0.05

Discussion

Evaluating the quality of life in children with epilepsy is critical, as epilepsy is not only a neurological disorder but also a condition that profoundly affects emotional, social, cognitive, and physical well-being.[14] The impact of epilepsy on children extends beyond the episodic nature of seizures; it influences the child's development, daily life, family dynamics, and future opportunities.[14] Studies have shown that focusing solely on seizure control may not be sufficient to ensure an optimal quality of life for these children.[15] For instance, frequent medication adjustments to control seizures may bring about significant side effects that impact physical and emotional well-being. A focus on QOL allows healthcare providers to design individualized care strategies that balance seizure management with improved psychosocial outcomes, aiming for a well-rounded approach to epilepsy care.

The QOL assessment based on the QOLCE-55 scores revealed that physical functioning scored the highest (65.11 ± 4.747), whereas emotional functioning scored the lowest (55.11 ± 4.889).

Cognitive functioning, which received relatively low scores, is often impacted by both epilepsy itself and the side effects of ASM. Cognitive challenges can hinder academic progress, leading to feelings of inadequacy and isolation, which are especially notable in older children who may experience more stigma and a need for social belonging. Emotional functioning scored lowest in younger age groups (5-8 and 9-12 years). Children in this age range are still developing self-regulation and coping mechanisms, so epilepsy's unpredictability and the need for continuous treatment can foster feelings of anxiety, frustration, and low self-esteem. Emotional functioning in these children may also be shaped by overprotective or anxious behaviours from parents, which can lead to a limited sense of independence. Social functioning, particularly in the oldest age group (13-15 years), was another domain of concern, highlighting the social stigma associated with epilepsy that becomes more evident as children become more socially aware. Adolescents often desire peer acceptance and independence, but epilepsy can act as a barrier, limiting participation in social activities and fostering a sense of exclusion. This social withdrawal or rejection can be damaging to self-identity, which is particularly vulnerable during adolescence. Physical functioning scored the highest across all age groups, suggesting that the direct physical limitations associated with epilepsy are perceived as less restrictive than cognitive and social challenges. This may be because the physical effects of epilepsy while limiting certain activities can be managed to some extent with precautions and supervised participation in everyday routines.

The overall QOL scores exhibited a decline with increasing age, suggesting a cumulative impact of epilepsy on mental health and social integration as children grow older. Nadkarni et al, [4] reported in their study that the mean age for groups 5-9 and 10-14 years was 62.96 ± 8.23 and 57.93 ± 11.11 respectively (p<0.001).

In our study, socio-demographic factors, particularly maternal education and socioeconomic status, emerged as significant determinants of QOL in children with epilepsy. Nadkarni et al, [4] reported that CWE of illiterate mothers had more compromised QOL as compared to children with literate mothers (p <0.001). Nagesh et al. [7] also observed that the maternal education and socio-economic status of parents affected the QOL of the children. Our findings are consistent with existing research indicating that lower socioeconomic status and parental education levels often correlate with poorer health outcomes, reduced access to healthcare, and limited resources for managing chronic conditions. Maternal education plays a pivotal role in managing childhood epilepsy, as mothers with higher levels of education may be better equipped to understand medical instructions, identify and respond to seizure triggers, and advocate for appropriate care. Socioeconomic status influences QOL by affecting access to healthcare, including medication adherence, timely follow-up visits, and access to educational and social resources. Families with higher socioeconomic status are often able to provide a more supportive environment, which can help children with epilepsy feel more integrated and less isolated. Conversely, children from lower socioeconomic backgrounds may face additional barriers, including lack of access to specialized care, restricted medication options, and greater exposure to stigma, all of which can negatively impact their QOL. Contrary to our observation, the study conducted by Arya et al, [3] in 40 children from the age group of 2-14 who were suffering from epilepsy, showed that parental education, socio-economic status, frequency of seizure, or type of epilepsy did not significantly affect the overall QOL among children with epilepsy. The difference in findings between our study and the study conducted by Arya et al, [3] could be attributed to several factors, including methodological differences, the choice of the quality of life (QOL) assessment tool, and demographic or regional variations.

We also observed that an earlier onset of epilepsy was linked to poorer QOL outcomes, likely due to the prolonged disease burden these children endure. Early-onset epilepsy can disrupt critical developmental milestones and may result in accumulated psychological stress, social isolation, and impaired cognitive development over time. Additionally, early onset may mean that children have experienced years of medication and frequent medical visits, which can limit their sense of normalcy and create feelings of dependence or helplessness. Consistent with our reasoning, the study by Shetty et al, [16] revealed the

duration of epilepsy played an important role in QOL. Their study reported that patients with a duration of more than 15 years had poor QOL. These patients had lower cognitive functions which had limited their daily activities with poor attention/ concentration with feelings of language dysfunction. These patients also had seizure-worry, memory disturbance, fatigability, and health discouragement.[16]

Another important observation was a significant association between parental awareness of SAP and QOL in children with epilepsy. SAP provides structured guidelines on how to manage seizures promptly and effectively, reducing the likelihood of prolonged episodes and associated complications. Parental awareness is a cornerstone in managing childhood epilepsy effectively. It encompasses knowledge of the condition, its triggers, and emergency management. Parents who are well-informed about SAP are better equipped to respond calmly and swiftly during a seizure, which reduces the duration and severity of episodes, minimizes associated complications, and enhances physical functioning. This alleviates the anxiety and fear associated with unpredictable seizures for both parents and children and fosters a sense of security and stability, positively influencing emotional functioning. Well-informed parents can strike a balance between protecting their children and allowing them autonomy. This can help children participate in social and academic activities, improving their social functioning and cognitive development, which are essential components of QOL. Therefore, awareness of SAP is strongly associated with better QOL outcomes, as it promotes a supportive environment that fosters independence, reduces stigma, and helps children with epilepsy to lead a more balanced and fulfilling life.

The inclusion of this aspect in the research is a notable strength of our study, as it highlights a critical but underexplored area in epilepsy care. Unlike other factors such as socioeconomic status or maternal education, which are well-documented in prior studies, the role of parental awareness of SAP in improving QOL has no precedent in existing literature. By exploring parental awareness of SAP, the study fills a critical gap in existing research. This novel focus sets the groundwork for further investigations and the development of interventions targeting parental education.

Conclusion

The present study highlights the multifaceted impact of epilepsy on QOL in children, shaped by sociodemographic factors, like age, maternal education, socioeconomic status, and age at onset of seizure. Moreover, this study underscores the role of parental awareness of SAP on the QOL of CWE, emphasizing the need to include parental education as a core component of epilepsy management programs. Healthcare providers should prioritize parental training sessions focused on understanding epilepsy, recognizing triggers, and implementing SAP. These sessions should be integrated into patient discharge procedures and reinforced during every follow-up visit. Enhancing parental knowledge is not merely a supportive strategy; it is a fundamental step toward improving the overall quality of life for children living with epilepsy.

References

- 1. Ronen GM, Streiner DL, Verhey LH, Lach L, Boyle MH, Cunningham CE, et al. Disease characteristics and psychosocial factors: Explaining the expression of quality of life in childhood epilepsy. Epilepsy Behav. 2010;18:88–93. doi: 10.1016/j.yebeh.2010.02.023.
- Christianson AL, Zwane ME, Manga P, Rosen E, Venter A, Kromberg JG. Epilepsy in rural South Africa children-prevalence, associated disability and management. S Afr Med J. 2000;90:262–6.
- Arya V, Gehlawat VK, Kaushik JS, Gathwala G. Assessment of parent reported quality of life in children with epilepsy from Northern India: A cross-sectional study. J Pediatr Neurosci. 2014;9(1):17-20. doi: 10.4103/1817-1745.131473.

- 4. Nadkarni J, Jain A, Dwivedi R. Quality of life in children with epilepsy. Ann Indian Acad Neurol. 2011;14(4):279-82. doi: 10.4103/0972-2327.91948.
- 5. Pachange PN, Dixit J, Arjun M, Goel AD. Quality of life among middle and secondary school children with epilepsy. Journal of Neurosciences in Rural Practice. 2021;12(03):490-4.
- 6. Choudhary A, Gulati S, Sagar R, Sankhyan N, Sripada K. Childhood epilepsy and ADHD comorbidity in an Indian tertiary medical center outpatient population. Sci Rep. 2018;8(1):2670.
- 7. Nagesh A, Gade A, Puchchakayala G, Bhava S, Kagitapu S, Madanu S, et al. Assessment of health-related quality of life in children with epilepsy using quality of life in childhood epilepsy questionnaire (Qolce-55) in tertiary care hospital. Journal of Basic and Clinical Pharmacy. 2017;8(2):74-77.
- Fisher RS, Cross JH, French JA, Higurashi N, Hirsch E, Jansen FE, 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.
- 9. Saleem SM. Modified Kuppuswamy socioeconomic scale updated for the year 2020. Indian J Forensic Community Med. 2020;7(1):1-3.
- Goodwin SW, Lambrinos AI, Ferro MA, Sabaz M, Speechley KN. Development and assessment of a shortened Quality of Life in Childhood Epilepsy Questionnaire (QOLCE-55). Epilepsia 2015;56(6):864-72.
- 11. Puka K, Goodwin SW, Ferro MA, Smith ML, Widjaja E, Anderson KK, et al. Validation of the Quality of Life in Childhood Epilepsy Questionnaire (QOLCE-55 and QOLCE-16) for use by parents of young adults with childhood-onset epilepsy. Epilepsy &Behavior. 2020;104:106904.
- Conway L, Widjaja E, Smith ML, Speechley KN, Ferro MA. Validating the shortened Quality of Life in Childhood Epilepsy Questionnaire (QOLCE-55) in a sample of children with drugresistant epilepsy. Epilepsia. 2017;58(4):646-656. doi: 10.1111/epi.13697.
- 13. Volkers N. Seizure action plans: More than management tools for epilepsy. Epigraph 2024; 26(2): 94-99.
- Rozensztrauch A, Kołtuniuk A. The Quality of Life of Children with Epilepsy and the Impact of Disease on the Family Functioning. Int J Environ Res Public Health. 2022 Feb 17;19(4):2277. doi: 10.3390/ijerph19042277.
- Phillips NL, Widjaja E, Smith ML. Family resources moderate the relationship between seizure control and health-related quality of life in children with drug-resistant epilepsy. Epilepsia. 2020 Aug; 61(8):1638-1648. doi: 10.1111/epi.16602.
- 16. Shetty PH, Naik RK, Saroja A, Punith K. Quality of life in patients with epilepsy in India. J Neurosci Rural Pract. 2011 Jan;2(1):33-8. doi: 10.4103/0976-3147.80092.