

# Socio-Demographic and Clinical Profile of Children with Epilepsy: A Cross-Sectional Study

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## Abstract:

**Background:** Epilepsy is a common neurological disorder with the most demanding and challenging management, It ranges from narrowly focused medication-based management to holistic management.

**Material and Methods:** This cross-sectional study was conducted from Jan 2020 to June 2020 at the Institute of Pediatric Neurodisorder and Autism, Bangabandhu Sheikh Mujib Medical University (BSMMU). Previously diagnosed and purposively selected 70 epilepsy patients who are attending at the outpatient department during data collection period were included in the study. Data was collected through face-to-face interview using a pre tested questionnaire.

**Results:** Mean age of the children was  $4.28 \pm 3.65$  (SD) years, majority were male (75.70%) having middle class group (54.73%) with rural inhabitant (51.40%). More than half (51.40%) parents had superstitious belief and 48.60% had history of taking consultation from traditional healer. History

of post-natal complication and developmental delay prominent among patients and 47.1% had the onset of the disease within 06 months of age. One-fourth (24.3%) patients able to live independently without any supervisions. Nearly half of the patients (47.2%) had focal seizure and 37.1% had generalized seizure.

**Conclusion:** In Bangladesh perspective, superstitious belief and seeking consultation to traditional healers are major drawbacks for availing modern treatment options. Mean age of the epileptic children was 4 years with clear male preponderance. Focal seizure was the commonest type among the study patients. It is also revealed that adequate treatment enabled a good number of patients to live independently.

**Key word:** Epilepsy, Clinical Profile, Sociodemographic Profile

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## Introduction:

Epilepsy is a common neurological condition affecting people of all ages, races, and social classes with complex ramifications.<sup>1</sup> There are an estimated 50 million people with epilepsy in the world, of whom up to 75% live in resource-poor countries with little or no access to medical services or treatment.<sup>2</sup> The clinical scenario is almost similar in developing and developed countries, but the extent to which patients with epilepsy are recognized, investigated, and managed is different. Epidemiology, etiology, socio-cultural, and economic

factors all contribute to these differences.<sup>3</sup> Based on the prevalence rate of 10 per 1,000 populations, it is estimated that out of 150 million, there are at least 1.5-2.0 million people with epilepsy in Bangladesh. The incidence of epilepsy is high in childhood, which decreases in adulthood and can rise again in older age.<sup>4</sup>

Epilepsy is a common health problem in Bangladesh, and 30-40% of patients are still treated by traditional healers. Superstitious belief is a stigma in the community. Help-seeking behavior of parents of children with epilepsy is influenced by their religious and cultural beliefs that also affect their epilepsy management skills.<sup>5</sup> Parents' knowledge, attitudes, and perceptions about epilepsy get affected by the severity of their child's seizures. Febrile seizures are easily controlled with medications, but seizures that occur at quite a young age due to pre or peri-natal complications often result in delaying the child's developmental milestones. These manifest in the form of comorbid conditions like Intellectual Disability (ID) and attention deficit hyperactivity disorder.<sup>6,7</sup> Children are at a higher risk of developing difficulties

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and disorders that co-occur along with epilepsy and affect their psychological, social, and cognitive development.<sup>8</sup>

The principal risk factors for seizures in children are correlated with: Positive family history, High temperature, Mental disability, Delayed discharge from NICU or premature birth, Mother's alcohol abuse and smoking in pregnancy.<sup>11</sup> Causes of epilepsy in child are genetic, structural/metabolic and unknown.<sup>12</sup> Pathophysiology of epilepsy in child prolonged convulsive seizures are associated with altered body physiology including major changes in blood pressure, heart rate, respiratory function, electrolyte concentrations, glycaemia, and body temperature.<sup>13,14</sup> Diagnosis is helped by EEG, neuroimaging, and metabolic evaluation.<sup>15</sup> Regarding treatment the most important factor is to use effective drugs at the appropriate dosages. Benzodiazepines are considered the first choice in the initial treatment of seizures and epilepsy in pre-hospital emergency care which increase inhibition of GABA receptors. Barbiturates increase inhibition of GABA receptors of them Phenobarbital is one of the most commonly used. Valproic acid is important in epilepsy.<sup>16</sup>

Etiological factors for childhood epilepsy are different from those for epilepsy occurring later in life. In children, perinatal insults, developmental deficits, genetic factors, degenerative CNS or other malformations and perinatal events (i.e., asphyxia and CNS hemorrhage) are all often identified as possible causes of epilepsy, whereas cerebrovascular and degenerative causes have become recognized as possible causes in the older age group.<sup>9</sup> Knowledge of the epidemiology of childhood epilepsy and of current functioning of children with this condition will help inform the development of systems of care that move beyond a narrow focus on seizure control to address implications of the condition for the child's social, emotional, and developmental well-being.<sup>10</sup> It is expected that the understanding gained from the present study might help in developing integrated services for this group. Knowledge of the epidemiology of childhood epilepsy might help inform the development of care systems for the child's social, emotional, and developmental well-being. The

information can be used as a guideline for developing services for children with epilepsy and preventing some detectable causes in resource constrain countries.

Various studies from different parts of the world have explored the link between the socio-demographic profile and access to expert health care. However, very few studies have examined the clinical and socio-demographic profile of children with epilepsy. As such, the objective of the study is to determine the socio-demographic profile and clinical profile of the children with epilepsy attending the outpatient department of Bangabandhu Sheikh Mujib Medical University (BSMMU).

### **Methodology:**

This cross-sectional study was carried out at the outpatient Department of Institute of Pediatric Neurodisorder and Autism, BSMMU from Jan 2020 to Jun 2020. Purposively selected previously diagnosed 70 epilepsy patients of 2 months to 15 years of age were included in the study. Patients of below 2 months and above 15 years of age, Seizure due to other reason like electrolyte imbalance, infection, hypoglycemia and neuro-metabolic disorder were excluded from the study. Ethical clearance was obtained from Institutional review board of BSMMU (Ref no –BSMMU/2020/3024, date-02/03/2020) and neither any intervention nor any invasive procedure was involved. Written informed consent were taken from the parents/legal guardians of the patient. Epilepsy considered when an individual had: at least two unprovoked or reflex seizures >24 h apart, one unprovoked or reflex seizure and a probability of having another seizure similar to the general recurrence risk after two unprovoked seizures ( $\geq 60\%$ ) over the next 10 years, or an epilepsy syndrome. Data was collected through face-to-face interview using a pre tested questionnaire which includes socio-demographic and clinical profile of children with epilepsy as well as information on onset, frequency and duration of seizure and disease. Data processing and analyses were done by using Statistical Package for Social Sciences (SPSS) version 23. Frequencies, percentage, mean and standard deviation (SD) were used for descriptive statistics. Proportions were compared using Chi-square test. A value of  $p < 0.05$  was considered as statistically significant.

### Operational Definition

Children: Any subject at or below 15 years of age were considered as children in this study.

Epilepsy: Epilepsy is the condition to have recurrent unprovoked seizures occurring 24 hours apart.<sup>17</sup>

### Results

Among the patients, 75.7% were male, more than half of them were from middle class family and 51.4% reside in rural area. In regards to the educational qualification, highest (41.4% and 51.4%) number of father mother were primary qualified respectively. Ninety-three percent had no sibling rivalry and 51.4% had superstitious belief with 48.60% had history of taking consultation form traditional healers (Table 1).

Near about half (47.1%) had their onset of epilepsy below 6 months of age with 47.2% had focal seizure. Cerebral palsy (44.3%) was the main comorbidity which is followed by GDD (15.7%). About half (45.7%) had focal abnormality in EEG which is followed by generalized (32.9%) abnormality (Table 2).

In regards to the birth and developmental history of the children, 8.6% and 58.6% children had pre- and perinatal complication respectively, 84.3% had birth weight >2.5 kg with 57.1% had delayed cry and there were no congenital anomalies. About 70.0% had delayed developmental course and 62.9% had delayed domain in all the domain (Table 3).

**Table-I**

*Sociodemographic profile of the children (n=70).*

Attributes	Frequency (%)
Sex	
Male	53 (75.7)
Female	17 (24.3)
Socioeconomic status	
Poor	26 (37.1)
Middle class	38 (54.3)
Upper middle	05 (7.1)
High	01 (1.4)
Place of Residence	
Rural	36 (51.4)
Urban	34 (48.6)
Education of father	
Illiterate	11 (15.7)
Primary	29 (41.4)
SSC and above	18 (25.7)
Graduate and above	12 (17.1)
Education of mother	
Illiterate	11 (15.7)
Primary	36 (51.4)
SSC and above	17 (24.3)
Graduate and above	06 (8.6)
Superstitious belief	
Present	36 (51.4)
Absent	34 (48.6)
Consultation from traditional healers	
Taken	34 (48.6)
Not taken	36 (51.4)

**Table-II**

*Clinical profile of the children (n=70).*

Attributes	Frequency (%)
Age of onset of epilepsy	
<6 months	33 (47.1)
6-24 months	15 (21.4)
>24 months	22 (31.4)
Type of seizure	
Focal	33 (47.2)
Generalized	26 (37.1)
West syndrome	11 (15.7)
EEG findings	
Generalized	23 (32.9)
Focal	32 (45.7)
EE 13 (18.6)	
Normal	02 (2.9)
Family history of epilepsy	
Yes	10 (14.3)
No	60 (85.7)
Comorbid condition	
No comorbidity	18 (25.7)
Cerebral palsy	31 (44.3)
Intellectual disability	04 (5.7)
Autism	03 (4.3)
ADHD	01 (1.4)
GDD	11 (15.7)
Speech delay	01 (1.4)

**Table III**

*Distribution of birth and developmental history of the children (n=70).*

Attribute	Frequency (%)
Pre-natal complication	
Present	06 (8.60)
Absent	64 (91.40)
Peri-natal complication	
Present	41 (58.6)
Absent	29 (41.4)
Birth weight (in kg)	
<2.5	11 (15.7)
>2.5	59 (84.3)
Cry after birth	
Normal	30 (42.9)
Delayed	40 (57.1)
Congenital anomalies	
Present	00 (0)
Absent	70 (100)
First four weeks complication	
Present	34 (48.6)
Absent	36 (51.4)
Child's developmental course	
Normal	21 (30.0)
Delayed	49 (70.0)
Domains delayed	
No delay	21 (30.0)
Specific domain	05 (7.1)
All the domain	44 (62.9)
Age delay first noticed in months	
<6	45 (64.3)
7-24	4 (5.7)
>24	00 (0.0)
No delay	21 (30.0)
ADLs (Activities of Daily Living)	
Independent	17 (24.3)
Needs supervision	53 (75.7)

## Discussion

Epilepsy is one of the most common non-communicable chronic neurological diseases. About 50 million people have epilepsy all over the world and nearly 80% of them are in low and middle income countries.<sup>18</sup> The present study was conducted with a view to determine the socio-demographic and clinical profile of children with epilepsy

reporting at a super-specialized referral center of Bangladesh.

The average age of the study subjects was under five years ( $4.28 \pm 3.65$  years). Among all of study cases, only 5.70% aged > 10 years and maximum (70%) aged <6 years. Study conducted by Berg et al found the mean age of their study cases  $4.30 \pm 2.10$  years which is consistent to the finding of this study and Pandey et al found the mean age of their study cases  $10.50 \pm 5.06$  years which are slightly higher than finding of this study.<sup>19,20</sup>

Regarding sex, clear male predominance is noted with a 3.12:1 male female ratio. Study conducted by Farghaly et al, and Hossain et al also found clear male predominance in their respective study regarding epilepsy.<sup>21,22</sup> Neurodevelopmental, and neuroprotective role of estrogen and progesterone may be the possible reasons for this lower prevalence of epilepsy among female children.<sup>23</sup>

Maximum 54.30% of the study subjects were in middle socio-economic group, followed by poor (37.10%), upper middle (07.10%) and high (1.40%) socio-economic group. Numbers of rural and urban residents were nearly equal (51.4% and 48.6%). Study conducted by Rani and Thomas (2019) observed urban residents (43.3%) predominance, which were slightly higher than that of rural residents (35%) may be due to lack of awareness at country-side.<sup>24</sup>

Illiteracy rate was found 15.70% both among father and mother. Maximum of their parents (41.40% father and 51.40% mother) were primarily educated. Also the number of graduate fathers (17.10%) and graduate mothers (8.60%) were remarkable. Rani and Thomas (2019) observed that most of the parents were educated upto secondary level (36%) it also reflects that general social awareness is increasing here despite wide educational level variation among the parents.<sup>24</sup>

Study conducted by Rani and Thomas (2019) observed 37.7% parents felt epilepsy was caused by evil spirits.<sup>24</sup> Unfortunately, we also found that majority (51.40%) of the parents had faith in superstitious root of the disease and 48.60% took consultation from traditional healer.

Among the study subjects, history of peri-natal complications (58.60%) was more common than history of pre-natal complications (8.60%). Regarding age of onset of epilepsy, most of the children (47.10%) had

developed epilepsy before six months of their age. Most of the cases 57.10% had history of delayed birth cry. About 15.70% of the study subjects were underweight (<2.50 kg) at the time of delivery. We also found that 7.10% had delayed development in a specific domain and 62.90% had delayed development in all domains. About 75.70% of the study children need supervision of others to perform their daily activities necessary for living. Positive family history of epilepsy was found in 14.30% study cases. Study conducted by Rani and Thomas (2016) also observed positive history of perinatal complications among their 56.7% study cases, positive family history among their 21.9% study cases, global developmental delay in 35% of cases, history of delayed cry in 41.7% of cases.<sup>1</sup> All the findings are nearly consistent to the finding of this study.

Focal seizures, generalized seizures and west syndrome were noted among 47.20%, 37.10% and 15.70% study cases. In electroencephalography, focal abnormalities were observed among 45.70% cases, generalized abnormalities were observed among 32.90% cases and epileptic encephalopathy was observed among 18.60% cases and normal EEG findings was observed among 2.90% cases. Maximum (65.80%) of the study subjects had >10sec duration of seizures and maximum (91.40%) had >10sec duration of seizures and maximum (91.40%) had <10times/day frequency of seizure. Different comorbidity like cerebral palsy, intellectual disability, autism, attention deficit hyperactivity disorder, global developmental delay, speech delay and surge weber syndrome was noted among 44.30%, 5.70%, 4.30%, 1.40%, 15.70%, 1.40% and 1.40% cases respectively. Study conducted by Berg et al also observed focal seizure among majority of their study cases.<sup>19</sup> However, Malik et al observed generalized seizures among majority of their study epileptic children.<sup>25</sup> Study conducted by Aaberg et al observed attention deficit hyperactivity disorder, autism, global developmental delay, and speech delay among their 6%, 5%, 7%, and 6% cases respectively. However, they observed cerebral palsy only among their 2% cases which is far lower than findings of this study.<sup>26</sup>

### Conclusion

In this study it is revealed that, epilepsy is predominant in male and children with delayed birth cry who had delayed developmental milestone achievement with

mean age around 4 years. Most of them are from middle class family, whose parents having superstitious belief and they are seeking consultation from traditional healers causing major drawbacks for availing modern treatment options. It was also revealed that focal seizure was the commonest type and adequate treatment enabled a good number of patients to live independently.

**Conflict of interest:** None

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