# Post-Traumatic Seizures in Pediatric Head Injury: Epidemiology, Risk Factors, and Outcomes in a Nigerian Tertiary Health Center

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Publication Date: 2026/05/16

**Abstract:**

- ***Background:***

**Post-traumatic seizures (PTS) are a common complication of pediatric traumatic brain injury (TBI) and may contribute to secondary brain injury and poor neurological outcomes.**

- ***Objective:***

**To determine the incidence, timing, predictors, and outcomes of PTS among children with head injury in a Nigerian tertiary care center.**

- ***Methods:***

**This prospective cohort study included children aged 0-18 years admitted and managed for head injury between January 2024 and December 2025 at Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria. Data on demographics, injury severity, neuroimaging findings, management, and seizure occurrence were collected. Functional outcome was assessed using the Glasgow Outcome Score (GOS). Logistic regression analysis was used to identify independent predictors of PTS and poor functional outcome.**

- ***Results:***

**Among 218 children, 58 (26.6%) developed PTS. Seizures occurred more frequently in younger children and were significantly associated with severe head injury, abnormal CT findings, and operative management ($p < 0.05$). Late seizures were the most common (39.7%). Mortality did not differ significantly between children with and without PTS ($p = 0.409$). However, PTS was strongly associated with poor functional outcome (51.7% vs 11.3%; OR = 8.97; 95% CI: 4.25-18.93; $p < 0.001$). Independent predictors included younger age, severe injury, abnormal CT findings, and operative intervention.**

- ***Conclusion:***

**PTS are common after pediatric head injury and are strongly associated with adverse functional outcomes. Early risk identification and sustained follow-up are essential to improve neurological recovery.**

***Keywords:*** *Post-Traumatic Seizures; Pediatric Head Injury; Traumatic Brain Injury; Functional Outcome.*

**How to Cite:** Dada Oluwamuyiwa Adeniyi (2026) Post-Traumatic Seizures in Pediatric Head Injury: Epidemiology, Risk Factors, and Outcomes in a Nigerian Tertiary Health Center. *International Journal of Innovative Science and Research Technology,* 11(5), 259-265. https://doi.org/10.38124/ijisrt/26may288

## I. INTRODUCTION

Traumatic brain injury (TBI) is a leading cause of death and long-term neurological disability among children worldwide. The burden is disproportionately higher in low- and middle-income countries (LMICs), where injury-prevention strategies are limited and access to specialized trauma care remains suboptimal [1-3]. In Sub-Saharan Africa, pediatric TBI constitutes a major public health challenge, with hospital-based studies reporting high admission rates and unfavorable outcomes. In Nigeria and other parts of West Africa, pediatric head injury commonly results from road

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26may288

traffic accidents, falls, and interpersonal violence [4, 5]. Earlier studies identified head injury as a leading cause of trauma-related childhood mortality, while more recent reports suggest a rising burden linked to urbanization and increased motorization [6].

Post-traumatic seizures are among the most frequent neurological complications following pediatric TBI and may exacerbate secondary brain injury through increased metabolic demand, hypoxia, elevated intracranial pressure, and excitotoxic neuronal damage [7]. Population-based studies have demonstrated a significantly increased risk of seizures following head injury, particularly in children [8]. PTS are conventionally classified as immediate (within 24 hours), early (within 7 days), or late (after 7 days) following injury [9]. Late post-traumatic seizures are of particular concern because of their strong association with epileptogenesis and the subsequent development of post-traumatic epilepsy [10, 11].

Children are especially susceptible to PTS due to heightened excitability of the immature brain, reduced inhibitory neurotransmission, and ongoing neurodevelopmental processes [12, 13]. Several risk factors for PTS have been identified, including young age, severe head injury, intracranial hemorrhage, cortical contusions, depressed skull fractures, and the need for neurosurgical intervention [14]. Continuous electroencephalographic monitoring has further demonstrated that subclinical seizures are common following pediatric TBI and may contribute to adverse neurological outcomes if undetected [15].

Although earlier Nigerian studies documented seizures following childhood head injury, contemporary data from LMICs remain limited. Neuroimaging studies from our environment demonstrate a high burden of structural brain lesions among injured children, which may further increase seizure risk [16, 17]. The impact of PTS on mortality and functional outcome in resource-limited settings also remains incompletely characterized [18]. This study therefore aimed to determine the incidence, timing, predictors, and outcomes of post-traumatic seizures among children with TBI managed at Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

## II. METHODOLOGY

➢ *Study Design and Setting*

This was a prospective cohort study conducted at Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria, between January 2024 and December 2025. The study was designed in line with established methodological approaches used in pediatric traumatic brain injury outcome research [19]. The center serves as a major referral hospital, providing neurosurgical and pediatric care within the region.

➢ *Study Population*

Children aged 0-18 years who presented within 24 hours of head injury and required hospital admission were eligible for inclusion. Patients were recruited consecutively over the study period. Children with a prior history of epilepsy or unprovoked seizures were excluded. Other exclusions included congenital or structural brain abnormalities, cerebrovascular disorders, intracranial infections unrelated to trauma, and intracranial mass lesions, in order to minimize confounding factors that could independently influence seizure occurrence [20].

➢ *Data Collection*

Data were collected prospectively using a structured proforma. Information obtained included age, sex, mechanism of injury, and clinical status at presentation. Neurological status was assessed using the Glasgow Coma Scale (GCS) on admission. Seizure occurrence and timing were documented throughout hospitalization and follow-up. Findings from cranial computed tomography (CT) scans were recorded, along with details of management, including whether patients were managed operatively or non-operatively. Data collection was carried out by clinicians directly involved in patient care, ensuring consistency in assessment and documentation.

➢ *Definitions and Outcome Measures*

Injury severity was classified using the Glasgow Coma Scale score as mild (GCS 13-15), moderate (GCS 9–12), or severe (GCS ≤8). Post-traumatic seizures were defined as clinically observed seizures attributable to head injury and were categorized as immediate (within 24 hours), early (1-7 days), or late (>7 days) following injury [9]. Functional outcome was assessed using the Glasgow Outcome Scale (GOS). Poor outcome was defined as GOS categories 2-4, while good recovery corresponded to GOS category 5 [21].

➢ *Follow-Up*

All patients were followed for at least three months after discharge. Follow-up assessments were conducted during outpatient visits, where clinical status and any seizure activity were reviewed. Caregivers were also educated on recognizing seizures and advised to report any events occurring between scheduled visits.

➢ *Statistical Analysis*

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0 (IBM Corp., Armonk, NY, USA). Categorical variables were summarized as frequencies and percentages. Associations between variables were assessed using the Chi-square test or Fisher's exact test, as appropriate. Variables with a p-value $< 0.20$ on univariate analysis were entered into a multivariable logistic regression model to identify independent predictors of post-traumatic seizures. Adjusted odds ratios (aORs) with 95% confidence intervals (CIs) were reported. Model fitness and collinearity were assessed to ensure robustness. Statistical significance was set at $p < 0.05$ [22].

➢ *Ethical Considerations*

Ethical approval was obtained from the Institutional Ethics Review Committee of Ekiti State University Teaching Hospital. Informed consent was obtained from parents or legal guardians prior to enrolment. The study was conducted in accordance with the principles of the Declaration of Helsinki.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26may288

## III. RESULTS

➢ *Study Population and Prevalence of Post-Traumatic Seizures*

A total of 218 children with head injury were included in the study. Of these, 58 (26.6%) developed post-traumatic seizures (PTS), while 160 (73.4%) did not (Table 1).

➢ *Demographic and Injury Characteristics*

Post-traumatic seizures occurred significantly more frequently among younger children, particularly those in the toddler and preschool age groups, whereas older children-especially adolescents-were less likely to develop seizures (p < 0.001) (Table 1). Although males constituted the majority of the study population in both groups, female sex showed a modest association with seizure occurrence on univariate analysis (p = 0.048). However, this association was not sustained after adjustment for other variables (Table 4). Road traffic accidents were the most common mechanism of injury in both groups, followed by falls and assaults, but mechanism of injury was not significantly associated with the occurrence of PTS (p = 0.835) (Table 1). There was no statistically significant association between the presence of multiple injuries and seizure occurrence (p = 0.091) (Table 1).

➢ *Injury Severity, Neuroimaging Findings, and Management*

The occurrence of post-traumatic seizures was strongly associated with injury severity. Children with severe head injury accounted for the majority of seizure cases, while those with mild injury were less likely to develop seizures (p < 0.001) (Table 1). Abnormal cranial computed tomography (CT) findings were significantly more common among children who developed seizures compared to those who did not (94.8% vs 80.6%, p = 0.006) (Table 1). Operative management was also significantly associated with seizure occurrence, with a substantially higher proportion of children in the PTS group requiring surgical intervention compared to the non-PTS group (65.5% vs 16.2%, p < 0.001) (Table 1).

➢ *Timing of Post-Traumatic Seizures*

Among the 58 children who developed seizures, late seizures (occurring more than 7 days after injury) were the most frequent, accounting for 23 cases (39.7%). Early seizures (1-7 days) occurred in 18 children (31.0%), while immediate seizures (within 24 hours) were observed in 17 children (29.3%) (Table 2).

➢ *Functional Outcomes and Mortality*

The overall mortality rate in the study population was 16.5% (36). There was no statistically significant difference in mortality between children with and without post-traumatic seizures (p = 0.409) (Table 3). However, functional outcomes differed markedly between the two groups. Poor functional outcome, defined as Glasgow Outcome Scale (GOS) categories 2-4, was observed in 30 children (51.7%) in the PTS group compared to 18 children (11.3%) in the non-PTS group. Overall GOS outcome distribution differed significantly between the groups ($\chi^2$ test, p < 0.001) (Table 3). Post-traumatic seizures were associated with a substantially increased likelihood of poor functional outcome (OR = 8.97; 95% CI: 4.25–18.93; p < 0.001) (Table 3).

➢ *Independent Predictors of Post-Traumatic Seizures*

On multivariable logistic regression analysis, younger age, severe head injury, abnormal CT findings, and operative management were identified as independent predictors of post-traumatic seizures (Table 4). Children aged at or below the preschool level had significantly higher odds of developing seizures compared to older children (aOR = 6.82; 95% CI: 2.91-15.96; p < 0.001). Severe head injury was also a strong predictor (aOR = 4.96; 95% CI: 2.18-11.31; p < 0.001), as were abnormal CT findings (aOR = 3.12; 95% CI: 1.19-8.21; p = 0.021) and operative management (aOR = 5.43; 95% CI: 2.41-12.23; p < 0.001). Although female sex showed a significant association on univariate analysis, it was not an independent predictor after adjustment (aOR = 1.71; p = 0.104). Similarly, mechanism of injury and the presence of multiple injuries were not significantly associated with seizure occurrence in the multivariable model.

➢ *Tables of Results*

Table 1 Demographic and Clinical Characteristics of Children with and without Post-Traumatic Seizures

| **Variable** | **Category** | **PTS (n=58) n (%)** | **No PTS (n=160) n (%)** | ***p*-value** |
|---|---|---|---|---|
| Age Group | Infants | 3 (5.2) | 5 (3.1) | <0.001 |
| | Toddlers | 30 (51.7) | 12 (7.5) | |
| | Preschool | 12 (20.7) | 2 (1.2) | |
| | School age | 11 (19.0) | 58 (36.3) | |
| | Adolescents | 2 (3.4) | 83 (51.9) | |
| Sex | Male | 33 (56.9) | 115 (71.9) | 0.048 |
| | Female | 25 (43.1) | 45 (28.1) | |
| Mechanism of Injury | Falls | 15 (25.9) | 38 (23.7) | 0.835 |
| | Road Traffic Accidents | 40 (68.9) | 116 (72.5) | |
| | Assaults | 3 (5.2) | 6 (3.8) | |
| Injury severity (GCS) | Mild | 8 (13.8) | 97 (60.6) | <0.001 |
| | Moderate | 14 (24.1) | 34 (21.3) | |
| | Severe | 36 (62.1) | 29 (18.1) | |
| Associated injuries | Head injury only | 37 (63.8) | 80 (50.0) | 0.091 |
| | Head injury + others | 21 (36.2) | 80 (50.0) | |

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26may288

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|---|---|---|---|---|
| CT scan Findings | Normal<br>Abnormal | 3 (5.2)<br>55 (94.8) | 31 (19.4)<br>129 (80.6) | 0.006 |
| Management | Operative<br>Non-operative | 38 (65.5)<br>20 (34.5) | 26 (16.2)<br>134 (83.8) | <0.001 |

- Footnote: Values are presented as frequency (percentage). Fisher's exact test used where appropriate. Statistical significance in this table reflects univariate analysis.

Table 2 Timing of Post-Traumatic Seizures among Affected Children (n = 58)

| **Seizure type** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|
| Immediate (< 24 hours) | 17 | 29.3 |
| Early (1-7 days) | 18 | 31.0 |
| Late (> 7 days) | 23 | 39.7 |
| Total | 58 | 100.0 |

- Footnote: Percentages are calculated based on total number of children with post-traumatic seizures.

Table 3 Functional Outcomes and their Association with Post-Traumatic Seizures

| **GOS Category** | **Description** | **PTS (n=58) n (%)** | **No PTS (n=160)** |
|---|---|---|---|
| 1 | Death | 7 (12.0) | 29 (18.1) |
| 2 | Vegetative state | 3 (5.2) | 3 (1.9) |
| 3 | Severe disability | 15 (25.9) | 7 (4.4) |
| 4 | Moderate disability | 12 (20.7) | 8 (5.0) |
| 5 | Good recovery | 21 (36.2) | 113 (70.6) |
| **Summary Outcome Measure** | | | |
| **Outcome category** | **PTS (n=58) n (%)** | **No PTS (n=160) n (%)** | **Statistical value** |
| Poor outcome (GOS 2-4) | 30 (51.7) | 18 (11.3) | OR = 8.97 (95% CI: 4.25 – 18.93); p < 0.001 |
| **Statistical Tests** | | | |
| Overall outcome distribution: $\chi^2$ test, $p$ <0.001<br>Mortality comparison (GOS 1): $p$=0.409 | | | |

- Footnotes: Poor functional outcome defined as GOS categories 2-4. Odds ratio (OR) represents likelihood of poor outcome among children with post-traumatic seizures.

Table 4 Multivariable Logistic Regression Analysis of Predictors of Post-traumatic Seizures

| **Predictor variable** | **Adjusted Odds Ratio (aOR)** | **95% Confidence Interval** | **p-value** |
|---|---|---|---|
| Age ≤ preschool (vs school-age & adolescents) | 6.82 | 2.91 – 15.96 | <0.001 |
| Female sex (vs male) | 1.71 | 0.89 – 3.27 | 0.104 |
| Severe head injury (vs mild/moderate) | 4.96 | 2.18 – 11.31 | <0.001 |
| Abnormal CT finding (vs normal CT) | 3.12 | 1.19 – 8.21 | 0.021 |
| Operative management (vs non-operative) | 5.43 | 2.41 – 12.23 | <0.001 |
| Road traffic accident (vs other mechanisms) | 0.91 | 0.41 – 2.01 | 0.816 |
| Multiple injuries (yes vs no) | 1.58 | 0.77 – 3.24 | 0.210 |

- Footnotes: Variables included in the model were selected based on univariate analysis ($p$ < 0.20). Adjusted odds ratios account for potential confounding. Statistical significance set at $p$ < 0.05.

## IV. DISCUSSION

➢ *Prevalence of Post-Traumatic Seizures*

This study demonstrates that post-traumatic seizures (PTS) are a common complication of pediatric traumatic brain injury (TBI), affecting 26.6% of children in this cohort. This prevalence is consistent with rates reported in pediatric populations globally, although variations across studies are expected due to differences in study design, case mix, and methods of seizure detection [23]. The relatively high burden observed in this study likely reflects the predominance of moderate-to-severe injuries and the high frequency of abnormal neuroimaging findings, both of which are well-established determinants of seizure risk [14]. In addition, contextual challenges common in low- and middle-income countries (LMICs), including delayed presentation, limited prehospital care, and constrained access to specialized neurosurgical services, may contribute to secondary brain injury and increased susceptibility to seizures [1-3].

➢ *Demographic and Injury Characteristics*

Age emerged as a strong determinant of seizure occurrence, with younger children-particularly those in the toddler and preschool age groups-demonstrating a significantly higher risk of PTS. This finding aligns with established neurodevelopmental principles, as the immature brain is characterized by heightened neuronal excitability,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26may288

reduced inhibitory neurotransmission, and ongoing synaptic reorganization, all of which predispose to epileptogenesis following injury [12, 13]. Younger children may also be more vulnerable to diffuse injury patterns and metabolic disturbances, further increasing seizure susceptibility. These findings highlight the need for age-specific risk stratification and heightened clinical vigilance in the management of pediatric head injury. Although sex showed a modest association with seizure occurrence on univariate analysis, it was not an independent predictor after adjustment for confounding variables. This suggests that the observed association may be attributable to differences in injury severity or exposure patterns rather than intrinsic biological susceptibility. Similarly, mechanism of injury was not significantly associated with seizure occurrence, indicating that post-traumatic seizures are more closely related to the severity and structural consequences of injury than to the mechanism itself. This observation is consistent with previous studies [14].

➢ *Injury Severity, Neuroimaging Findings, and Management*

Injury severity was a key determinant of PTS, with severe head injury independently associated with seizure occurrence. This is consistent with existing literature demonstrating that the extent of primary brain injury strongly correlates with seizure risk [14]. Severe injuries are frequently accompanied by intracranial hemorrhage, cerebral oedema, and cortical contusions, which disrupt neuronal networks and provide a substrate for abnormal electrical activity [7]. Abnormal cranial CT findings also independently predicted seizure occurrence, further emphasizing the role of structural brain injury in epileptogenesis. Neuroimaging abnormalities such as intracranial hemorrhage, cortical contusions, and depressed skull fractures increase cortical irritability and seizure propensity [17, 24]. The high prevalence of abnormal CT findings among children with PTS in this study underscores the importance of early neuroimaging not only for acute management but also for prognostication. Operative management was significantly associated with seizure occurrence on multivariable analysis. However, this association likely reflects the severity and focal nature of intracranial pathology rather than a direct causal effect of surgical intervention. Children requiring neurosurgical procedures typically present with more severe injuries, including mass lesions and depressed fractures, which inherently increase seizure risk [22, 24].

➢ *Timing of Post-Traumatic Seizures*

The temporal pattern of seizures observed in this study is clinically significant. Late seizures constituted the largest proportion of cases, exceeding both immediate and early seizures. This finding is particularly important because late PTS are more strongly associated with epileptogenesis and the subsequent development of post-traumatic epilepsy [10, 11]. The predominance of late seizures underscores the ongoing vulnerability of children with TBI beyond the acute phase of injury and highlights the need for sustained follow-up. In resource-limited settings, where continuity of care may be suboptimal, this finding has important implications for long-term surveillance and caregiver education.

➢ *Functional Outcomes and Mortality*

Although overall mortality did not differ significantly between children with and without PTS, seizure occurrence was strongly associated with adverse functional outcomes. Children who developed seizures were significantly more likely to experience moderate to severe disability or vegetative outcomes compared to those without seizures. This finding is consistent with previous reports demonstrating that seizures contribute to long-term neurological impairment and increase the risk of post-traumatic epilepsy in pediatric populations [25]. The mechanisms underlying this association likely include increased cerebral metabolic demand, excitotoxic neuronal injury, and elevated intracranial pressure during seizure activity [7, 18]. Importantly, the absence of a significant difference in mortality suggests that the primary impact of PTS lies in long-term functional disability rather than acute survival. This distinction is clinically relevant, as it emphasizes the need for outcome measures that extend beyond mortality to include functional recovery and quality of life.

➢ *Independent Predictors of Post-Traumatic Seizures*

This study identified younger age, severe head injury, abnormal CT findings, and operative management as independent predictors of post-traumatic seizures. These findings are consistent with established risk factors reported in previous studies and reinforce the importance of early risk stratification in pediatric TBI [14, 22]. The strong association between younger age and seizure occurrence highlights the vulnerability of the developing brain, while the predictive value of injury severity and neuroimaging findings reflects the central role of structural brain damage in epileptogenesis. Current international guidelines recommend targeted antiseizure prophylaxis in children at high risk of early PTS, particularly those with severe injury and intracranial lesions [26]. Evidence suggests that such prophylaxis reduces the incidence of early seizures, although its effect on late seizures remains uncertain [27]. Given the predominance of late seizures observed in this study, further research is needed to determine optimal strategies for long-term seizure prevention in similar settings. Long-term follow-up is essential. Previous studies have shown that the risk of epilepsy persists for years following pediatric TBI, particularly among children with severe injury or early seizure activity [20]. Integrating structured follow-up systems, caregiver education, and timely neurological evaluation into routine care may help mitigate long-term disability, especially in resource-limited environments.

➢ *Strengths and Limitations*

The present study possesses several notable strengths. Its prospective cohort design allowed for systematic and real-time data collection, thereby minimizing recall bias and ensuring accurate documentation of seizure timing and clinical progression. The use of standardized and widely accepted clinical tools, including the Glasgow Coma Scale and the Glasgow Outcome Scale, enhances the reliability of the findings and facilitates comparison with existing literature. In addition, the study provides a detailed characterization of post-traumatic seizures by classifying

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26may288

them into immediate, early, and late categories, offering clinically relevant insight into their temporal patterns. The application of multivariable logistic regression further strengthens the analytical rigor by identifying independent predictors while accounting for potential confounding variables. Importantly, the study contributes context-specific evidence from a Nigerian tertiary health institution, addressing a significant gap in data from low- and middle-income settings where the burden of pediatric traumatic brain injury is substantial. The relatively adequate sample size and the inclusion of functional outcomes, rather than mortality alone, also enhance the clinical relevance and interpretability of the results.

Despite these strengths, certain limitations should be acknowledged. The study was conducted at a single tertiary center, which may limit the generalizability of the findings to other healthcare settings, particularly rural or less-resourced environments. The follow-up period of three months is relatively short and may not fully capture the long-term risk of post-traumatic epilepsy, which can manifest months or years after the initial injury. Furthermore, the absence of continuous electroencephalographic monitoring raises the possibility that subclinical seizures were not detected, potentially leading to an underestimation of the true incidence of post-traumatic seizures. The inclusion criteria, which restricted the study population to children presenting within 24 hours of injury and requiring hospital admission, may have introduced selection bias toward more severe cases, thereby influencing the observed prevalence and associated risk factors. Although multivariable analysis was performed, the potential for residual confounding from unmeasured variables, such as prehospital care, socioeconomic factors, and variations in clinical management, cannot be excluded. Additionally, reliance on computed tomography as the primary imaging modality may have limited the detection of subtle cortical injuries that are better visualized with more advanced imaging techniques. Collectively, these limitations should be considered when interpreting the findings and underscore the need for further multicenter studies with longer follow-up and more comprehensive diagnostic approaches.

## V. CONCLUSION

Post-traumatic seizures are a frequent and clinically significant complication of pediatric traumatic brain injury in this setting, affecting over one-quarter of affected children. Although seizure occurrence did not significantly influence mortality, it was strongly associated with adverse functional outcomes, highlighting its impact on long-term neurological recovery.

Younger age, severe head injury, abnormal cranial CT findings, and operative intervention were identified as independent predictors of post-traumatic seizures, providing a framework for early risk stratification.

These findings underscore the need for a proactive, risk-based approach to management. Children at high risk should receive closer neurological monitoring, particularly during the acute and subacute phases of care. Given the predominance of late seizures, structured follow-up systems and caregiver education are essential for early detection and timely intervention. Targeted use of antiseizure prophylaxis may be considered in high-risk patients in line with existing guidelines, while further multicenter studies are needed to refine long-term preventive strategies in similar settings.

## ACKNOWLEDGEMENTS

The author acknowledges the medical, nursing, and records staff of the Children's Accident and Emergency Department, Pediatric Ward, Intensive Care Unit, and Neurosurgical Outpatient Clinic of Ekiti State University Teaching Hospital, Ado-Ekiti, for their support during data collection and patient follow-up. Appreciation is also extended to the parents and caregivers of children who participated.

- *Conflict of Interest Statement*

The author declares no conflict of interest.

- *Source of Funding*

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

- *Author Contributions*

The author was solely responsible for the conception and design of the study and drafting of the manuscript. The author conducted data collection, patient evaluation and clinical follow-up.

- *Ethical Approval Statement*

Ethical approval was obtained from the Hospital Research and Ethics Committee prior to commencement of the study. The study was carried out in accordance with the ethical standards of the institutional research committee and the principles of the Declaration of Helsinki.

- *Data Availability Statement*

The datasets generated and analyzed during the study are available from the corresponding author upon reasonable request.

- *United Nations Declaration of Human Rights*

The author confirms that he accepts and agrees with the UN's Declaration of Human Rights.

## REFERENCES

[1]. World Health Organization. Neurological Disorders: Public Health Challenges. Geneva, Switzerland: World Health Organization; 2006.
[2]. Hyder AA, Wunderlich CA, Puvanachandra P, Gururaj G, Kobusingye OC. The impact of traumatic brain injuries: a global perspective. NeuroRehabilitation. 2007;22:341-353.
[3]. Dewan MC, Rattani A, Gupta S, et al. Estimating the global incidence of traumatic brain injury. J Neurosurg. 2019;130(4):1080-1097.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26may288

[4]. Adeloye, A., Olumide, A.A. & Obiang, H.M. Acute head injuries in children in Ibadan, Nigeria. *Child's Nerv Syst. 1986;* **2**: 309–313
[5]. Udoh, D., & Adeyemo, A. (2014). Traumatic brain injuries in children: A hospital-based study in Nigeria. *African Journal of Paediatric Surgery*. 2014; *10*(2): 154–159.
[6]. Osifo, O.D., Iribhogbe, P.E. and Ugiagbe, E.E. (2012) Epidemiology and Pattern of Paediatric and Adolescent Trauma Deaths in a Level 1 Trauma Center in Benin City, Nigeria. Injury; 43: 1861-1864.
[7]. Yablon SA. Post-traumatic seizures. Arch Phys Med Rehabil. 1993; 74(9): 983-1001.
[8]. Annegers JF, Hauser WA, Coan SP, Rocca WA. Seizures after traumatic brain injuries. N Engl J Med. 1998; 338(1): 20-24.
[9]. Jennett B. Epilepsy after non-missile head injuries. Scott Med J. 1973; 18(1): 8-13.
[10]. Lowenstein DH. Epilepsy after head injury. Epilepsia. 2009; 50(Suppl 2): 4-9.
[11]. Englander J, Bushnik T, Duong TT, et al. Analyzing risk factors for late posttraumatic seizures: a prospective, multicenter investigation. Archives of Physical Medicine and Rehabilitation. 2003r; 84(3): 365-373.
[12]. Holmes GL. Effect of Seizures on the Developing Brain and Cognition. Seminars in Pediatric Neurology. 2016; 23(2): 120-126.
[13]. Pitkänen A, Bolkvadze T, Immonen R. Anti-epileptogenesis in rodent post-traumatic epilepsy models. Neurosci Lett. 2011; 27; 497(3): 163-71.
[14]. Petridis AK, Doukas A, Maslehaty H, Mehdorn HM. Predictors and incidence of posttraumatic seizures in children and adolescents after brain injury. Clin Pract. 2012; 8: 2(3):e66.
[15]. Arndt DH, Lerner JT, Matsumoto JH, Madikians A, Yudovin S, Valino H, McArthur DL, Wu JY, Leung M, Buxey F, Szeliga C, Van Hirtum-Das M, Sankar R, Brooks-Kayal A, Giza CC. Subclinical early posttraumatic seizures detected by continuous EEG monitoring in a consecutive pediatric cohort. Epilepsia. 2013; 54(10): 1780-8.
[16]. Adeloye A, Odeku EL. Epilepsy after missile wounds of the head. J Neurol Neurosurg Psychiatry. 1971; 34(1): 98-103.
[17]. Itanyi, Ukamaka, Kolade-Yunusa, Hadijat. Computed tomography findings in pediatric traumatic head injury in Abuja, Nigeria. African Journal of Medical and Health Sciences. 2017; 16(1): 52
[18]. Ferguson PL, Smith GM, Wannamaker BB, et al. Risk of epilepsy after traumatic brain injury. Epilepsia. 2010; 51(5): 891-898.
[19]. Dikmen, S. S., Machamer, J. E., Winn, H. R., & Temkin, N. R. (1995). Neuropsychological outcome at 1-year post head injury. *Neuropsychology.1995; 9*(1): 80–90.
[20]. Hauser WA, Annegers JF, Kurland LT. Incidence of epilepsy and unprovoked seizures in Rochester, Minnesota: 1935-1984. Epilepsia. 1993; 34(3): 453-468.
[21]. Jennett B, Bond M. Assessment of outcome after severe brain damage. Lancet. 1975; 1(7905): 480-484.
[22]. Ritter AC, Wagner AK, Fabio A, et al. (2016). Incidence and risk factors of posttraumatic seizures following traumatic brain injury: A Traumatic Brain Injury Model Systems Study. Epilepsia. 2016; 57(12): 1968–1977.
[23]. Elsamadicy AA, Koo AB, David WB, Lee V, Zogg CK, Kundishora AJ, Hong C, Reeves BC, Sarkozy M, Kahle KT, DiLuna M. Post-traumatic seizures following pediatric traumatic brain injury. Clin Neurol Neurosurg. 2021; 203: 106556..
[24]. Vespa PM, McArthur DL, Xu Y, Eliseo M, Etchepare M, Dinov I, Alger J, Glenn TP, Hovda D. Nonconvulsive seizures after traumatic brain injury are associated with hippocampal atrophy. Neurology. 2010 ; 75(9): 792-8.
[25]. Mariajoseph FP, Chen Z, Sekhar P, Rewell SS, O'Brien TJ, Antonic-Baker A, Semple BD. Incidence and risk factors of posttraumatic epilepsy following pediatric traumatic brain injury: A systematic review and meta-analysis. Epilepsia. 2022; 63(11): 2802-2812.
[26]. Kochanek PM, Tasker RC, Carney N, Totten AM, Adelson PD, Selden NR, Davis-O'Reilly C, Hart EL, Bell MJ, Bratton SL, Grant GA, Kissoon N, Reuter-Rice KE, Vavilala MS, Wainwright MS. Guidelines for the Management of Pediatric Severe Traumatic Brain Injury, Third Edition: Update of the Brain Trauma Foundation Guidelines, Executive Summary. Neurosurgery. 2019; 84(6): 1169-1178.
[27]. Temkin NR, Dikmen SS, Wilensky AJ, et al. A randomized, double-blind study of phenytoin for the prevention of post-traumatic seizures. N Engl J Med. 1990;323(8):497-502.