Research Article

Clinical profiles of children presenting with convulsive status epilepticus at Moi Teaching and Referral Hospital, Kenya

Banweni Kong Yoach Jobar[1], Esther Clyde Nabakwe[1], Eren Oyungu[2]

Author Affiliation:

1. Department of Child Health and Paediatrics, School of Medicine, Moi University, Eldoret, Kenya
2. Department of Medical Physiology, School of Medicine, Moi University, Eldoret, Kenya

Correspondence:
Banweni Kong Yoach Jobar
banweniyoach@gmail.com

Submitted: May 2026
Accepted: August 2026
Published: November 2026

Citation: Yoach et al. Clinical profile of children presenting with convulsive status epilepticus at Moi Teaching and Referral Hospital, Kenya. South Sudan Medical Journal, 2026;19(4):220-224
© 2026 The Author (s) **License:** This is an open access article under CC BY-NC
DOI: https://dx.doi.org/10.4314/ssmj.v19i4.3

ABSTRACT

Introduction: Convulsive status epilepticus (CSE) remains a major global neurological health emergency associated with significant morbidity and mortality in children. Data from low-resource settings like Kenya remain limited despite its clinical burden. This study assessed the clinical profile of children presenting with status epilepticus at the Moi Teaching and Referral Hospital (MTRH).

Method: A hospital-based observational study was conducted between January and December 2025 at the paediatric sick child clinic and paediatric wards. Children aged one month to 14 years with confirmed CSE were consecutively recruited. Clinical data were collected using a structured tool and analysed using descriptive statistics.

Results: A total of 51 children aged one month to 14 years who presented with CSE between January 1, 2025, and December 31, 2025, were included in the study. The median age was 3.0 years (IQR 1.0–6.0), with 45.1% aged 1–<5 years and a male predominance (54.9%). 58.9% were known epileptics. All children presented with seizures lasting 5–30 minutes, with 56.9% classified as stage I CSE. Generalized seizures by semiology were most common (76.5%). Remote symptomatic causes formed the largest clinical category (43.1%), followed by acute symptomatic (35.3%), febrile (17.7%), and idiopathic (3.9%). Electroencephalography was performed in 70.6% of children, with 77.8% showing abnormalities, mainly focal patterns.

Discussion: MTRH should strengthen early clinical recognition and structured evaluation of children presenting with seizures, particularly among children under five years, with emphasis on detailed seizure characterization, history assessment, and increased access to electroencephalogram for accurate clinical profiling.

Conclusion: The clinical profile of paediatric CSE was characterized by early childhood, male preponderance, generalized seizure presentation, and frequent abnormal electroencephalogram findings, with remote symptomatic cases forming the largest proportion.

Keywords: convulsive status epilepticus, semiology, clinical profile; children, EEG abnormalities, Kenya.

Introduction

Convulsive status epilepticus (CSE) is a neurological emergency defined by continuous convulsive seizures lasting at least five minutes or recurrent seizures without recovery of consciousness between episodes.[1] It contributes significantly to childhood morbidity and mortality, particularly in low- and middle-income countries where delayed healthcare access and infectious diseases are common. Children with CSE frequently present with generalized seizures, impaired consciousness, fever, respiratory compromise, and metabolic disturbances, all of which may adversely affect clinical outcomes.[2] The greatest burden of CSE occurs among children under five years of age due to increased susceptibility to infections and heightened vulnerability of the developing brain.[3]

Epilepsy affects approximately 50 million people globally, with nearly 5 million new cases reported annually.[4] The incidence and clinical profile of paediatric CSE vary across regions, with lower incidence rates reported in high-income countries and higher rates observed in sub-Saharan Africa.[5] Common aetiologies include febrile illnesses, acute symptomatic conditions, neuroinfections, metabolic disorders, and pre-existing epilepsy.[6] CSE predominantly affects males and children younger than five years and commonly presents with prolonged seizures, altered consciousness, and respiratory distress, factors associated with poor outcomes such as neurological impairment and mortality.[7]

In Kenya, there is limited published data regarding the clinical characteristics of children presenting with CSE despite epilepsy being one of the most common paediatric neurological disorders. At Moi Teaching and Referral Hospital, epilepsy has previously been identified as a major neurological diagnosis among admitted children However, specific information on the clinical profile of paediatric CSE remains scarce. Profiling children presenting with CSE at this tertiary referral hospital is important for identifying common demographic characteristics, seizure patterns, associated aetiologies, and clinical manifestations that influence patient outcomes. This information may help clinicians improve early recognition, risk stratification, and management strategies for children affected by CSE in resource-limited settings.

Method

This hospital-based descriptive longitudinal study at Moi Teaching and Referral Hospital (MTRH) between January and December 2025. The hospital is a major tertiary referral and teaching facility with a paediatric neurology clinic managing a wide range of neurological disorders. The study included children aged 1 month to 14 years with clinically confirmed CSE, defined as continuous convulsive seizures lasting at least five minutes or recurrent seizures without recovery of consciousness. Children admitted to the Intensive Care Unit (ICU), those with refractory or super-refractory status epilepticus, unaccompanied minors, and those without consent were excluded. Using Fisher's formula, the minimum sample size was 35, but consecutive enrolment of all eligible cases yielded 51 participants. After stabilization, informed consent from the parent or guardian and assent (where appropriate) were obtained. Investigations that had been requested by the clinician according to the suspected underlying aetiology were noted down, including renal function tests, electrolytes, blood glucose, full haemogram, CSF analysis, electroencephalogram (EEG) and brain imaging (either CT scan or MRI). We followed participants from admission to discharge or up to 30 days post-discharge to assess short-term outcomes, including hospital stay, discharge status, neurological sequelae, and mortality. Data were analysed descriptively using SPSS version 25. The Moi University and MTRH Institutional Research and Ethics Committee (FAN:0004883) approved the study, and the National Commission for Science, Technology and Innovation (NACOSTI/P/25/417407) issued a research license. This study had certain limitations. This single-centre observational study relied partly on guardian recall, introducing potential recall bias. The small sample size limited statistical power to detect significant associations.

Results

Sociodemographic characteristics

Table 1 presents the sociodemographic characteristics of the recruited children.

Fifty-one children with CSE were included in the study. The median age was 3.0 years (IQR 1.0 – 6.0), with 45.1% aged 1 to <5 years. Males slightly outnumbered females, accounting for 54.9% of the cohort. The median weight was 11.8kg (IQR 7.9 18.0). Most children were accompanied by one parent (66.7%), while 29.4% were accompanied by both parents.

Seizure Characteristics

Table 2 presents the seizure characteristics of children treated for convulsive status epilepticus (CSE).

Table 1. Demographic characteristics of children with convulsive status epilepticus (N=51)

Characteristic	Frequency (%) or median (IQR)
Age (Median, IQR) years:	**3.0 (1.0-6.0)**
Below 1 year	13 (25.5)
1 year to <5	23 (45.1)
5 to < 10	11 (21.6)
>10	4 (7.8)
Weight (Median, IQR) kg	**11.8 (7.9-18.0)**
Range	4.2 - 44.0
Sex:	
Male	28 (54.9)
Female	23 (45.1)
Caregiver:	
Both parents	15 (29.4)
One parent	34 (66.7)
Guardian	2 (3.9)

Table 2. Seizure characteristics

Variable	Frequency n (%)
Seizure duration at presentation	
5–30 minutes	51 (100)
Stage of convulsive status epilepticus	
Stage I (5–10 minutes)	29 (56.9)
Stage II (10–15 minutes)	22 (43.1)
Seizure aetiology	
Acute symptomatic	18 (35.3)
Remote symptomatic	22 (43.1)
Febrile	9 (17.7)
Idiopathic	2 (3.9)
Seizure semiology	
Generalized seizures	39 (76.5)
Focal onset seizures	12 (23.5)
EEG status	
EEG not done	15 (29.4)
EEG done	36 (70.6)
EEG findings among those tested	
Normal EEG	8 (22.2)
Abnormal EEG	28 (77.8)
Focal abnormalities	17 (60.7)
Generalized abnormalities	8 (28.6)
Unspecified abnormalities	3 (10.7)

Past medical history

Figure 1 shows the distribution of past medical history among children with CSE. Children known to have epilepsy but with poor medication adherence were 31%, while 27% were known epileptic children who were adherent to treatment. 24% presented with a first seizure without a previous diagnosis of epilepsy, while 18% were non-epileptic children presenting with a recurrent episode.

Discussion

The predominance of younger children in this study is consistent with reports from the United States, India, and Uganda, where most paediatric patients with CSE were below five years of age.[7] Researchers attribute this vulnerability to immature inhibitory neuronal pathways and increased excitatory susceptibility in the developing brain, which lowers the threshold for sustained seizure activity. Additionally, children in this age group have greater exposure to seizure-provoking conditions such as febrile illnesses and infections.[8] The lower mean age observed in the present study than in studies conducted in Canada, Turkey, and Australia, where the mean age ranged from 5 to 7 years, may reflect differences in study inclusion criteria, particularly the inclusion of adolescents up to 18 years in some studies.[9]

Similarly, the male predominance observed in this study matches findings reported in Uganda, South Africa, Canada, Australia, Scotland, Turkey, and the United States.[6,9] This pattern may reflect sex-linked neurobiological susceptibility and differential childhood exposure to seizure-provoking conditions.[8] However, the literature has not yet described a definitive causal explanation, although biological and environmental factors may contribute. Also, the relatively small sample size means we could not rule out chance variation.[8]

All children in this study presented with seizures lasting between 5 and 30 minutes, findings that are consistent with previous studies[10,11] but shorter than reports from Turkey where most seizure episodes exceeded 30 minutes.[12] Remote symptomatic causes were the most common aetiologies identified, followed by acute symptomatic causes. Infectious diseases were common causes of CSE. However, because the study was purely observational, we only recorded investigations requested by the clinician based on the suspected aetiology. Malaria is also common in the western part of Kenya, but MTRH serves children from all over the country, and although malaria tests were done where suspected, the study did not focus on malaria.

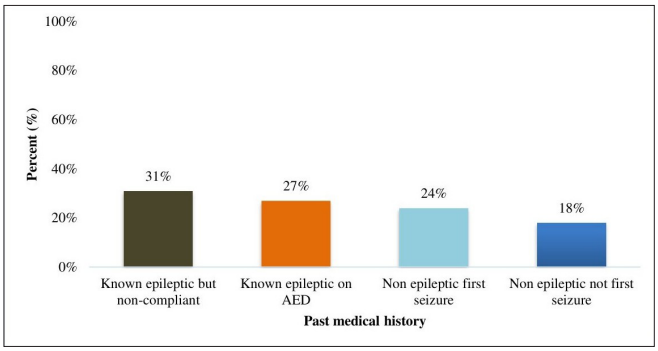

Figure 1. Past medical history/underlying diagnosis (AED: Anti-epileptic drugs)

This differs from findings in India where acute symptomatic aetiologies predominated,[11,8] while idiopathic cases in the present study were relatively uncommon compared to reports from Egypt.[10,11] More than three-quarters of the participants presented with generalized seizures, similar to findings reported in Tunisia and Taiwan,[12] but differing from studies conducted in Turkey, where focal seizures were more prevalent.[10] EEG abnormalities were frequently observed, predominantly focal patterns despite generalized clinical seizure manifestations.

These findings are consistent with reports from South Africa suggesting focal seizure onset with secondary generalization.[5] The facility has EEG, CT, and MRI, but this study was purely observational. CT scan of the head is, however, a priority in the event that lumbar puncture (LP) for CSF was needed if there was a suspicion of meningitis. An LP in the presence of raised intracranial pressure is potentially dangerous.

About one-third of children with CSE (31%) were known epileptics with poor medication adherence, while 27% were known epileptics who adhered to treatment. These findings highlight non-adherence as a significant challenge in paediatric epilepsy management. Similar patterns have been reported in studies conducted in the United States, Iran, and China, where adherence levels varied considerably and were influenced by socioeconomic factors, parental education, and clinical characteristics such as seizure type and treatment complexity.[11,12]

Limitations

Exclusion of children admitted to the ICU and those with refractory or super-refractory status epilepticus may have introduced selection bias and therefore, resulted in under-representation of children with more severe CSE. The single-centre design at a tertiary teaching and referral hospital may limit the generalizability of the findings, as the patient population at MTRH may differ from that seen in periphery or primary healthcare facilities. Finally, the relatively small sample size limited the ability to perform more detailed statistical analysis or identify associations between clinical characteristics and outcomes.

Recommendations

MTRH should strengthen clinical assessment of paediatric CSE through early recognition in children under five years, detailed seizure characterization, epilepsy history review, and expanded EEG use, reflecting the predominance of generalized seizures, remote symptomatic cases, abnormal EEG findings, and prior epilepsy history.

Conclusion

Children with CSE at Moi Teaching and Referral Hospital were predominantly young, with a slight male predominance, and presented with generalized seizures lasting 5–30 minutes. Remote symptomatic causes were most common, followed by acute symptomatic and febrile causes. EEG often showed abnormalities, mainly focal patterns, despite generalized clinical presentation. Many had prior epilepsy, with reported medication non-adherence being common. Further multicentre studies including children admitted to the ICU and those with refractory or super-refractory status epilepticus are needed to better characterize the clinical and aetiological profile of paediatric CSE in Kenya.

References

1. Trinka E, Cock H, Hesdorffer D, Rossetti AO, Scheffer IE, Shinnar S, et al. A definition and classification of status epilepticus–Report of the ILAE Task Force on Classification of Status Epilepticus. Epilepsia. 2015;56(10):1515–23.
2. Chin RF, Neville BG, Peckham C, Bedford H, Wade A, Scott RC. Incidence, cause, and short-term outcome of convulsive status epilepticus in childhood: prospective population-based study. Lancet. 2006;368(9531):222–9.
3. Sadarangani M, Seaton C, Scott JA, Ogutu B, Edwards T, Prins A, et al. Incidence and outcome of convulsive status epilepticus in Kenyan children: a cohort study. Lancet Neurol. 2008;7(2):145–50.
4. World Health Organization. Epilepsy [Internet].

Geneva: WHO; 2024 [cited 2026 May 27]. Available from: https://www.who.int/news-room/fact-sheets/detail/epilepsy

5. Wilmshurst JM, Kakooza-Mwesige A, Newton CR. The challenges of managing children with epilepsy in Africa. Semin Pediatr Neurol. 2014;21(1):36–41.
6. Abend NS, Loddenkemper T. Pediatric status epilepticus management. Curr Opin Pediatr. 2014;26(6):668–74.
7. Kariuki SM, Matuja W, Akpalu A, Kakooza-Mwesige A, Chengo E, Wagner RG, et al. Clinical features, proximate causes, and consequences of active convulsive epilepsy in Africa. Epilepsia. 2014;55(1):76–85.
8. Gulati S, Kalra V, Sridhar MR. Status epilepticus in Indian children in a tertiary care center. Indian J Pediatr. 2005;72(2):105–8.
9. Aydin K, Serdaroglu A, Okuyaz C, Bideci A, Gucuyener K. Clinical characteristics and prognosis of convulsive status epilepticus in Turkish children. Pediatr Int. 2007;49(3):276–80.
10. Huang CC, Chang YC, Wang ST. Acute symptomatic seizure disorders in young children—a population study in southern Taiwan. Epilepsia. 1998;39(9):960–4.
11. Modi AC, Monahan S, Daniels D, Glauser TA. Development and validation of the Pediatric Epilepsy Medication Self-Management Questionnaire. Epilepsy Behav. 2010;18(1–2):94–9.
12. Zhao X, Zhang Y, Li J, Wang Y, Wu X. Medication adherence and its influencing factors among children with epilepsy in China. Epilepsy Behav. 2018;82:1–6.