

# A Study to Assess the Anxiety among the Adolescents Suffering from Epilepsy at a Tertiary Care Hospital in Mysore, Karnataka

Harsha G. T.<sup>1</sup>, Ashok Kumar K. S.<sup>2,\*</sup>

<sup>1</sup>Assistant Professor, Department of Psychiatry, BGS Global Institute of Medical Sciences, Bangalore

<sup>2</sup>Assistant Professor, Department of Psychiatry, Mandya Institute of Medical Sciences, Mandya

---

**Abstract Background:** Historically psychiatric disorders in epilepsy were considered to be a consequence of psychosocial disturbance due to poor adaptation to a chronic disease, but recent studies have suggested that epilepsy and psychiatric disorders are best conceptualized as epiphenomena rather than cause or consequence. These studies foster the need for study of bidirectional relationship between psychiatric disorders and epilepsy, suggesting that behavioral and psychosocial impairment in epilepsy may be the consequence of unrecognized psychiatric disorder rather than the cause of a psychiatric condition. **Objective:** A Study to Assess the Anxiety among the Adolescents suffering from Epilepsy. **Materials and Methods:** 100 consecutive children and adolescents aged 8-17 years diagnosed to have epilepsy presenting to the paediatric and neurology outpatient department of J.S.S. Hospital, Mysore from December 2011 to June 2013 were enrolled for the study. Detailed socio-demographic and epilepsy characteristics were recorded in proforma specially designed for the study after fulfilment of the inclusion and exclusion criteria. After screening for mental retardation, all the patients were assessed using self-report CDI for anxiety. **Results:** About 35% of patients could be grouped into specific anxiety disorder with majority of patients having social anxiety disorder and various other types of disorders as mentioned in the table. 5% of patients had mixed type of anxiety which has been detailed in the above table. 44% of patients had significant anxiety scores with 35% of them having very elevated scores. **Conclusion:** Increased awareness of the clinical presentations of anxiety and depressive disorders may help clinicians to develop effective prevention and intervention strategies to improve the long term outcome.

**Keywords** Anxiety, Adolescents, Epilepsy, Cdi, Psychiatric

---

## 1. Introduction

There is strong evidence to suggest that neurological diseases are accompanied by psychological disturbances. [1-4] One such neurological disorder is epilepsy, which is the disturbance of the nervous system that abruptly interferes with ongoing behavior, perception, movement, consciousness and other brain functions. Epilepsy is one of the world's most prevalent non-communicable diseases affecting approximately 50 million people in the world with no age, racial, social class, and national or geographical boundaries. [5-7] It has to be acknowledged that more than 80% of people with epilepsy live in developing countries, where the condition remains largely untreated. [8]

Approximately nearly 25% of the world population who are suffering from epilepsy are below 15 years of age. [9] Many studies done by various researchers showed the annual incidence rate of epilepsy is about 60-124 per 100000 population and is around 40-50 per 100000 population in developed countries.

Moreover, epilepsy is considered by several researchers [3, 10, 11] to represent the most common chronic neurological disorder in childhood. It is a rather unique neurological disorder in that the clinical presentation, progression and underlying etiology appear to vary across clinical cases.

Historically psychiatric disorders in epilepsy were considered to be a consequence of psychosocial disturbance due to poor adaptation to a chronic disease, but recent studies have suggested that epilepsy and psychiatric disorders are best conceptualized as epiphenomena rather than cause or consequence. These studies foster the need for study of bidirectional relationship between psychiatric disorders and epilepsy, suggesting that behavioral and psychosocial impairment in epilepsy may be the consequence of unrecognized psychiatric disorder rather than the cause of a

---

\* Corresponding author:

statisticsclinic2018@gmail.com (Ashok Kumar K. S.)

Published online at <http://journal.sapub.org/ijcp>

Copyright © 2018 The Author(s). Published by Scientific & Academic Publishing

This work is licensed under the Creative Commons Attribution International

License (CC BY). <http://creativecommons.org/licenses/by/4.0/>

psychiatric condition.

There is an increased risk of behavioural problems and psychiatric disorders amongst children with epilepsy, said to be 3 to 6 times higher compared with normal children and those with other chronic disorders like diabetes. Of these, anxiety, depression and attention disorders are the most common and well-studied. Although anxiety and depressive disorders have distinct features that enable separate classification in the Diagnostic and Statistical Manual of Mental Disorders 4th Edition (DSM-IV-TR) [10], these two mood disorder tend to exist co-morbidly and are often studied together. The relationship between epilepsy and mood disorders is thought to be bidirectional rather than a simple cause-and-effect phenomenon.

Interictal anxiety and depression can exert independent adverse effects on health-related quality of life (HRQOL). In addition, frequent, severe, and chronic seizures also reduce HRQOL, but appear less powerful predictors of HRQOL than interictal psychiatric symptoms. Recognition and treatment of co-morbid depression and anxiety thus form an important consideration in improving quality of life in Epilepsy. [11]

The three most common pediatric anxiety disorders—separation anxiety, generalized anxiety and social phobia—have much in common and can be readily distinguished from other childhood anxiety disorders. Generalized anxiety disorders are common anxiety diagnoses in children, with a reported prevalence range of 0.5 to 7.1 percent. Pediatric generalized anxiety disorder is commonly associated with other anxiety disorders and mood disorders. Up to 50 percent of children and adolescents with generalized anxiety will have another psychiatric disorder. In children and adolescents the anxiety disorders are considered to be one of the most common psychiatric diagnosis, and have been shown to affect 5-18% of children, 0.3-12.9% of pre adolescents and 0.6-7% of adolescents. The prevalence of anxiety in paediatric epilepsy is estimated to be 15 to 20%.

Historically psychiatric disorders in epilepsy were considered to be a consequence of psychosocial disturbance due to poor adaptation to a chronic disease, but recent studies have suggested that epilepsy and psychiatric disorders are best conceptualized as epiphenomena rather than cause or consequence. These studies foster the need for study of bidirectional relationship between psychiatric disorders and epilepsy, suggesting that behavioral and psychosocial impairment in epilepsy may be the consequence of unrecognized psychiatric disorder rather than the cause of a psychiatric condition. Moreover children with epilepsy are found to have more risk of psychiatric disorders. Unfortunately these children with epilepsy are often unrecognized and left untreated for these psychiatric disorders, which can lead to negative outcome on quality of life.

As there are no published Indian studies throwing light on these issues it is difficult to gauge the prevalence of this comorbidity in the Indian context. Hence our study aims to make clinicians aware of accompanying psychiatric

symptoms in epileptic children to aid in early detection and treatment of psychiatric comorbidities.

## 2. Objective

A Study to Assess the Anxiety among the Adolescents suffering from Epilepsy.

## 3. Materials and Methods

The Cross Sectional study was conducted in the Department of Pediatric and Neurology at J.S.S. Hospital, Mysore from December 2011 to June 2013.

## 4. Sample Procedure

The study enrolled 100 consecutive children and adolescents aged 8 to 17 years diagnosed to have epilepsy presenting to the outpatient Department of Paediatric and Neurology at J.S.S. Hospital, Mysore from December 2011 to June 2013. Detailed socio-demographic and epilepsy characteristics were recorded in proforma specially designed for the study after fulfillment of the inclusion and exclusion criteria. After screening for mental retardation using Binet-Kamath test for intelligence, all the patients were assessed further using self-report CDI and SCARED scales for depression and anxiety respectively. All the data was collected by Interview technique in a pretested and semi structured questionnaire after obtaining the informed consent from the parents.

After screening for mental retardation using Binet-Kamath test for intelligence, all the patients were assessed further using Self-report for childhood anxiety related emotional disorders (SCARED) for assessment of anxiety disorders. [12]

The SCARED was initially developed by Birmaher and his collaborators. It comprises of 38-items that can be grouped into five subscales. Four of these subscales measure anxiety disorder symptoms as conceptualized in the DSM-IV-TR: panic disorder, generalized anxiety disorder, separation anxiety disorder, and social anxiety. The fifth subscale, school anxiety, represents a common anxiety problem in childhood and adolescence. [12]

The 38-item SCARED questionnaire was employed in this study. The adolescent rated each symptom on a 3-point scale: 1 (almost never), 2 (sometimes), 3 (often). The subscales of the questionnaire are: panic disorder (13 items), generalized anxiety disorder (9 items), separation anxiety disorder (8 items), social anxiety (4 items), and school anxiety (4 items).

Children's Depression Inventory was 27 item self-rated symptom orientated scale suitable for school age children and adolescents to screen for Depression among the adolescents.

Presence of psychiatric disorder prior to the onset of seizure disorder and Mental Retardation were excluded from

the study.

The Statistical software namely SAS 9.2, SPSS 15.0, Stata 10.1, MedCalc 9.0.1, Systat 12.0 and R environment ver.2.11.1 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc. Data are expressed In term of Percentage and figures. Appropriate Statistical test have been used to test the level of Significance.  $P < 0.05$  is considered as significant.

## 5. Results

A total of 100 subjects were Selected for the study in the study period who were found to be not mentally retarded by Binet-kamath intelligence scale

**Table 1.** Socio Demographic Profile of the Subjects

Socio Demographic Profile		No of Patients (n=100)
Age in years	<10	21
	10-15	39
	>15	40
Gender	Male	55
	Female	45
Residence	Urban	35
	Rural	65
Religion	Hindu	93
	Muslim	6
	Christian	1
Socioeconomic Status	I	1
	II	35
	III	64
	IV	0
	V	0

Nearly 21% of the subjects were less than 10 years with 45% of the females and nearly 35% belonged to urban area and 93% were Hindu By religion.

Of the 100 patients included for the study 60% had generalized tonic-clonic seizures, 7% with childhood absence seizures, 15% with focal/complex partial seizures and 18% with hot water/reflex epilepsy.

There was history of febrile convulsions in 11% of patients. 6% of patients had family history of epilepsy and 2% of them had family history of psychiatric disorder. ajority of the patients had an age of onset between 10 to 15 years.

Most of the patients had frequency less than or equal to 4times. Majority of patients had illness duration between 2 to 5 years.

**Table 2.** Different types of Anxiety disorders identified

Anxiety type	No. of patients (n=100)	%
Nil	65	65
Panic Disorder	7	7
Generalized anxiety Disorder	5	5
Separation Anxiety Disorder	6	6
Social Anxiety Disorder	12	12
Significant School Avoidance	0	0
Panic disorder+ Social Anxiety Disorder	1	1
Panic disorder+ Significant School Avoidance	1	1
Separation Anxiety Disorder+ Social Anxiety Disorder	1	1
Separation Anxiety Disorder+ Significant School Avoidance	1	1
Social Anxiety Disorder+ Significant School Avoidance	1	1

About 35% of patients could be grouped into specific anxiety disorder with majority of patients having social anxiety disorder and various other types of disorders as mentioned in the table. 5% of patients had mixed type of anxiety which has been detailed in the above table.

**Table 3.** Anxiety scores on SCARED scale

Anxiety score	No of Patients	%
< 24	56	56
25-29	9	9
30 & above	35	35

44% of patients had significant anxiety scores with 35% of them having very elevated scores. With majority of patients were on single epileptic drug (71%), 23% received two anti-epileptics and 6 of them received more than two anti-epileptics. Observations showed that among the type of anti-epileptic drug being taken, 39% received phenytoin, 35% received valproate, 26% of them received carbamazepine, 19% phenobarbitone, 14% clobazam and 3% of them were on oxcarbamazepine.

**Table 4.** Co relation of Different type of Epilepsy to Anxiety Score

Variables		Types of Epilepsy				P value
		GTCS (n=60)	Absence (n=7)	CPS (n=15)	Hot water epilepsy (n=18)	
Anxiety Score	20-24	34 (56.7%)	7(100%)	8(53.3%)	7(38.9%)	Chi square =13.470; P=0.036*
	25-29	8 (13.3%)	0(0%)	1(6.7%)	0(0%)	
	30 & above	18 (30%)	0(0%)	6(40%)	11(61.1%)	
Mean Anxiety Score		24.67 ±7.05	18±3.79	25.33±9.36	28.11±8.44	0.031

The Anxiety score and types of epilepsy was found to be statistically significant. The Mean Anxiety Score was co related with different types of epilepsy and anxiety score was found to be having positive co relation with p value. We also found significant co-relation between anxiety and hot water epilepsy. Patients with hot water epilepsy had high anxiety scores followed by complex partial seizures. Patients with absence seizures had least anxiety scores.

## 6. Discussion

Patients with epilepsy have a high prevalence of psychiatric comorbidity. Most psychiatric disturbances are predominant in people with drug-resistant epilepsy and temporal lobe epilepsy, with/without associated neurological or mental abnormalities and psychosocial problems. [13, 14] Comorbidity of epilepsy may be due to a shared pathophysiological mechanism, however, coincidence or selection bias cannot always be excluded. In addition, genetic, psychosocial and iatrogenic factors may also contribute to the co-morbidity. 22 Comorbidity of epilepsy and psychiatric disorders are often, yet the most common are depression, nervousness and anxiety, less common being psychosis and schizophrenia. [15]

The different type of epilepsy seen in our study was similar to the study findings of the Mandebaum and Burack [16], Mendez et al [17] and Hoare et al [18]. Roeder et al [19] stated that greater number of AEDs was independently associated with severe symptoms of anxiety, suggesting the number of AEDs to be a risk factor for undetected symptoms of Anxiety. Plioplys [20] stated that the depressogenic effect of AEDs cannot explain development of depression in children per se; suggesting this effect to be related to the side effects of individual drugs. Oguz et al [21] stated that anxiety was significantly higher in patients receiving more than one AED.

The effectiveness of psychological treatments, such as cognitive-behavioral therapy (CBT), has been well established in the adult literature. For example, studies have revealed that CBT and other psychological approaches can lead to improvements in quality of life and even reductions in seizure frequency. Unfortunately, despite the recognized clinical need for psychosocial interventions in pediatric epilepsy [22] similar studies with children and adolescents have been minimal. Among the available studies, there are multiple methodological limitations that affect their applicability to clinical practice, such as small sample sizes, poor treatment specificity, and questionable differential diagnosis within the samples. Studies on the pharmacotherapy of anxiety disorders have revealed that SSRIs, including fluoxetine, fluvoxamine, sertraline, and citalopram are effective in treating anxiety disorders in children and adolescents. [23] At this time, there are no known controlled studies of the medication therapy of anxiety disorders in adults or children with epilepsy. However, investigations supporting the safety of SSRIs in

the treatment of depression in patients with epilepsy are likely applicable to the treatment of anxiety disorders in this population. As previously discussed, some AEDs can exacerbate anxiety in certain types of patients, especially in the context of polytherapy. However, it has been further shown that some AEDs have anxiolytic effects. Valproate, gabapentin, tiagabine, and vigabatrin have been used with varying success in the treatment of anxiety disorders in adult studies. [24] In a review of the literature, Mula et al. [25] indicated that the strongest evidence for the antianxiety effects of AEDs has been demonstrated for pregabalin in social phobia and generalized anxiety disorder, lamotrigine in posttraumatic stress disorder, and gabapentin in social anxiety. In their general psychiatric use, benzodiazepines are routinely used in conjunction with SSRIs in the management of anxiety disorders in adults. Their use with children is typically reserved for symptomatic treatment of severe anxiety on a short-term basis. However, it should be highlighted that benzodiazepines carry with them a high risk of dependency when used in long term treatment.

Considering all the above facts currently SSRI's remain the best treatment option with the combination of CBT in childhood depression and anxiety. [26]

## 7. Conclusions

Of greater concern is that only one third of those who were diagnosed sought or received mental health treatment. This represents an area of unmet health needs, with a significant impact on long term mental and physical health outcome. Hence there is a need for increased awareness and better training to address issues on diagnosis, monitoring and treatment. While multimodality treatment aimed at the patient, family and community currently represents the best approach, more research is required to determine best practices so that these children can make a smooth and happy transition to adulthood.

---

## REFERENCES

- [1] Billiard, C., Motte, J., & Farmer, M. (2002). The BREV neuropsychological test: Part II. Results of validation in children with epilepsy. *Developmental Medicine and Child Neurology*, 44, 398-404.
- [2] Binnie, C.D. (2003). Cognitive impairment during epileptiform discharges: Is it justifiable to treat EEG. *Lancet Neurology*, 2, 725-730.
- [3] Dodrill, C.B. (1992a). Neuropsychological aspects of epilepsy. *Psychiatric Clinics of North America*, 15(2), 383-395.
- [4] Dodrill, C., & Ojemann, G.A. (2007). Do recent seizures and recent changes inantiepileptic drugs impact performance on neuropsychological tests in subtle ways that might easily be missed?. *Epilepsia*, 48, 1833-1841.

- [5] Aldenkamp, A.P., & Arens, J. (2004). The relative influence of epileptic EEG discharges, short non convulsive seizures, and type of epilepsy on cognitive function. *Epilepsia*, 45, 54-63.
- [6] Spangenberg, J.J., & Lalken, N. (2006). Children with epilepsy and their families: psychosocial issues. *South African Family Practice*, 48(6), 60-63.
- [7] Baskind, R. (2005). Epilepsy care in Zambia: A study of traditional healers. *Epilepsia*, 46, 1-6.
- [8] Epilepsy; Media centre; WHO 2006 available at <http://www.who.int/mediacentre/factsheets/fs999/en/>.
- [9] Forsgren L. Incidence and prevalence. In: Wallace SJ, Farrell K, eds. *Epilepsy in children*, 2nd edn. London: Arnold, 2004: 21-25.
- [10] Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): A replication study. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1999; 38: 1230-1236.
- [11] Dieter Janz, Neurological Morbidity of Severe Epilepsy *Epilepsia*. 1998. 29 (1).1-8.
- [12] Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): A replication study. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1998; 38: 1230-1236.
- [13] Alwash RH, Hussein MJ, Matloub FF. Symptoms of anxiety and depression among adolescents with seizures in Irbid, northern Jordan. *Seizure* 2000; 9:412-6.
- [14] Høie B, Sommerfelt K Waaler P, et al. Psychosocial problems and seizure-related factors in children with epilepsy. *Devel Med Child Neurol* 2006; 48(3): 213-6.
- [15] Gaitatzis A, Carroll K, Majeed A et al. The Epidemiology of the comorbidity of epilepsy in the general population. *Epilepsia* 2004; 45 (12): 1613-1622.
- [16] Mandebaum DE, Burack GD. The effect of seizure type and medication on cognitive and behavioural functioning in children with idiopathic epilepsy. *Dev Med Child Neurol* 1997; 39:731-5.
- [17] Mendez MF, Doss RC, Taylor JL et al. Depression in epilepsy relationship to seizures and anticonvulsant therapy. *J NervMent Dis* 1993; 181: 444-447.
- [18] Hoare P, Kerly S psychosocial adjustment of the children with chronic epilepsy and their families. *Dev Med Child Neurol* 1991; 33: 201-15.
- [19] Roeder R, Roeder K, Asano E, et al. Depression and mental health help-seeking behaviors in a predominantly African American population of children and adolescents with epilepsy. *Epilepsia* 2009; 50(8): 1943-52.
- [20] Pliplys S. Depression in children and adolescents with epilepsy. *Epilepsy Behav* 2003; 4(3): 39-45.
- [21] Oguz A, Kurul S, Dirik E, et al. Relationship of epilepsy-related factors to anxiety and depression scores in epileptic children. *J Child Neurol* 2002; 17(1): 37-40.
- [22] Snead K, Ackerson J, Bailey K, et al. Taking charge of epilepsy: the development of a structured psychoeducational group intervention for adolescents with epilepsy and their parents. *Epilepsy Behav* 2004; 5: 547-56.
- [23] Walkup JT, Labellarte MJ, Riddle MA, et al for the Research Unit on Pediatric Psychopharmacology Anxiety Study Group. Fluvoxamine for the treatment of anxiety disorders in children and adolescents. *N Engl J Med* 2001; 344: 1279-85.
- [24] Pande AC, Davidson JR, Jefferson JW, et al. Treatment of social phobia with gabapentin: a placebo-controlled study. *J Clin Psychopharmacol* 1999; 19: 341-8.
- [25] Mula M, Pini S, Cassano GB. The role of anticonvulsant drugs in anxiety disorders: a critical review of the evidence. *J Clin Psychopharmacol* 2007; 27: 263-72.
- [26] Bernstein GA, Shaw K, for the American Academy of Child and Adolescent Psychiatry. Practice parameters for the assessment and treatment of children and adolescent with anxiety disorders. *J Am Acad Child Adolesc Psychiatry* 1997; 36(Suppl. 10): 69S-84S.