Emotional and Behavioral Disorders in Children with Epilepsy

***Rabin F[1], Mullick SI[2], Nahar JS[3], Bhuiyan SI[4], Haque MA[5], Khan MH[6], Khalil MI[7], Faruki MA[8]**

This cross sectional study was done to observe the prevalence of emotional and behavioral disorders in children with epilepsy, in the Department of Psychiatry, Pediatrics and Neurology, of Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh from July 2007 to June 2008. In this study, information about psychiatric disorders of 50 epileptic children, age ranging from 5-17 years with mean±SD (11.1±1.43) years, and 50 age, sex and socio-demographic status matched controls children (age ranging from 5-18 years with mean±SD (11.6±1.82) years were enrolled by parent, teacher and self version of Development And Well-Being Assessment (DAWBA) (Validated Bangla Version). Emotional disorders are more prevalent than behavioral disorders among epileptic children. Forty four percent (44%) of children with epilepsy had psychiatric disorder and this rate was significantly higher than that of healthy control ($p>0.05$). Disorders include major depressive disorder (20%), obsessive compulsive disorder (25%), other anxiety disorders (25%), specific phobia (15%), separation anxiety disorder (10%) and panic disorder with agoraphobia (5%).

[Mymensingh Med J 2013 Apr; 22 (2): 313-319]

Key words: Behavioral disorder, Emotional disorder, Epilepsy

Introduction

Epilepsy is the most common neurological disorder in children[1]. Population-based surveys to determine the burden of childhood epilepsy have been repeatedly considered in many countries. In a large study in Nova Scotia from 1977 to 1985 is was observed that the overall incidence rate in children from 1 month to 16 years was 41 cases per 100,000 person years. It was concluded that the incidence of epilepsy is highest in the first year of life; it plateaus in early childhood, and decreases markedly after age 10 years[2]. Very little is known about childhood epilepsies in Bangladesh. However preliminary epidemiological surveys confirm that seizure disorders are common in Bangladeshi children, a prevalence rate of 68/1000 for any seizure history and 9/1000 for any unprovoked seizure, in children aged 2 to 9 years have been reported[3].

In the community, a child with epilepsy has an increased prevalence rate of mental disorders compared with the general population[4]. Representative studies revealed that childhood epilepsy associated with multiple problems, including impairment of academic achievement, behavioral and emotional adjustment, and social competence[5,6,7,8].

1. **Dr Farzana Rabin, Assistant Professor, Department of Psychiatry, Holy Family Red Crescent Medical College, Dhaka, Bangladesh; E-mail: drfarzanarabin@yahoo.com*
2. *Professor Mohammad SI Mullick, Chairman, Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka*
3. *Professor Jhunu Shamsun Nahar, Department of Psychiatry, BSMMU, Dhaka, Bangladesh*
4. *Dr Mohammad Saiful Islam Bhuiyan, Assistant Professor, Department of Dermatology and Venereology, BSMMU, Shahbagh, Dhaka*
5. *Dr M Atiqul Haque, Assistant Professor (Medical Statistics), Department of Public Health and Informatics, BSMMU, Dhaka, Bangladesh*
6. *Dr M Maruf Haque Khan, Medical Officer, Department of Public Health and Informatics, BSMMU, Dhaka, Bangladesh*
7. *Dr Mohammad Ibrahim Khalil, Assistant Professor, Department of Neurology, Shaheed Suhrawardy Medical College & Hospital (ShSMCH), Dhaka, Bangladesh*
8. *Dr Musanna Al Faruki, Honorary Medical Officer, Department of Medicine, Dhaka Medical College, Dhaka, Bangladesh*

**for correspondence*

Even when seizures are well controlled with antiepileptic medications, these problems may persist because of abnormal brain formation or function[5]. Livingston et al. commented that the epileptic child may be "more susceptible to the development of emotional difficulties than the nonepileptic"[9]. In some recent studies it has been found that, the frequency of emotional and behavioral disorders including depressive disorder, anxiety disorder and ADHD are considerably high in children with epilepsy[10,11,12,13].

The present study was undertaken to estimate the prevalence of emotional and behavioral disorders among children with epilepsy by using DAWBA (Development and Well-Being Assessment).

Methods

This was a cross sectional study conducted to test the hypothesis that the prevalence of emotional and behavioral disorders in children with epilepsy is significantly higher than that of the general child population. It was conducted from July 2007 to June 2008 in the Department of Psychiatry, Pediatrics and Neurology of Bangabandhu Sheikh Mujib Medical University (BSMMU). Fifty epileptic children (cases) with an age limit from five to eighteen years, of both sexes and having at least one afebrile seizure were included purposively and consecutively from the epileptic children attending the out patient department (OPD). Fifty (50) ages, sex, socio-demographic status matched healthy children; preferably healthy siblings of the patients were recruited as controls. Informed written consent was obtained from the parents.

Information regarding psychiatric disorder was collected by parent, teacher and self version of Development and Well-Being Assessment (DAWBA) (Validated Bangla Version) and rated by an internationally rater.

Questionnaire: The questionnaire was designed to collect information regarding socio-demographic variables including age, sex, housing, religion, educational status of the child and parents, monthly family income and other related information. It also contains some relevant cultural variables like belief and attitude of parents regarding child's disease and some variables related to epilepsy such as duration of illness, age of onset, type of epilepsy (according to seizure origin), seizure frequency, family history of epilepsy, anticonvulsive therapy at the time of assessment.

Development and Well-Being Assessment (DAWBA): Assessment of emotional and behavioral disorders was carried out using the DAWBA method. It is well accepted method consisting of questionnaires, interviews, and rating techniques designed to generate International Classification of Diseases (ICD) - 10 and DSM - IV psychiatric diagnoses among children and adolescents of 5 to 18 years of age. It primarily focuses on the common emotional, behavioral, and hyperactivity disorders and also covers less common disorders more briefly. It has three versions: parent version, self version, and teacher version. Its parent version was used for all cases. Self version was used for adolescents 11 to 18 years of age. Its teacher version is used for all school going children and adolescents. This instrument has been translated in Bangla and standardized and validated by Mullick MSI, one of the coauthor of this article. It has two components-blind ended and open-ended questions. The interviews are administered by the interviewers who also record verbatim accounts of any reported problems, but do not rate them. Experienced clinicians subsequently review both verbatim accounts and answers to structured questions before assigning diagnoses according to ICD-10 criteria. The validated Bangla version of DAWBA was used in this study.

ICD-10 (DCR): It is the 10th revision of International Classification of Diseases by the World Health Organization which is also used for diagnostic criteria for the research. It provides specific criteria for the diagnoses of mental and behavioral disorders. In this study only Axis-I diagnoses was considered.

Statistical analyses: Statistical analyses of data were done by SPSS 15 (Statistical package for Social Sciences) and λ^2 test was done to see the impact of childhood epilepsy on emotional and behavioral development of epileptic children comparing with normal healthy controls. All tests were performed with a significance level of alpha=0.05, two sided.

Results

Table I shows, 62% of cases and 70% of controls were in the age group of 5-10 years and 38% of

cases and 30% of controls were from the age group of above 10 years. Male-female ratio was almost similar between the two groups. There were 22% of cases and 26% of controls who had never gone to school. On the other hand 78% of cases and 74% of controls was school going. Among school going children 64.3% cases and 84.4% controls were studying in grade I-V, 14.3% cases and 15.6% controls were studying in grade VI-X, 21.4% cases were studying in grade ≥XI. Among dropped out cases of childhood epilepsy, 90.9% were in grade I-V and 9.1% in grade ≥VI and among dropped out controls 80.0% were in grade I-V and 20.0% in grade ≥VI. The causes of drop out from school among epileptic cases were primarily related the disease, however financial and other problems were responsible for 9.1-63.6% cases. In contrast cause of drop out in controls was due to financial problem (Table I).

Table I: Distribution of respondents by socio demographic characteristics

Characteristics	Group		P value
	Case (n=50)	Control (n=50)	
Age (in years)			
5-10	31 (62.0)	35 (70.0)	
11-18	19 (38.0)	15 (30.0)	
Mean±SD (Range)	11.1±1.43 (5-17)	11.6±1.82 (5-18)	0.398NS
Sex			
Male	31 (62.0)	33 (66.0)	0.677 NS
Female	19 (38.0)	17 (34.0)	
Habitat			
Rural	17 (34.0)	22 (44.0)	0.067 NS
Urban	22 (44.0)	25 (50.0)	
Religion			
Islam	43 (86.0)	42 (84.0)	0.779 NS
Hinduism	7 (14.0)	8 (16.0)	
Educational status			
Never goes to school	11 (22.0)	13 (26.0)	
Goes to school	39 (78.0)	37 (74.0)	0.640 NS
Studying in grade			
I-V	18 (64.3)	27 (84.4)	0.022 *
VI-X	4 (14.3)	5 (15.6)	
≥XI	6 (21.4)	0 (0.0)	
Drop out from school in grade			
I-V	10 (90.9)	4 (80.0)	0.541 NS
≥VI	1 (9.1)	1 (20.0)	
Cause of drop out from school			
Due to disease	3 (27.3)	0 (0.0)	
Financial problem	7 (63.6)	5 (100.0)	0.298 NS
Others	1 (9.1)	0 (0.0)	

¶ Figure within parenthesis denoted corresponding percentage
# Chi square test was done to measure the level of significance
* Significant ($p < 0.05$)
NS = Not significant

Psychiatric disorder was prevalent among children with epilepsy. Emotional disorder was common psychiatric problem than behavioral disorders (p>0.05) (Table III). Common emotional disorders of epileptic children include major depressive disorder, obsessive compulsive disorder, other anxiety disorders, specific phobia, separation anxiety disorder, social phobia and panic disorder with agoraphobia (Table IV). Regarding behavioral disorders, two cases and one control had hyperkinetic disorder. One control child had enuresis and one had stuttering.
Table V showing that anti epileptic drugs (AED) have not significant effect on behavioral problem among children with epilepsy (p=0.273).

Table II: Frequency of psychiatric disorders among epileptic and non-epileptic children

Psychiatric disorders	Group		P value
	Children with epilepsy (Case, n=50)	Children without epilepsy (Control, n=50)	
Present	22 (44.0)	11 (22.0)	0.019*
Absent	28 (56.0)	39 (78.0)	
Total	50 (100.0)	50 (100.0)	

¶ Figure within parenthesis denoted corresponding percentage; # Chi square test was done to measure the level of significance; Significant (p<0.05)

Table III: Category of psychiatric disorders among epileptic and non-epileptic children

Category of disorders	Group		P value
	Epileptic children (Case, n=22)	Non-epileptic children (Control, n=11)	
Emotional disorders	20 (90.9)	8 (72.7)	
Behavioral disorders	2 (9.1)	1 (9.1)	0.067 NS
Other disorders	0 (0.0)	2 (18.2)	
Total	22 (100.0)	11 (100.0)	

¶ Figure within parenthesis denoted corresponding percentage; # Chi square test was done to measure the level of significance; * Significant (p<0.05); NS = Not significant

Table IV: Specific type of emotional disorders among epileptic and non-epileptic children

Emotional disorders	Group		P value
	Epileptic children (Case, n=20)	Non-epileptic children (Control, n=8)	
Major depressive disorder	4 (20.0)	1 (12.5)	0.640 NS
Obsessive compulsive disorder	5 (25.0)	0 (0.0)	0.119 NS
Separation anxiety disorder	2 (10.0)	3 (37.5)	0.086 NS
Specific phobia	3 (15.0)	1 (12.5)	0.864 NS
Social phobia	1 (5.0)	1 (12.5)	0.486 NS
Generalized anxiety disorder	0 (0.0)	1 (12.5)	0.107 NS
Other anxiety disorder	5 (25.0)	2 (25.0)	0.999 NS
Panic disorder with agoraphobia	1 (5.0)	0 (0.0)	0.520 NS

Multiple responses
¶ Figure within parenthesis denoted corresponding percentage; # Chi square test was done to measure the level of significance; * Significant (p<0.05); NS = Not significant

Table V: Distribution of cases by anticonvulsive therapy at the time of assessment

Anticonvulsive therapy at the time of assessment	Emotional and behavioral disorders		P value
	Present (n=22)	Absent (n=28)	
None	3 (30.0)	7 (70.0)	0.273[NS]
Monotherapy	12 (41.4)	17 (58.6)	
Polytherapy	7 (63.6)	4 (36.4)	
Total	22 (44.0)	28 (56.0)	

¶ Figure within parenthesis denoted corresponding percentage
# Chi square test was done to measure the level of significance

Discussion

Epilepsy is a complex disorder that has an impact on many aspects of a child's development and functioning. As a result, many of these children are at increased risk of failure at school experiences; difficulties in social engagement with peers; inadequate social-skills; and poor self-esteem[14]. It is, therefore, important to understand and focus probable emotional or behavioral disorders of epileptic child for their healthy and sound mental development and functioning.

Rutter et al. reported that 29% of the 63 children with uncomplicated epilepsy manifested a psychiatric disorder relative to 12% of the 138 children with chronic but nonneurological disorders[15]. Mellor et al. reported that 27% of 308 children with epilepsy aged 5-13 manifested a behavior disorder relative to 15% of healthy controls[16]. Prassouli et al. in a similar type of study demonstrated a high prevalence of behavioral and emotional problems in children with idiopathic epilepsy[17].

In a recent study Chen et al. found that the frequency of emotional and behavioral disorders including depress disorder, anxiety disorder and ADHD was considerably high in children with epilepsy[10]. In current study, 44% of children with epilepsy had behavioral and emotional disorders as measured by the Bangla version of Development and Well-Being Assessment (DAWBA). This result is consistent with the study by Davies et al. who found rates of 37% psychiatric disorders using the DAWBA scale[18]. Also support the findings of Rutter et al. who reported a 28.6% prevalence of behavioral and psychiatric problems in children with seizures and no additional central nervous system damage[15]. In children with new-onset epilepsy, Dunn et al. reported a similar (24%) prevalence of the total Child Behaviour Checklist (CBCL) scores increased beyond a normal range[19]. We found different specific types of emotional and behavioral disorders among children with epilepsy. These include major depressive disorder (20%), obsessive compulsive disorder (25%), other anxiety disorders (25%), specific phobia (15%), separation anxiety disorder (10%), social phobia (5%) and panic disorder with agoraphobia (5%). All of these have higher incidence among children with epilepsy. But the results were statistically no significant. Caplan et al. showed in their study that depression and anxiety disorders associated with suicidal ideation are more prevalent in children with epilepsy than the non epileptics[20]. Depression and anxiety disorders are also more prevalent psychiatric disorder in adult epileptic patients. Though it was not fulfilling any diagnostic criteria, but we have found irritability as a common problem among epileptic children and adolescents.

Our study shows that the duration of epilepsy is an important issue on occurrence of emotional and behavioral disorders. Those who had been suffering from epilepsy for more than ten years, 58% of them had emotional and behavioral disorders. We did not found any significant influence of seizure frequency on these disorders, which supports a seven years follow-up study by Sbarra et al. who demonstrated no difference in the behavioral and emotional adjustment problems between teenagers with ongoing seizures and those in full remission[21].

Freilinger et al. in their study suggested that specific epilepsy related factors are associated with specific behavioral and emotional problems. Children with symptomatic epilepsy syndromes and an earlier age at onset might be at higher risk of developing social problems[22]. Though majority of epileptic children of our study had generalized seizures, but we found psychiatric morbidity is more (75%) in focal seizure.

The relationship of anti epileptic drug (AED) therapy with the occurrence of emotional and behavioral problems was not significant in our study, but we found that 63% of those who were on polytherapy, had psychiatric morbidity. Plioplys et al. in their 10 years review on psychiatric problems in epilepsy found that the specific causal effects of AEDs on the cognitive and behavioral problems in intellectually normal children with epilepsy are either insufficient or inconclusive[23]. Some other researchers commented that antiepileptic drugs, when used in monotherapy, appear to have minimal effects on cognitive functioning[24]. Our study was consistent with these previous studies. However, it is often difficult to distinguish between the effects of medications and those of seizures themselves.

There was a limitation of the study, as the control group was siblings of the affected cohort who are at more risk of emotional and behavioral disorders than a control group that would come from a family without epilepsy, which had a chance to influence the outcome.

The results of the current study demonstrated a high prevalence (44%) of behavioral and emotional problems in children with epilepsy. The findings emphasize the necessity to evaluate and address psychosocial problems in children with epilepsy.

Conclusion

We conclude that emotional and behavioral disorders are frequent among epileptic children than non epileptics. Emotional problems are higher than behavioral problems in children with epilepsy.

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