

## Clinico-etiological and Demographic Profile of Children Presenting with Seizures: A Cross Sectional Study

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### Abstract

**Aim:** To study the clinic-etiological profile and use of antiepileptic drugs in children presenting with seizures. **Methods:** The present prospective observational study was conducted in the Department of Pediatric, Nalanda Medical College and Hospital, Patna, Bihar, India for 1 year. A total of 120 children with acute symptoms and signs of seizures were studied. History was obtained to determine the possible cause of the seizure and type of epilepsy. The data obtained was analyzed with SPSS version 20. **Results:** out of total 120 children majority were found in the age group of 1-4 years and males had higher prevalence compared to female. Primary generalised tonic clonic epilepsy was the commonest type of epilepsy seen. Unconsciousness 51.7%, fever 40.8%, vomiting 26.7%, and headache 20% were the leading presenting complaints in seizure patients. **Conclusions:** The study showed primary generalised tonic clonic epilepsy was the commonest type of epilepsy seen, followed by focal seizures. Effort should be intensifying to eradicate the preventable causes of the disease.

**Keywords:** Epilepsy, Fever, Children

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### Introduction

A “seizure” is a paroxysmal alteration of neurologic function caused by the excessive, hyper synchronous discharge of neurons in the brain. “Epileptic seizure” is used to distinguish a seizure caused by abnormal neuronal firing from a nonepileptic event, such as a psychogenic seizure. “Epilepsy” is the condition of recurrent, unprovoked seizures.[1]

Epilepsy can be caused by a variety of factors which include the genetic,

metabolic and structural deformations in the brain. The manifestation of epilepsy can be due to either known or unknown etiological factors which make it complicated to understand the underlying mechanism, however, the different cases of epilepsy show marked dysfunction of the brain leading to an imbalanced neuronal activity, causing seizures.[2]

Studies have shown that epilepsies are the most common conditions encountered in

most paediatric neurology clinics in many parts of the developing world.[3,4] Eighty per cent of epilepsies in children are said to live in developing countries.<sup>5</sup> Epilepsy in sub-Saharan Africa is mainly secondary, reflecting persistently high risks at birth, and the adverse neurological sequelae of viral, bacterial, malarial and other parasitic infections during and beyond childhood.[6]

Proper diagnosis, classification, and management are always challenging in a child with seizure. The problem is even more complicated in resource-limited countries like India due to lack of proper investigations and technologies in many hospitals. There are only limited studies based on clinic-demographic profile, types, and etiological causes of seizures in children. The present observational study was therefore conducted to study the clinico-etiological profile of children presenting with seizures.

### Materials and Methods

The present cross-sectional study was conducted in the Department of Pediatric, Nalanda Medical College and Hospital, Patna, Bihar, India for 1 year. A total of 120 children with acute symptoms and signs of seizures were studied.

### Inclusion criteria

- Children of either sex
- Age group 1-14 year
- Children with acute symptoms and signs of seizures

### Results:

### Exclusion criteria

- Age less than 1 year and above 14 years
- Children obtained treatment for seizures
- Not willing to participate

The study protocol was reviewed by the Ethical Committee of the Hospital and granted ethical clearance.

### Methodology

Diagnosis of epilepsy was made on clinical grounds, based on detailed history obtained from both the parents and the patients in most cases confirmed by electroencephalography. Neuroimaging was carried out where necessary. Clinical diagnosis of epilepsy was established based on history of two or more unprovoked seizures witnessed by a responsible adult or the authors and sometimes by video recording of seizure event. Where there were doubts with verbal description, the parents or guardians would be requested to mime what they observed during attacks so that accurate seizure types were then recorded.

### Statistical analysis

The recorded data was compiled entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 20 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages, means and standard deviations were calculated.

**Table 1: Demographic profile of the study population**

Variables	N= (%)
Age (years)	
1-4	58 (48.3%)
5-8	36 (30.0%)
8-12	26 (21.7%)
Mean±SD	2.37±1.12
Gender	
Male	69 (57.5%)
Female	51 (42.5%)
Total	120 (100.0%)

**Table 2: distribution of type of seizure in the study population**

Seizure Type	N (%)
Generalized Tonic Clonic	68 (56.7%)
Focal Seizure	34 (28.3%)
Myoclonic	8 (6.7%)
Tonic	4 (3.3%)
Atonic	3 (2.5%)
Absence	3 (2.5%)
Total	120 (100.0%)

**Table 3: distribution of presenting symptoms in the study population**

Clinical presentation	N (%)
Unconscious	62 (51.7%)
Fever	49 (40.8%)
Vomiting	32 (26.7%)
Headache	24 (20.0%)
Speech disorder	14 (11.7%)

**Table 4: distribution of various etiologies in the study population**

Etiology	N (%)
Febrile	43 (35.8%)
Infection	31 (25.8%)
Seizure disorder	20 (16.7%)
Head Injury	18 (15.0%)
Metabolic	8 (6.7%)

## Discussion

Epilepsy is the most common serious neurological disorder and is one of the world's most prevalent non-communicable diseases. Many studies done before shows high incidence of seizure in younger age group of children and a decreasing trend in older ones as well as more common incidence of seizure in males.[7] In our study also most children were found in the age group of 1-4 years and males had higher prevalence compared to female.

In line with the world trend, the study showed epilepsy to be the commonest neurological presentation among children presenting at the paediatric neurology clinic of our facility. This is also in agreement with previous studies by Izuora in south Eastern Nigerian and a community study by Durkin in Banglabash.[8,9] Incident studies performed in developing countries, particularly in Africa, reported a greater proportion of individuals to have epilepsy

characterized by generalized onset seizures than epilepsy characterized by partial seizures.[10] This agrees with findings in the present study where primary generalised tonic clonic epilepsy was the commonest type of epilepsy seen. The findings are similar to that of Aiziz et al in studies of patient with epilepsy in urban centres in Pakistan where 59% was documented.[11]

Fever with seizure frequency was 40.8% in a similar study conducted in western region of the country by Adhikari et al.[12] A South Indian study reported the presence of fever in 51.5% of children. In the present study, unconsciousness 51.7%, fever 40.8%, vomiting 26.7%, and headache 20% were the leading presenting complaints in seizure patients. Seizure can have many possible etiologies, neurologic/developmental causes, infection, metabolic disturbances, traumatic head injury, toxins, febrile seizure etc.[13,14] One of the most

common causes of seizure attack was reported to be due to febrile seizure.[15] In our study febrile seizures constitute 35.8%.

### Limitation

We could not study the outcome of those seizure patients which could have helped to understand the exact disease burden, mortality, and morbidity. In the present study newborns with seizures or children below 1 year of age were not included. This may alter the findings of the present study. Multicentric prospective study with large sample size is needed to find out details regarding these problems.

### Conclusion

The present study concluded that children with seizures comprise a significant burden in inpatient department of developing countries with GTCS being more common and having various etiologies like meningitis, encephalitis, tubercular meningitis and neuro cysticercosis as well as by febrile seizure. Health care facilities should be prepared for emergency management of seizures to decrease mortality and morbidity.

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