PREVALENCE OF DEPRESSION AND/OR ANXIETY IN CHILDREN WITH EPILEPSY AGED 5 TO 18 YEARS - A PROSPECTIVE OBSRVATIONAL HOSPITAL BASED STUDY FOR A PERIOD OF ONE YEAR.

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Dr. TANMAYA METGUD
MD (PAEDIATRICS)
Professor and Head,
Department of Paediatrics,
J. N. Medical College,
Nehru Nagar, Belagavi – 10

Date: 05/01/2023
Place: Belagavi

Dr.(Mrs.) N.S. MAHANTSHETTI
MD (PAEDIATRICS)
Principal
J. N. Medical College,
Nehru Nagar, Belagavi – 10

PRINCIPAL
J.N. Medical College,
BELAGAVI- 590 010

Date: 05/01/2023
Place: Belagavi

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Place: Belagavi

(REG NO. BM0120018)

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JAWAHARLAL NEHRU MEDICAL COLLEGE

(Recognized by Medical Council of India, New Delhi)

Accredited 'A+' Grade by NAAC (3rd Cycle) **Placed in Category 'A' by MHRD (GoI)**

Nehru Nagar, Belagavi- 590 010, Karnataka, INDIA

0831 - 2471350 0831 - 2470759 www.jnmc.edu principal@jnmc.edu

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Dr. (Mrs.) N.S. Mahantashetti.
Chairperson-Antiplagiarism Committee &
Principal,
J. N. Medical College, Belagavi.

To,
Reg. No. BM0120018,
Postgraduate Student,
2020-21 Batch,
Department of Paediatrics,
J. N. Medical College, Belagavi.

INSTITUTIONAL ETHICAL CLEARANCE

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed – to- be- University)
Accredited 'A' Grade by NAAC (2nd Cycle) Placed in Category 'A' by MHRD (GoI)
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu
Phone: (+ 91-(0)831 Office : 2472550
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 163 **Date: 25/01/2021**

To,

PG student in Paediatrics,
J.N.Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

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(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

LIST OF ABBREVIATIONS USED

ILAE	-	International League against epilepsy
INCLEN	-	International Clinical Epidemiology Network
DSM-IV-TR	-	Diagnostic and Statistical Manual of Psychiatric Disorders
MDD	-	Major Depressive Disorder
OCD	-	obsessive-compulsive disorder
PTSD	-	post-traumatic stress disorder
GAD	-	generalized anxiety disorder
ASM	-	anti seizure medication
ADHD	-	Attention deficit/hyperactivity disorder
CAE	-	childhood absence epilepsy
TLE	-	Temporal lobe epilepsy
EEG	-	Electroencephalogram
SES	-	socioeconomic status
SSRI	-	Selective serotonin reuptake inhibitor
CYP450	-	Cytochrome P450
TCAs	-	Tricylic antidepressants
SAD	-	separation anxiety disorder
RCMAS	-	Revised Children's Manifest Anxiety Scale
K-SADS	-	Kiddie Schedule for affective disorders and Schizophrenia

STAIc	-	State–Trait Anxiety Inventory for Children
CBT	-	cognitive-behavioral therapy
CSI	-	Child Symptom Inventory
RCADS	-	Revised Child Anxiety and Depression Scale
RCADS-P	-	Revised Child Anxiety and Depression Scale - Parent Version
SDQ	-	Strengths and Difficulties Questionnaire
QOLIE-31	-	Quality of life in epilepsy.
ICD	-	International Classification of disease.
IQ	-	Intelligence quotient
DAWBA	-	Development and Well-Being Assessment

ABSTRACT

BACKGROUND: Children with epilepsy suffer from medical and psychiatric co-morbidities, which increase the emotional burden on the child as well as the family. This in turn leads to poor quality of life and non-compliance to medication.

OBJECTIVE: To evaluate depression and anxiety in children with epilepsy and further to assess how these co-morbidities affect the quality of life of a child.

METHODS: All children with epilepsy with normal intelligence quotient. They were assessed using **RCADS (Revised child anxiety and Depression scale) and SDQ (Strengths and Difficulties questionnaire).** If the RCADS had clinical evidence of psychiatric co-morbidity, they were examined by Child psychiatrist and were further assessed using ICD-10. QOLIE-31 was done to assess quality of life and children were followed up after 3 months either in person or telephonically.

RESULTS: In our study, 52(57.78%) children were in the age group of 10-14 years. Mean age group was 10.79 +/-3.26 years. Using RCADS it was found that 22(24.44%) children met criteria for social phobia. Eighteen (20.00%) children met criteria for major depression. Thirty-five (38.89%) children met criteria for generalized anxiety. Thirty-two (35.56%) children met criteria for separation anxiety.

Using SDQ, 26 (28.89%) children had high to very high clinical problem of conduct problem and 12(13.34%) children had high to very high clinical problem of peer problem .There was a significant co-relation between social phobia and children with focal epilepsy. The Quality of life assessed at the time of enrollment and again after 3 months, improvement was noted on follow up after intervention/counseling by child psychiatrist.

CONCLUSIONS: Psychiatric co-morbidities are commonly associated with children suffering from epilepsy like depression, generalized and separation anxiety, social phobia and/or behavioural problems like conduct, peer problem, emotional problem. These add to the burden of the family leading to poor quality of life and non-compliance to medication. Hence timely psychiatric intervention/counselling is important.

KEYWORDS: Psychiatric co-morbidity in children with epilepsy, depression in children with epilepsy, anxiety in children with epilepsy, Quality of life in children with epilepsy.

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INTRODUCTION

Epilepsy is one of India's most common neurological problems, which is known to cause a significant burden on family. According to ILAE (International League against epilepsy) as "At least 2 unprovoked seizures occurring 24 hours apart or one unprovoked seizure and a probability of further seizure similar to the general recurrence risk of (at least 60%) after 2 unprovoked seizures, occurring over the next 10 years". The prevalence of epilepsy in children ranges from 3.2-5.5/1,000 in developed countries and 3.6-44/1,000 in underdeveloped countries [1]. International clinical epidemiology network (INCLEN) trust survey which was done in five regions of India, had enrolled 3,964 children and it was found that the prevalence of epilepsy in these pooled population of 5 regions of India was 1.1% in the age group of 2 to <6 years of age and 2.2% in the age group of 6-9 years of age [2].

Children with epilepsy suffer from various medical and psychiatric co-morbidities. Epilepsy affects the physical, cognitive, psychological, emotional, and social spheres of the growing child. The scholastic performance is also affected along with Cognition, working memory, processing speed; attention, executive function, and language are also known to be affected in epilepsy, either because of disease or because of the adverse effects of the ASMs. These all factors are an added burden on the family of these children leading to poor quality of life hence affecting the learning ability and development of a child.

Children with epilepsy have reported to be at higher risk for behavioral and psychiatric disorders in population based studies [3]. High rates of depression, anxiety and suicidal attempts have been reported with epilepsy and it is increasingly being realized that both depression and anxiety in children with epilepsy are common

but often unrecognized disorders [4,5]. Hence, the early identification and treatment of both is important to reduce the risk of suicide and have a positive impact on quality of life .There should be regular monitoring of psychological adjustment of children with epilepsy. Ott et al. [6] reported that 60% of children suffering from epilepsy in a clinic based study had one or more psychiatric co-morbidity; nearly two-thirds of those were not receiving treatment.

The fourth edition (text revised) of the Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-IV-TR) classified mood disorders into major depressive disorder (MDD), dysthymic disorder, and bipolar disorders. The important feature of a depressive episode is a period of at the least two weeks in which there is either low mood or loss of interest/pleasure in most of the activities and in children and adolescents the mood may also present as irritable as opposed to sad in case of younger children. Other symptoms are decreased/increased appetite, sleep, decreased energy, feelings of no worth or guilt, difficulty in thinking, trouble in concentrating or making any decision or recurrent thoughts of death or suicidal ideas, plans or attempts. The prevalence of depression in children is 1–2%, increasing to 3–8% in adolescents and all adolescents approximately 1 in 5 adolescents experience at least one depressive episode [7].

Largely clinicians focus on depression in children with epilepsy, whereas symptoms of anxiety are also common and disabling in these children as well. The DSM-IV-TR classifies anxiety into several types, including panic disorder, obsessive-compulsive disorder (OCD), agoraphobia, social phobia, specific phobia, post-traumatic stress disorder (PTSD), and generalized anxiety disorder (GAD). In pediatric population, anxiety disorders affect 5– 18% of children age group 5-8 years,

0.3–12.9% of preadolescents, and 0.6–7% of adolescents. In children suffering with epilepsy depression and anxiety tend to occur together with increased frequency, and anxiety is often co-morbid with depression in epilepsy [8].

The awareness regarding these psychiatric co-morbidities in children with epilepsy is less and is frequently missed out by pediatricians. In developed countries there are policies to screen children with epilepsy for common psychiatric co-morbidities sadly it is not the same in India and there is a paucity of these studies addressing the issue. This in turn effect's the child's quality of life and compliance to medication. Early diagnosis of such psychiatric co-morbidities can affect the ASM of choice and may positively impact quality of life of a child.

OBJECTIVES

PRIMARY OBJECTIVE: -

1. To know the prevalence of depression and/or anxiety in children with epilepsy aged 5 to 18 years.

SECONDARY OBJECTIVE: -

1. To know the prevalence of attention-deficit/ hyperactivity disorder, obsessive-compulsion disorder, conduct disorder in children with epilepsy.

2. To know the effect of psychiatric co-morbidities on the quality of life of a child with epilepsy

REVIEW OF LITERATURE

Epilepsy is one of the major problems seen in the Indian subcontinent. Epilepsy's categorization is a multilevel classification. First level is classifying on the basis of seizure type i.e. focal, generalized or unknown in onset. Focal onset is further classified into Aware and impaired awareness, generalized onset is divided into Motor and Non-Motor (absence) and Unknown onset can be further divided into Motor and Non Motor. Second level is that of Epilepsy type where it is assumed that the patient has a diagnosis of epilepsy according to the definition which is further classified under the headings of Focal Epilepsy, Generalized epilepsy, Combined Generalized and Focal epilepsy and lastly under Unknown epilepsy. The third level is Epilepsy Syndrome diagnosis. An epilepsy syndrome is a cluster of seizure types, EEG, and imaging features. It includes age-dependent features i.e. age at onset and remission, seizure triggers, diurnal variation.

The prevalence of epilepsy in children is observed to range from 0.04 to 1.0 %, making it the most prevalent neurological condition in children 28.6% of these children have an additional psychological problem [9]. In patients with a known neurological condition, prevalence of mood disorders and behavioural abnormalities is 58.3% [10]. Children with epilepsy come with multiple co-morbidities like intellectual disability, cerebral palsy, movement disorders, behavioural and psychiatric abnormalities. Children with epilepsy tend to have poor quality of life when they are just treated for epilepsy; they tend to discontinue medication and have decreased compliance to medication, following which they enter a vicious cycle of poor compliance and non resolving epilepsy.

Various investigations focusing on the prevalence of psychiatric co-morbidity in children with epilepsy have found that children with epilepsy have an overall risk of 21–60% for childhood psychiatric illness. The likelihood of psychiatric co-morbidity is three to six times higher in children who are healthy (6.6%) than it is in children who have a chronic medical disease that does not affect the central nervous system (11.6%) [10]. In children with epilepsy, type 1 diabetes, and healthy children, the rate of psychiatric co-morbidity was 37%, 11%, and 9%, respectively, which was observed in an epidemiological study by Davies et al. additionally, it has been observed that children with complex epilepsy are twice more likely to experience psychological co-morbidity than children with idiopathic epilepsy.

In the past, stigmatizing psychiatric co-morbidity in epilepsy was thought to result from psychiatric instability brought on by failure to adjust to the illness [12]. It is advisable to think of epilepsy and psychiatric co-morbidity as cause-and-effect factors. In a research by Austin et al. around one-third of the children who experienced their first seizure episode also demonstrated behavioural abnormalities. Such a finding supports bidirectional relationship between psychiatric co-morbidity and epilepsy [13]. Children and adolescents with epilepsy are more likely to have a variety of psychological co-morbidities which are as follows:

Psychiatric retardation, autism, attention deficit/hyperactivity disorder (ADHD), depression, anxiety, and psychotic illnesses [14-18].

Mood disorders and anxiety are frequent co-morbid illnesses. In fact, depression symptoms itself has an estimated prevalence of 23–26%, based on self-report instruments [19]. The prevalence of generalized and separation anxiety, is between 15 and 20% [20]. Unfortunately, however, these conditions are turned a blind

eye and left untreated in children with epilepsy which can lead to inferior quality of life [21].Health care professionals often undervalue the significance of children with epilepsy who also have psychiatric co-morbid illnesses including major depression and generalized anxiety. According to criteria from the Diagnostic and Statistical Manual of Psychiatric Disorders, Fourth Edition, Text Revision (DSM-IV-TR), 61% of children with epilepsy and normal IQ had a psychiatric co-morbidity, although only 33% received psychiatric health therapy [6]. According to a study carried out by Caplan et al., of 171 children and adolescents with epilepsy, 33% experienced anxiety, and 20% had major depression. However, just 33% from these adolescents and children were seeing a trained psychiatrist for therapy [23]. Despite their similarities, anxiety and depression illnesses have different sets of manifestations, etiology, and risk factors. It is crucial to understand the prevalence, clinical trajectory, and risk factors of these illnesses in children with epilepsy, whether they co-occur or not. Depression and anxiety disorders are thus separate conditions.

Depression

Over the past few years, awareness of childhood depression has increased. Numerous studies have demonstrated that depression in children emerges differently from depression in the adult age group. There is proof that juvenile-onset depression recurs, and it carries a high risk of suicide as well as severe psychosocial morbidity [24].

Irritability, aggression, and a loss in academic performance are a few indicators of childhood depression that are distinct from adult depression [16, 24]. Children's depression can also be linked to bodily and vegetative symptoms [25].Psychomotor retardation, anhedonia, insomnia, melancholy, weight fluctuations,

and addictive behaviors are increasingly noticeable during adolescence [24]. The rate of suicidal behavior is almost the same in children and adolescents, but the advent of puberty is accompanied by a sharp rise in suicidal behaviors and fatal suicides.

The existence of co-morbid psychiatric disorders adds to the complexity of depression among children and adolescents. An estimated 40–70% of people with co-morbid psychosocial problems such as anxiety, attention-deficit/hyperactivity disorder, conduct disorder, and addictions [16, 26]. It's critical to understand that depression has a larger probability of progressing to bipolar illness than adult depression does [27]. In contrast to melancholy, manic episodes in children and adolescents frequently include psychotic symptoms.

Unfortunately, depressive illnesses are frequently misdiagnosed and poorly managed in the case of children and adolescents with epilepsy [16, 21, 23]. Devinsky emphasized that this might be because depression in this population presents in a slightly unusual way. He proposed that in addition to the usual sleep and eating difficulties associated with depression, these children frequently display an irritable attitude and negative thoughts about their lives, friends, and family. Children with epilepsy who are depressed also typically report attention issues and academic difficulties [26]. Coexisting behavioural issues must be taken into consideration while conceptualizing said children with epilepsy. As per literature, anxiety disorders and disruptive behavior disorders, as well as depression, frequently co-occur [23].

Numerous studies have demonstrated unequivocally that children and adolescents with epilepsy are more prone than the general pediatric population to experience suicidal ideation and attempts [21,23,29]. Caplan et al. found that among their sample of 171 patients (aged 5 to 16) with focal seizures with impaired

awareness and childhood absence epilepsy, suicidal ideation was exhibited at a prevalence rate of 20%. This was significantly higher than both the results for the control group (9%) and the general population of 9 to 17-year-olds (5.2%). They also identified a correlation between the duration of epilepsy and suicidal ideation.The authors came to the realization that a diagnostic of disruptive behavior disorders with impulsivity and depression with anxiety appears to be more strongly associated to suicide than a diagnosis of depression or anxiety disorders alone [23]. These suicidal behavior findings could indicate that, compared to children without epilepsy, children and adolescents with epilepsy are more likely to experience more severe and complicated depression, which would worsen their mortality rate.

Prevalence and risk factors for depression in children with epilepsy

Recent studies show that depression is one of the most prevalent psychiatric co-morbid illnesses in epilepsy patients of all ages. Compared to the prevalence in the general population of children and adolescents, which are estimated to be 1-3 and 4-8%, respectively, the likelihood of depression in children and adolescents with epilepsy appears to be much greater [30,31]. According to Ettinger et al., patients with pediatric epilepsy (aged 7 to 18) had a depression prevalence of almost 26%. In contrast to 16% of controls, 33% of children and adolescents with seizures had depression, Dunnet et al. [19] surveyed primarily youths with epilepsy and reported a rate of 23%, whereas a Nigerian study observed a prevalence rate of depression of 28.4% [33].

The prevalence of depression may be impacted by a variety of predictors, despite the fact that rates of depression might differ depending on the rating and diagnostic tools used. According to Oguzet al. [28], age was a significant predictor of

depressive symptoms, with adolescents 12–18 years old with epilepsy exhibiting more depressive symptoms than children 9–11 years old, with or without seizures. Adolescents with depression were much more prevalent, according to ThomeSouza et al. findings [11].

Although it has been hypothesized that teenage girls have more depressive symptoms than teenage boys or younger children in the general population [31], this link hasn't always held true in people with epilepsy [34]. No association between gender and depression was discovered by Hoare et al. [35] in children and adolescents with epilepsy. In contrast, Austin et al. reported that girls had far more emotional issues.

Adolescents and young people with epilepsy are susceptible to depression for a variety of reasons, including neurobiological, behavioural, and iatrogenic risk factors. Studies on the relationship between seizure type, psychiatric conditions, and depression have produced conflicting findings, with the majority of them failing to find a substantial connection [19, 29]. According to the Schedule for Affective Disorders and Schizophrenia for Children, in schools, there was no difference in the depression rates between the two groups of children in Ott et al study on the emotional functioning of children with focal seizures with impaired awareness and childhood absence epilepsy (CAE). However, Caplan et al. [14] concluded that children with childhood absence epilepsy had significantly greater rates of mood disorders and co-morbid anxiety and depressive symptoms than children with focal impaired awareness seizure. Caplan et al. speculated about the potential impact of including older focal impaired awareness seizure patients in the sample and the

potential impact of seizure involvement in various cerebral regions in explaining this difference between the two groups.

According to Thome-Souza et al research, focal seizures in children are linked to a greater likelihood of psychiatric co-morbidity than generalized seizures [37].The correlation between psychiatric co-morbidity and temporal lobe epilepsy (TLE), one of the focal seizure disorders, has drawn great attention in the adult literature [38,39]. Fewer studies have been conducted in this regard, when it comes to children and adolescents who have epilepsy. Equivalent rates of depression were identified in patients with TLE and individuals who had chronic asthma in a 1988 study of 26 adolescents, indicating that higher psychiatric co-morbidity in adolescents with epilepsy may be attributable to chronic illness rather than epilepsy-specific conditions [40]. A more recent study, however, demonstrated that seizure localization might be used to differentiate between subgroups of children and adolescents with epilepsy.When compared to children and adolescents with frontal lobe epilepsy, Titus et al. found that children and adolescents with TLE had considerably greater prevalence of depressive symptoms. The difference between individuals with TLE and individuals with generalized seizures was not equivalent. However, more study is necessary to prove whether seizure location and syndrome are reliable risk factors for depression in children and adolescents with epilepsy [40].

The vast number of investigations conducted on children and adolescents have found no evidence regarding depression and seizure laterality .Furthermore, research utilizing EEG results hasn't been able to establish a connection between electrographic results and mood disorders in youngsters with epilepsy [11, 19, 23, 29]. Another significant risk factor for depression in adolescents with epilepsy is the

severity and/or recurrence of seizures. A more recent study also shows that emotional distress and despair are substantially related with seizure severity. A prospective study of adolescents suffering with seizures found no distinction in emotional issues between those who had continued seizures and those who were in clinical remission [42].These observations are backed by a recent analysis of the literature, which demonstrated that seizure frequency cannot predict psychiatric co-morbidity and emotional issues on its own [44].

There is contrary evidence about the connection between depression and seizure onset. Sab-bagh et al. in 2006 proposed that there might be a connection, despite the fact that multiple past research studies did not support the age of onset as a risk factor for low mood [45].Longer duration of epilepsy has also been associated with low mood. [29,42].Epilepsy and depression frequently coexist.[19]

The depressive episodes of patients who later acquired epilepsy seem to have occurred significantly closer in time to the development of epilepsy than the depressive episodes in the matched controls, which is another intriguing finding of these investigations. In his recent review, Kanner et al.[17] presented the most recent data on the subject and found that patients with epilepsy who have a history of depression have less success with pharmacological and surgical treatments. As was previously established, severe seizures and poorly managed seizures have both been found to be predictors of depression in people with epilepsy.

In a study examining the bidirectional link between mood disorders and epilepsy in children, Hersdorffer et al. concluded that children with epilepsy were fourfold more likely to have a history of depression prior to the development of epilepsy [46]. Based on their findings, the researchers speculated that depression may

raise the likelihood of a child developing epilepsy. Further research is needed to establish the precise cause-effect relationship between depression and epilepsy in children and adolescents, however additional studies have shown that up to one-third of children with epilepsy experience psychiatric symptoms before their seizures begin [13].

Additionally, it has been discovered that familial characteristics are a significant predictor of depression. It is generally known that depression runs in families, children of parents suffering from depression are up to eight times more likely to experience depression than children of healthy parents. Patients with epilepsy seem to be affected by this association as well. Up to 50% of patients with epilepsy and depression have a family history of the condition, according to reports. [16]. Thome-Souza et al. observed that a family history of psychiatric disorders increased the risk of depression, particularly in children [12].

A child's view of their parents' behavior and their adaptability to the issue of epilepsy and behavioural issues were explored by Carlton-Ford et al. [57]. They noticed that a child's behavioural co-morbidities increased when parents were seen having too much control over them. Unsuitable and extremely stressful family settings were attributed to low mood in a study of adolescents with epilepsy [19]. Furthermore, Austin et al found a connection between psychiatric co-morbidity in adolescents and children suffering from epilepsy and aspects like poor family control and low parent competence in handling their child's discipline [58].

Children who've had seizures are further burdened by their exposure to stigma and its repercussions on their quality of life in terms of their health. About half of epilepsy victims are likely to face greater incidence of stigma, with adolescents being

most of them [59]. Adolescents with epilepsy, particularly older children, are likely to deal with greater stigma and, consequently, a poor quality of life. Studies have unequivocally demonstrated that perceived stigma and/or fear of stigma significantly contributed to low self-esteem, peer rejection, avoiding age-appropriate activities, and social isolation [60,62]. Lower expectations from caregivers may also result from stigma and stigma-related concern. Given these results, it is not shocking that sadness and emotional symptoms have a clear association with stigma [19, 60].

Socio-cultural aspects have also been identified as risk factors; however they seemed to have a poor level of predictability for psychiatric or behavioural issues in children with epilepsy. Across different cultures there was no major variation in the incidence of depression [19, 23, 29, 30]. Although the socioeconomic status (SES) findings are consistent, the outcomes have been more contradictory. The majority of studies [13, 23, 33, 63 and 64] do not support an association between SES and psychiatric disorders. However, Devinksy et al. [61] observed a relation between residing in socioeconomically disadvantaged households and higher level of stigma, overall bad quality of life. These characteristics, as was already mentioned, are frequently linked to a higher chance of depression.

In contrast, a study undertaken in India found that children from higher socioeconomic status background had a higher risk of behavioural challenges [65]. Various regional and cultural elements, including awareness of epilepsy and psychiatric co-morbidity, social support, and traditional beliefs, must be taken into consideration when analyzing the effects of SES in different countries on psychiatric co-morbidities in children with epilepsy.

With their potential behavioural and cognitive side effects, anti seizure medications (ASMs) have always been a controversial risk factor for depression. Depression and increased suicidal tendencies have been attributed to the use of Phenobarbital in children with epilepsy [66].The use of newer ASMs, including levetiracetam, zonisamide, topiramate, and tiagabine, have also been observed to raise the likelihood of depressive symptoms in individuals with epilepsy [67].

The potential danger of behavioural side effects in treatment plans integrating several antiepileptic drugs has also gained some attention. For instance, polytherapy and behavior issues in school-aged children with epilepsy were reported to be significantly correlated by Sabbagh et al. [45]. The type of school placement was also found to be connected to polytherapy. In a Turkish investigation, polytherapy was found to strongly predict the occurrence of depression in both children and adolescents with seizures [21]. However, some studies have provided contradictory findings, displaying no appreciable difference in depression rates among children receiving monotherapy and those receiving polytherapy[12, 13, 23].

As was previously indicated, depression frequently co-exists with other psychiatric diseases, including as anxiety disorders, and there appears to be a higher association between ASM polytherapy and anxiety problems in children with epilepsy. However, given the possibility of psychological side effects from ASMs, it is always the clinician's responsibility to weigh the costs and benefits of polytherapy when treating children and adolescents with epilepsy.

Patients completed a questionnaire composed of statements relevant to either generalized anxiety or 'depression', the latterbeing largely (but not entirely) composed of reflections ofthe state of anhedonia.

Treatment of depression:

There are several difficulties associated with depression in children with epilepsy, along with an increased risk of suicide and a more severe course. In addition to anti-depressant drugs, adverse effects of ASM monotherapy or polytherapy can complicate the clinical picture and should be considered. As a result, when depressive symptoms emerge in children with epilepsy, it is frequently wise to refer them to a licensed therapist with experience in epilepsy. The requirement increases. These signs include co-morbid illnesses, recurring or treatment-resistant depression, recent suicide attempts or thoughts.Particularly if the patient is experiencing severe anxiety, exhibits disruptive conduct (e.g., impulsivity), or lives in a dangerous family context, conditions co-morbid with depression (e.g., drug misuse or other psychiatric illnesses) necessitate more prompt psychiatric care [16]. Child psychiatrists should do routine evaluations of children and adolescents with epilepsy who have numerous risk factors for depression. This is important for the early detection, treatment, and prevention of depression and other behavioural abnormalities.

As with the therapy of depression in children without epilepsy, medication combined with cognitive-behavioural techniques in children appears to be the most effective method of treatment. It's essential to consider and use cognitive behavioural tactics and procedures while also taking into account a child's particular needs, social circumstances, dynamics in the home and at school, and psychological development [16]. This will benefit the psychiatrist and children in building a good rapport, as well as encourage other family members in attempts to educate and support the child. Individual and group counseling sessions that aim to educate children and parents on the evolution of the illness and various facets of medical management have been

proven to be effective [71]. According to research, psychotherapeutic interventions including teaching relaxation and coping skills might help people feel better about themselves and have lesser seizures [72]. These methods aids children in coping with daily stressors and adjusting to the condition, ultimately minimizing the likelihood of developing depression.

The effectiveness and safety of the selective serotonin reuptake inhibitor (SSRI) group of antidepressants—fluoxetine, paroxetine, citalopram, and sertraline—in adolescents with depression have been documented in a number of open-label and randomized placebo-controlled studies conducted so far. According to a few reports, response rates have touched 60%. Sertraline and fluoxetine were found to be beneficial therapy alternatives in terms of remission of depressive symptoms and reduction of incidence of adverse effects in a recent research in children suffering from epilepsy. This included maintaining seizure control in a comprehensive manner. In the study's epileptic patients had their seizures go worse, and one of those children was able to recover seizure control by changing the ASM [12].

Studies on the effectiveness and safety of SSRIs in treating epilepsy and depression in adults have produced consistent, encouraging findings. Citalopram reduced depression symptoms without impairing seizure control, according to the two trials investigating its use in depressed epileptic patients [74]. In fact, one study observed citalopram use to be associated with a decrease in seizure frequency [75]. In studies on animals, fluoxetine was demonstrated to have a variety of impacts on seizure threshold. In an animal disease model, Ferrero et al. reported that persistent fluoxetine treatment lowers the seizure threshold [76]. On the other hand, fluoxetine

may have anticonvulsant effects which has been demonstrated in few previously conducted studies [79].

According to Jobe and Browning's theory from 1978, antidepressants' favourable effects on seizure threshold are due to how they influence the noradrenergic and serotonergic systems. According to the concept, noradrenergic and serotonergic deficits contribute to seizure propensity, and antidepressant therapy may be able to reduce seizure propensity in epilepsy by boosting noradrenergic and serotonergic activity. Several SSRI-related evidence reviewed [75] added legitimacy to this idea. Jobe and Browning continue by saying that higher SSRI doses may activate various biological pathways that may in fact trigger seizure induction [80]. It's critical to take into account the SSRIs' cytochrome P450 (CYP450) iso-enzyme-inhibiting properties while pairing them with other drugs. The use of SSRIs in combination with ASMs may result in low or toxic levels of the drugs because the majority of ASMs may be substrates inducers, or inhibitors of the CYP450 isoenzymes. Citalopram, Escitalopram, and sertraline are the SSRIs that appears lowest likely to block CYP450 and, hence, have the least risk for interfering with other medications, particularly ASMs [83].

Other classes of antidepressants are considered for the exceptional situations where adequate trials of various SSRIs fail to demonstrate clinical efficacy. Depression in adolescents should not be treated with tricyclic antidepressants (TCAs) due to their lack of effectiveness and susceptibility for adverse events like anti cholinergic side effects, cardiac arrhythmia, and catastrophic overdose [16]. Indeed, compared to SSRIs, the risk of seizures is much higher with TCAs about 0.3-0.5% for imipramine, 1% for clomipramine, and 0.1% for SSRIs [84]. TCAs are not part of the

treatment plan for SSRI-resistant depression in children and adolescents with epilepsy due to the above mentioned factors. The risk of seizures is slightly higher with venlafaxine (approximate risk of 0.3%) than it is with mirtazapine (approximate risk of 0.05%). Bupropion, however, is not the treatment of choice in patients with epilepsy since it has demonstrated to lower seizure threshold in a dose-dependent manner (approximate risk of 0.4-0.8%) [87]. Research on these medications in children and adolescents with depression is not proven when compared to SSRIs. They are thus not regarded as first-line treatments for depression in childhood epilepsy populations.

The obvious unfavorable effects of depression on quality of life and the potential for suicide serve as strong arguments for the necessity of treating depression in children and adolescents with epilepsy. Indirectly, seizure control and quality of life may be addressed by treating depression since it may improve patients' sleep and boost their adherence to treatment plans. On the basis of their high effectiveness, few side effects, ease of administration, low risk of fatal overdose, minimal drug-drug interactions with ASMs, and minor and/or beneficial effects on seizure threshold, the substantial research strongly supports the use of SSRIs as the first line of pharmaceutical treatment for depression in children with epilepsy [12,16,44,71,83]. However, in most cases, safe treatment can be achieved by paying attention to the need for slow titration when starting treatment, maintenance of therapeutic doses, and close monitoring for side effects or complications. Medical management of more severe depression should be best done with the input of a trained child psychiatrist.

Anxiety disorders and epilepsy in children and adolescents

The DSM-IV-TR divides anxiety disorders into a number of categories, including social phobia, generalized anxiety disorder (GAD), panic disorder, and, under the subgroup of childhood psychiatric disorders, separation anxiety disorder (SAD). A panic attack is characterized by abrupt, intense, and prolonged episodes of worry that last a few minutes or more and are accompanied by a variety of physical symptoms, including palpitations, sweating, breathing difficulties, and a strong fear of dying or losing control. Recurrent, intrusive, and unpleasant thoughts, impulses, or fantasies that are frequently accompanied by behavioural or psychiatric compulsive behaviors are the hallmarks of OCD [88].

Estimates of the prevalence rates of anxiety disorders in the general population for men and women, respectively, are 9.1 and 18.1% [88]. Anxiety disorders are one of the most prevalent psychiatric diagnoses in children and adolescents, affecting 5–18% of children, 0.3–12.9% of preadolescents, and 0.6–7% of adolescents [90].When compared to the effects of depression and seizure frequency, generalized and separation anxiety are important predictors of poor quality of life in people with epilepsy [91]. In comparison to the general population, children with epilepsy have higher incidence of panic episodes, panic disorder, OCD, and GAD, according to a number of studies [92]. According to Baker et al. OCD and social anxiety symptoms were prevalent in adolescents [93]. Despite the complex ways in which any anxiety illness may manifest, GAD appears to be more frequent in epilepsy.GAD is frequently linked with concerns of upcoming seizures, a poor prognosis, and the possibility of death in epilepsy, with a significant risk of morbidity and mortality [91]. Due to the heterogeneity of epilepsy, anxiety disorders may manifest differently in children with

co-morbidities, making it challenging to narrow down symptoms to a single DSM-IV-TR diagnosis.

In children, the fear of having a seizure is generally linked to separation anxiety. For instance, the dread of seizures may result in a subtype of agoraphobia. Social phobia and loneliness are caused by the fear of having a seizure in public. It is critical to emphasize that while taking into account symptoms connected to different anxiety disorders, DSM-IV-TR criteria necessitates the absence of a physiological condition [87]. For example, some people experience anxiety due to the fear of having a seizure in public, whilst others do so in response to the condition's stress (i.e., reactively) or due to a preexisting tendency for worry (i.e. endogenous). Research with adolescents and children without epilepsy has shown that anxiety disorders and depression co-occur more frequently than disruptive behavior disorders. Brady et al found that between 15.9 and 61.9% of children who have been diagnosed with anxiety or depression also have the other disease, whereas the comorbidity rate between disruptive behaviour disorders and anxiety disorders is thought to be around 20% [91, 95]. To further understand the psychiatric co-morbidity of anxiety disorders in children with epilepsy, more studies are required.

Prevalence and risk factors for Anxiety spectrum of disorders in children with epilepsy

Only a few studies have looked at anxiety disorders in children and adolescents, despite the fact that they are widely prevalent and have an adverse impact on quality of life in children with epilepsy of all ages [12,28]. Using the Revised Children's Manifest Anxiety Scale (RCMAS), Williams et al. who also used the RCMAS, discovered that 18% of 101 children with epilepsy between the ages of 6

and 16 showed mild to moderate anxiety symptoms, and 5% had moderate to severe symptoms [16].Also Ettinger et al. showed a 16% prevalence rate of anxiety in a sample of 44 children and adolescents with epilepsy [22]. In contrast to healthy controls (16.8%), children and adolescents with epilepsy had a considerably higher propensity to experience anxiety symptoms (48.5%) [25]. Additionally, Caplan et al. [23] came to the conclusion that among children with epilepsy, anxiety problems are more prevalent than depression. According to kiddie schedule for affective disorders and schizophrenia (K-SADS) assessments, Caplan et al. estimated that 33% of children with epilepsy had emotional problems [23].

In a research utilizing the State–Trait Anxiety Inventory for Children (STAIc), Baki et al. discovered that 49% of their youth epilepsy patients showed mild to moderate anxiety symptoms, but they also discovered that the mean STAIc scores of patients with epilepsy did not differ significantly from those of typical children [48].

The elements, such as the unpredictable nature of seizures, the fear of dying, the perception that seizures are uncontrollable, and perceived stigma, are likely to predispose children and adolescents to anxiety [28]. The disorder's misinformation or lack of knowledge also appears to be linked to greater anxiety. The relevance of parental influences and the requirement for education and assistance not only for the children but also for the parents are highlighted by the fact that parental reactions of dread, worry, and distress also lead to symptoms of anxiety[16,21,23]. Age has been identified as a risk factor for anxiety in children. For instance, it is thought that adolescents with epilepsy are more likely than younger children to experience anxiety. Oguz et al. compared children and adolescents with epilepsy and healthy controls using the STAIc and discovered higher anxiety in epilepsy patients, particularly after

puberty [21] . Additionally, polytherapy and more frequent seizures were identified by Oguz et al. as the two main risk factors for increased anxiety in both ages .These observed disparities between children and adolescents may be a result of older children's higher cognitive abilities to comprehend and analyze the unpredictable and difficult-to-control character of the seizure disease. As a result, anxiety may increase and adverse affective reactions may result. Adolescence is distinct from the other developmental psychiatric stages due to the enormous social demands and difficulties that is present at this time. An adolescent's capacity to effectively complete the develop psychiatric milestones for this age is seriously threatened by the chance of having a seizure at school or while participating in a social activity with friends. Peer interactions are an important part of the teenage experience. This increases the chance of anxiety in numerous forms by causing serious self-esteem issues and possible social isolation. The discovery that one's seizure control was inadequate during adolescence may make one's chances of being able to live independently as an adult complex.

Other studies that looked at anxiety prevalence by age did not find any differences. In fact, according to one study, anxiety may start earlier in life [23]. Consider that a higher rate of anxiety may be present at all ages to help explain the conflicting results of the influence of age on anxiety. The age disparities in various research may be due to the varying ways that anxiety manifests in children and adolescents. That is to say, whereas adolescents are more prone to display more cognitive and socially avoidant symptoms, anxiety in younger children may largely consist of more autonomic and agitation symptoms.While gender does not appear to be affected by age when it comes to the risk of anxiety disorders in children and adolescents, it may be.

Majority of research do not show a link between age of seizure onset and an elevated risk of anxiety [17, 29, 56]. Studies have also looked at a potential link between the type of seizure and the prevalence of anxious symptoms. The relationship between seizure type and anxiety in children and adolescents appears to be much less obvious than it is in the situation with depression [56].Caplan et al. [14] found that children with CAE had greater prevalence of anxiety disorders than children with focal impaired awareness seizures.

It is reasonable to assume that academic underachievement will raise the likelihood of emotional discomfort among children and adolescents who have cognitive problems. A study by Caplan et al. that discovered greater incidence of emotional and anxiety disorders in children with epilepsy who also had impaired verbal skills [23].Such cognitive deficiencies prevent a child from performing to their full capacity, which raises the risk of extreme frustration and distress. However, educators only seldom acknowledge this effect since they believe that a child's potential is better demonstrated by their weaknesses rather than by their hidden strengths. Even if the anxiety may eventually be reduced by the lowered expectations, children in this situation frequently get acclimated to the possibility of failure. This may result in a further decline in self-esteem and more challenging emotional problems.

In educational systems where there is little knowledge about how epilepsy affects learning, such situations are not unusual. The impact on emotional functioning can be much more severe when a child's cognitive functioning changes along with improved or worse seizure control. ASM polytherapy has been shown in numerous trials to raise the risk of anxiety problems. This higher risk may be a result of an

adverse effect of the ASMs or complications from the removal from an ASM [19, 95]. Although it is plausible that the intractability of the seizures is exacerbating the feelings of anxiety, it is unclear whether there is a causative link between polytherapy and anxiety. To clearly define this link, more investigation is required. Cross-cultural differences have been demonstrated to mediate the onset of anxiety.

Williams et al. showed higher anxiety scores in Caucasian children with epilepsy than in African-American children, despite the fact that similar effects have not been observed in the depressed population with epilepsy [17]. Additionally, more data points to disparities in prevalence between Western and non-Western nations. However, Western-based studies by Ettinger et al. and Williams et al. revealed somewhat lower prevalence rates; 16 and 23%, respectively [10,15]. Nigerian and Jordanian investigations reported prevalence rates of 31.7 and 48.5%, respectively [32,33]. These findings might be a reflection of the varying socio-cultural frameworks and emotional reactions of adolescents across cultures. The general public's perspective of epilepsy and the perception of stigma in various cultures may both be important factors. In fact, a study conducted by Baker et al. showed that cross-cultural factors have a significant impact on social stigma in European countries [50].

It is significant to note that individuals with epilepsy may go through periods of increased or decreased anxiety before, during, or after a seizure. The symptoms of earlier discussed intercital anxiety are not present in this sort of anxiety. Ictal fear has been linked to focal impaired awareness seizures of temporal origin, especially when the amygdala is involved. Prodromal and postictal feelings of fear and anxiety resembling those in panic episodes can also be seen in TLE, though less commonly than in extratemporal lobe epilepsies [22]. The differential diagnosis of seizure-

related events can occasionally be challenging because panic attacks that mimic focal impaired awareness seizures can deceive clinicians [97]. Motor automatisms, changes in consciousness, and the potential existence of an aura are distinguishing symptoms that are more suggestive of focal impaired awareness seizures [20,84]. Additionally, whereas focal impaired awareness seizures are frequently shorter than panic episodes (lasting only a few minutes), panic attacks are more common (lasting less than a minute). Seizures that become secondary generalized or develop to status epilepticus, of course, are the exception to this rule. Furthermore, although confusion can occur after a seizure, it is not typically linked to panic attacks. Complex situations that are more challenging to differentiate may call for additional research using EEG, video/EEG monitoring, and/or brain imaging tests.

Treatment of children with epilepsy suffering from anxiety spectrum disorders:

There are several methods for controlling anxiety in epilepsy patients, but one essential component of efficient care is an effort to achieve the best seizure control possible. Regular psychiatric and/or psychological counseling with appropriate treatment modalities is crucial for the best management of anxiety in children and adolescents with epilepsy. This is especially true in more complex cases, as it is in depressed children. A full description of the problem to the children and the caregivers should also be included in the treatment plan, just as it is in the case of depression. Group and one-on-one counseling sessions may help to give the family the proper support and instruction they require [71, 72]. This multimodal method can enhance children with epilepsy's positive outcomes and reduce the possibility of life-threatening hazards (e.g., suicide). Research has shown that cognitive-behavioural therapy (CBT) and other psychological techniques might enhance quality of life and

even decrease seizure frequency [98]. One of Lewis and colleagues' more extensive research [72] examined the effectiveness of an educational intervention to increase competency in children ages 7 to 14.They discovered that educational strategies emphasizing communication and decision-making abilities and adopting a viewpoint that priorities the children and the family were highly beneficial to children's development. In a more recent trial, adolescents who received a psycho-educational intervention employing cognitive-behavioural strategies showed some improvement in their comprehension of epilepsy and their own unique situation [90].

Adolescents reported benefiting from the group process with other adolescents, and there were trends toward improvements in quality of life, even though objective measurements of depressed and anxiety symptoms showed no changes from the pretreatment condition. SSRIs, such as fluoxetine, fluvoxamine, sertraline, and citalopram, have been shown in studies on the pharmacotherapy of anxiety disorders to be beneficial in treating anxiety disorders in children and adolescents [99]. There are no known controlled studies on the use of medication to treat anxiety disorders in adults or children with epilepsy at this time. However, studies demonstrating the efficacy of SSRIs in treating depression in patients with epilepsy are probably applicable to the treatment of anxiety disorders in this population. It is fair to consider SSRIs a first choice for pharmacotherapy of anxiety disorders in children with epilepsy given the established efficacy of these medications in the treatment of general juvenile anxiety disorders and the proven safety of taking these medications in children with epilepsy. [22,44,71].

Buspiron, a partial agonist of serotonin-1A receptors, has been shown to be beneficial in lowering anxiety symptoms and is generally safe in adult epilepsy patients, despite the fact that it has not been thoroughly investigated in pediatric

populations [84]. As was previously mentioned, several ASMs, particularly when used in conjunction with polytherapy, might exacerbate anxiety in specific patient populations.It has been further demonstrated that some ASMs have anxiolytic properties. In studies on adults, valproate, gabapentin, tiagabine, and vigabatrin have all been used to treat anxiety disorders with various degrees of efficacy [100,101]. The strongest evidence for the anti-anxiety effects of ASMs has been found for pregabalin in social phobia and generalised anxiety disorder, lamotrigine in post-traumatic stress disorder, and gabapentin in social anxiety, according to a review of the literature by Mula et al. [102].

There are a number of theories and recommendations as to why some ASMs make epilepsy patients more anxious while other ASMs have the opposite effect. A history of psychiatric co-morbidity may enhance the risk of psychiatric adverse effects from ASMs. According to Ketter et al., ASMs like lamotrigine and felbamate, which decrease glutamate excitatory neurotransmission, may activate neurotransmitters that promote anxiety [96].

In contrast, GABAergic ASMs (such as barbiturates, benzodiazepines, valproate, tiagabine, gabapen-tin, and vigabatrin), which have negative side effects such drowsiness and cognitive impairment, can also help to reduce anxiety symptoms [85]. Because of this, picking the best ASM for a patient requires careful consideration of their baseline psychiatric profile. By doing this, it may be possible to increase the psychological advantages of these drugs while reducing their negative side effects. Sadly, no placebo-controlled trials have been done on the anxiolytic effects of ASMs in either adult or juvenile epilepsy patients. But given the material that has so far been published, it seems sense to think about using an ASM with

anxiolytic potential in a patient with epilepsy who also has a co-morbid anxiety illness.

It's crucial to remember that some psychotropic drugs have been shown to have the advantage of being anticonvulsant, in addition to the potential for ASMs to be useful in the care of psychiatric problems. Some benzodiazepines, including diazepam and lorazepam, also have indications as anticonvulsants in children with epilepsy in addition to their typical indication for anxiety disorders. They work especially well as preventative measures against protracted seizures [103]. Additionally, it was discovered that clonazepam works well for treating absence, myoclonic, and atonic seizures [104]. Benzodiazepines are frequently used with SSRIs in general psychiatric practice to treat anxiety disorders in adults. Their usage with children is typically limited to the short-term symptomatic relief of severe anxiety [105]. However, it should be noted that long-term use of benzodiazepines for medical purposes carries a significant risk of dependence [13, 74]. They are also not typically regarded as a first-line therapy option for anxiety in children with epilepsy, despite their antiepileptic efficacy in some children.

Studies that take into account the Prevalence rates of depression and anxiety in children with epilepsy together.

Given that epilepsy is characterized by severity, population-based studies are crucial for determining the prevalence rates of psychiatric co-morbidity in children with epilepsy. Because these clinics typically serve children with epilepsy that is at the more severe or complex end of the spectrum, reported rates of psychiatric co-morbidity from specialized epilepsy clinics were higher than rates from population samples [106]. According to Davis et al., rates of "emotional disorder" among

children with "complicated epilepsy" were comparable to those among children with "uncomplicated epilepsy," indicating that children with epilepsy who also struggle with additional neurological or intellectual issues are not the only ones who experience problems with anxiety and depression [3].

Children with significant learning disabilities (vocabulary quotient 60), speech or language issues, cerebral palsy, other physical impairments, and congenital diseases were all considered to have "complicated epilepsy". Studies examining the prevalence rates of depression and/or anxiety in epilepsy children have used clinic-based samples. The rates of low mood and/or anxiety have been reported with respect to norms on standardized behavioural checklists and/or comparisons with mean scores of children serving as controls. Children with epilepsy who have intellectual disabilities have typically been excluded from clinic-based investigations.Many clinic-based research have made use of diagnostic interviews, depression or anxietyspecific measures, and/or these tools. Between 12 to 32% of children with epilepsy score in the at-risk range according to research using the Childhood Depression Inventory [115-118]. However the cut-offs used to establish at-risk status have not always been the same in clinic-based studies. The group of epileptic adolescents who were chosen because they performed poorly in school had the highest reported rate, according to Tosun et al. and Roeder et al. reported that 36% of children tested positive for depressive symptoms on the Short Mood and Feelings Questionnaire, one of the instruments designed specifically to measure depression (SMFQ) [119-121]. According to Turky et al., who used the Moods and Feelings Questionnaire (MFQ), only 23.1% of adolescents matched the criteria for depression, even though 39.6% of them tested positive on the MFQ based on parent reports. Only 9.6% of children and adolescents who completed the Child

Symptom Inventory (CSI) [122] or the Adolescent Symptom Inventory matched the criteria for dysthymia or serious depression [124]. When using DSM-IV diagnostic interviews in clinic-based samples, rates of depression in children with epilepsy have ranged from 12.7% to 36.5% [12]. Regarding suicidal ideation, Caplan et al. found that in a clinic-based sample, 20% of children with epilepsy had suicidal ideation rates that were significantly higher than controls (9%) and the 5.2% rates in the general population [14]. In a clinic-based sample, Oguzetal et al., found that 17.1% of children with epilepsy had suicide ideation while none of the control individuals had such ideation [126]. Bipolar illnesses may be under diagnosed in children with epilepsy, according to some research. Only 1% of population-based sample of children with epilepsy were found to have bipolar illness [12].According to Dunn et al. only 0.9% of the 74 youths in the standardization sample and 5.4% of those from a clinic-based sample tested positive for bipolar illness [128]. However, this study did not offer any information regarding the prevalence of bipolar disorder based on a diagnostic interview. Studies of children with epilepsy conducted in clinic settings have focused less frequently on anxiety problems than on depression. The Revised Children's Manifest Anxiety Scale (RCMAS) has been the test that has been utilised in studies the most frequently [128]. Only one child out of 22 children who had their first seizure, according to Loney et al.'s study, had a clinically significant total anxiety score on the RCMAS (>2SD from the mean) [130]. In this study, eight of the 22 children showed "significant" anxiety symptoms (>1SD from the mean).According to Jones et al., who used the Schedule for Affective Disorders and Schizophrenia (K-SADS) diagnostic interview, it showed 35.8% of children had an anxiety problem [132]. Similar rates were reported by Caplan et al. using the same equipment [9]. In a Nigerian study employing the Diagnostic Interview for Children Version IV (DISC-

IV), Adewuya and Ola reported a rate of 31.4%.A similar study done by LaGrant et al with 1,042 epileptic children over the age of five. After using the sampling weights, it was calculated that 283,000 American children between the ages of 5 and 17 had epilepsy among which 25% of these children suffer from anxiety or despair [134]. According to a study, depression and/or anxiety affect 25% of children with epilepsy aged 5 to 17 years old. To be more precise, the weighted prevalence rates for depression alone were 1.6%, for anxiety alone were 11.8%, and for both it was 11.5%.

In our study we have used the following tools for assessment of children with epilepsy to screen for underlying spectrum of psychiatric and behavioural disorders. First being Revised Child Anxiety and Depression Scale (RCADS) and second one was Strengths and Difficulties Questionnaire (SDQ).The reason being they are validated, most commonly used, easily accesible tools with availability in various vernacular languages suitable for Indian setting . Quality of life assessment was done using QOLIE-31, in the next few lines we will discuss in detail about these scales.

Indian studies:

According to Nagabushana D et al. the awareness regarding these psychiatric co-morbidities in children with epilepsy is less and are frequently missed out by pediatricians, also there is no availability of screening methods to diagnose these conditions [135]. Children with epilepsy exhibit significant psychopathology and there is a need to screen several domains of functioning and provide psychosocial interventions that target modifiable factors. Accurately identifying children with emotional and behavioural problems may help pediatricians to make informed decisions regarding addressing and preventing further psychosocial morbidity by timely mental health referrals. In sum, comprehensive management of pediatric

epilepsy should focus on enhancing Quality of life by addressing behavioural, academic, and psychosocial difficulties. Clearly, a multidisciplinary approach to management with inputs from mental health professionals would help in addressing the multiple needs of the children with epilepsy and their families [136]. In a study by Malhi P they discussed about Quality of life which is an important health outcome to assess in children with epilepsy because they are a high risk group and in critical development period during which many cognitive and social skills have to be learned. Despite its importance, there is relative lack of research on quality of life among children with epilepsy from the developing countries. There is also little evidence about the parent's view on the effects of epilepsy on their functioning and management of their children [137].

In developed countries there are policies to screen children with epilepsy for common psychiatric co-morbidities sadly it is not the same picture in countries like India where there is a paucity of studies addressing this issue. In a country like India there are a few pediatric neurologists who cater to the needs of children with epilepsy and their parents or caretakers end up consulting a local pediatrician, who in his/her busy practice tend to miss out on the holistic approach of such children and end up treating the seizure part. This in turn affect's the child's quality of life and compliance to medication. Early diagnosis of such psychiatric co-morbidities can affect the ASM of choice and may positively impact quality of life of a child. The Quality of life in children with epilepsy is affected by various factors such as age of onset of seizure, seizure type, frequency, and severity, adverse effects of drugs as well as family socioeconomic status, social stigma, parental anxiety and presence of other co-morbidities.

Revised Child Anxiety and Depression Scale (RCADS) [138] :

A 47-item adolescent self-report questionnaire, the Revised Child Anxiety and Depression Scale (RCADS) has subscales for separation anxiety disorder, social phobia, generalized anxiety disorder, panic disorder, obsessive compulsive disorder, and poor mood (major depressive disorder). The Revised Child Anxiety and Depression Scale - Parent Version (RCADS-P) also evaluates parental reports of children's anxiety and depressive symptoms across the same six subscales, which is useful for children between the ages of 5 and 12. Spreadsheets used to score the RCADS and RCADS-P. On these spreadsheets, a "t-score" is generated from a raw score (total score of the scale or subscale). The scoring of the measures can also be done manually by adhering to the guidelines on the RCADS and RCADS-P Scoring Aids.

The 'clinical thresholds' for the overall score were established using the anxiety disorders interview schedule for DSM-IV, child and parent versions (ADIS-IV-C/P; Silverman & Albano, 1996) as a comparison (Chorpita et al., 2005). A t-score of 65 means that the score is roughly in the top 7% of scores of un-referred young people of the same age (described as borderline clinical by the developer) and a score of 70 means that the score is roughly in the top 2% of scores of un-referred young people of the same age (described as the clinical threshold by the developer).

STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (SDQ) [139]:

The Strengths and Difficulties Questionnaire (SDQ) is a brief emotional and behavioural screening questionnaire for children and young people. The tool can capture the perspective of children and young people, their parents and teachers.

The 25 items in the SDQ comprise 5 scales of 5 items each. The scales include:

1) Emotional symptoms subscale
2) Conduct problems subscale
3) Hyperactivity/inattention subscale
4) Peer relationships problem subscale
5) Prosocial behaviour subscale

The SDQ can be used for various purposes, including clinical assessment, evaluation of outcomes, research and screening .The SDQ can be completed by children and young people aged 11-17 years old, and a separate version can be completed by those aged 18 and over. The parent and teacher SDQ can be completed by the parent or teacher of children and young people aged 2-17 years. Clinical experience indicates that the SDQ may be appropriate to use with children with mild learning difficulties, but not with more severe learning difficulties. The scores are interpreted in the excel sheets and a score for each subcategory is generated, following these sub scores one can come to a conclusion under the terms of,

1) Close to average.
2) Slightly raised
3) High
4) Very high.

QUALITY OF LIFE IN EPILEPSY (QOLIE-31) [140] :

The quality of life in epilepsy inventory QOLIE-31) contains seven multi-item scales that tap following entities

1) Emotional wellbeing,
2) Social functioning,
3) Energy/fatigue,
4) Cognitive functioning,
5) seizure worry,
6) Medication effects and
7) Overall quality of life.

METHODOLOGY

This study was conducted from January 2021 to September 2022 in the Child Development clinic of KLES Dr Prabhakar Kore Hospital and Medical Research centre (MRC), Belagavi, a 2400 bedded hospital including super-specialties.

Study Design: Hospital Based observational study with study period: One year and 8 months duration from January 2021 to September 2022. Study was extended by 8 months in view of less recruitment of patients due to covid pandemic.

Place: The study was conducted in the child development clinic at KLES Dr Prabhakar Kore Hospital and Medical Research Centre in Belagavi, a teaching hospital affiliated with Jawaharlal Nehru Medical College.

Source of Data: All epilepsy patients aged 5-18 years who attended the Child Development Clinic of KLE Dr Prabhakar Kore Hospital were included in the study.

INCLUSION CRITERIA:

1. Children aged 5-18 years suffering from epilepsy
2. Children whose intelligence quotient is normal.

EXCLUSION CRITERIA:

1. Children having epilepsy with Cerebral palsy, Autism, pre-existing psychiatric abnormality.
2. Children who are on alternate medicine.
3. Parents who are not willing to give consent for the study.

Sample size: Sample size was calculated assuming the proportion of prevalence as 25% as per the study by ekinci et al [141].

The other parameters considered for sample size calculation were 5% absolute precision and 95% confidence level. The following formula was used

Based on previous hospital records, approximate numbers of potential children eligible for attending the study setting during the data collection period were considered as 120.

$$n' = \frac{NZ^2P(1-P)}{d^2(N-1) + Z^2P(1-P)}$$

Where n= sample size, N=Population size (120) , P= Expected Prevalence ,Z=statistic for a level of confidence =1.960,d=precision=0.05. The required sample size as per the above mentioned calculation comes out to be 85. To account for non-participation rate about 5% 4 subjects will be added to the sample size. Hence sample size comes out to be comes out to be **89**.Universal sampling procedure was followed to enrol the patients.

Ethical clearance: The institutional ethical committee of Jawaharlal Nehru Medical College, Belagavi, approved the study prior to its start (Annexure IX)

Informed Consent: The study's nature was explained to the parents of children with epilepsy who met the eligibility criteria. A written informed consent was also collected prior to enrolment in a language that they were familiar with.(Annexure I).

Methodology: All the children age 5 to 18 years suffering from epilepsy coming to child development clinic were taken into the study after obtaining informed consent

they were enrolled and their detailed history was taken and neurological examination was done.

Then every child with epilepsy with normal range IQ (assessed by trained psychologist) were assessed using **RCADS (Revised child anxiety and Depression scale) and SDQ (Strengths and Difficulties questionnaire).**

Ones the child was subjected to above scales, if the RCADS points out child had clinical evidence of Anxiety or depression he/she was further examined by a trained Child psychiatrist and will further be assessed using ICD-10.

Also QOLIE-31 assessment was done to assess the quality of life in both RCADS positive for anxiety or depression and RCADS negative for depression and anxiety.

Ones the assessment was done they were followed up at the outpatient department at 3 months after enrolment, where again they will be assessed by RCADS and QOLIE scales either in person or telephonically.

Outcome measures: The assessment was done to know whether child is suffering from generalized anxiety, separation anxiety, depression, Social phobia, Obsession and compulsion or Panic problems through **RCADS.**

Also using SDQ children was assessed for Emotional problem, Peer problem, Conduct Problem, Hyperactivity problem.

The quality of life of a child age group 5-12 will be assessed by the parents report and age group 12-18 will be assessed by self report using QOLIE-31.

Statistical Analysis:

Descriptive analysis: Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Non normally distributed quantitative variables were summarized by median and interquartile range (IQR).

Data was also represented using appropriate diagrams like bar diagram, pie diagram and box plots. All Quantitative variables were checked for normal distribution within each category of explanatory variable by using visual inspection of histograms and normality Q-Q plots. Shapiro- wilk test was also conducted to assess normal distribution. Shapiro wilk test p value of >0.05 was considered as normal distribution.

Categorical outcome / Crosstab: Categorical outcomes were compared between study groups using Chi square test /Fisher's Exact test (If the overall sample size was < 20 or if the expected number in any one of the cells is < 5, Fisher's exact test was used.)

Normal 2 group (Independent sample t-test): For normally distributed Quantitative parameters the mean values were compared between study groups using independent sample t test (2 groups) Normal more than 2 group (ANOVA): For normally distributed Quantitative parameters the mean values were compared between study groups using ANOVA (>2 groups). P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.

RESULTS

RESULTS FOR PREVALENCE OF ANXIETY AND DEPRESSION IN CHILDREN WITH EPILEPSY

A total of 100 patients were enrolled, out of which 5 did not give consent, 5 could not be followed up due to pandemic situation and were excluded from the study. So study was conducted with sample size of 90 who were assessed and were followed up either in person or telephonically at the end of 3rd month to know the child's condition and compliance with the medication and quality of life again at 3 months from the time of enrollment.

DEMOGRAPHIC DATA:

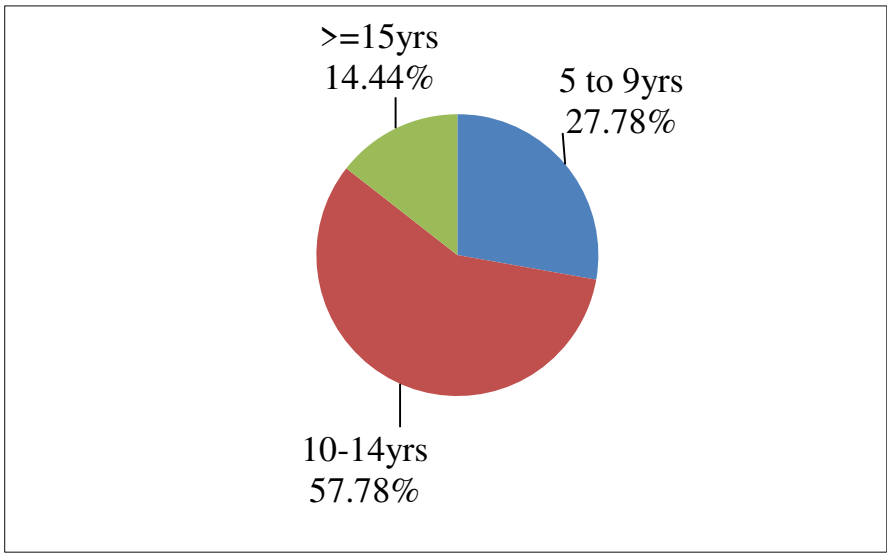
1. Age distribution-

Children in the age group between 5-18 years were enrolled in the study. The age group distribution in Table 1.

Table 1: Descriptive analysis of age (years) in study population (N=90)

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Age (Years)	10.79 ± 3.26	11.00	5.00	18.00	10.11	11.47

Figure 1: Pie chart age (years) in study population (N=90)



In our study, the age distribution was from 5-18 years out of which, majority of the children i.e. 52(57.78%) were in the age group of 10-14 years, 25(27.78%) patients were aged 5-9 years and 13(14.44%) >=15 years. Mean age group was 10.79 years. Median age was 11 years. This shows that most common age band seen in the study was 10-14 years at the child development clinic whereas >15 years of age group tend to show to adult neurologist.

2. Gender distribution:

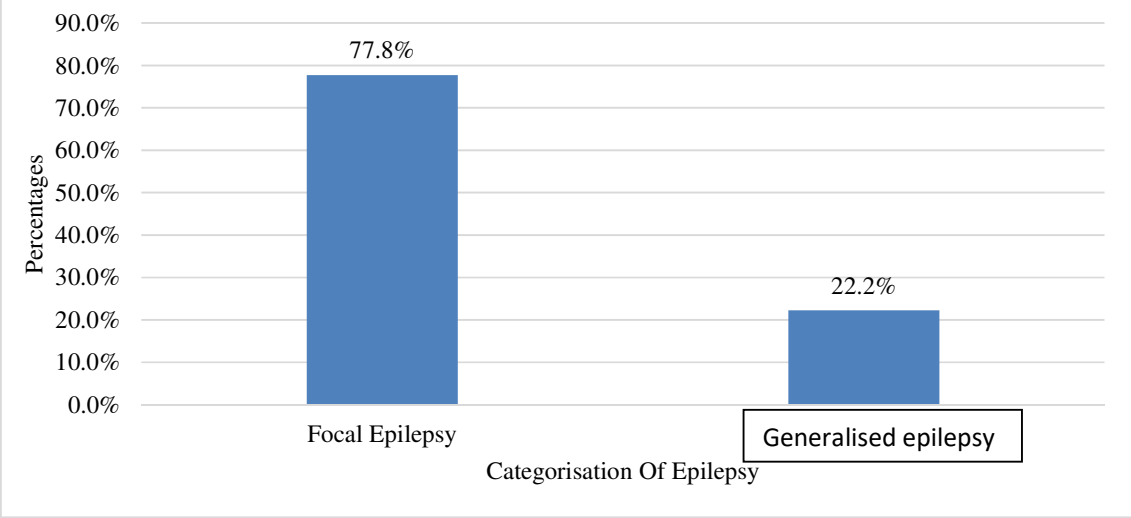
Table 2: Descriptive analysis of gender in the study population (N=90)

Gender	Frequency	Percentages
Male	51	56.67
Female	39	43.33

Out of 90 children who were enrolled in the study, 51 (56.67%) were male and 39 (43.33%) were female. The gender distribution of subjects has been shown in table no 2.

3. Categorization of epilepsy type in the study population:

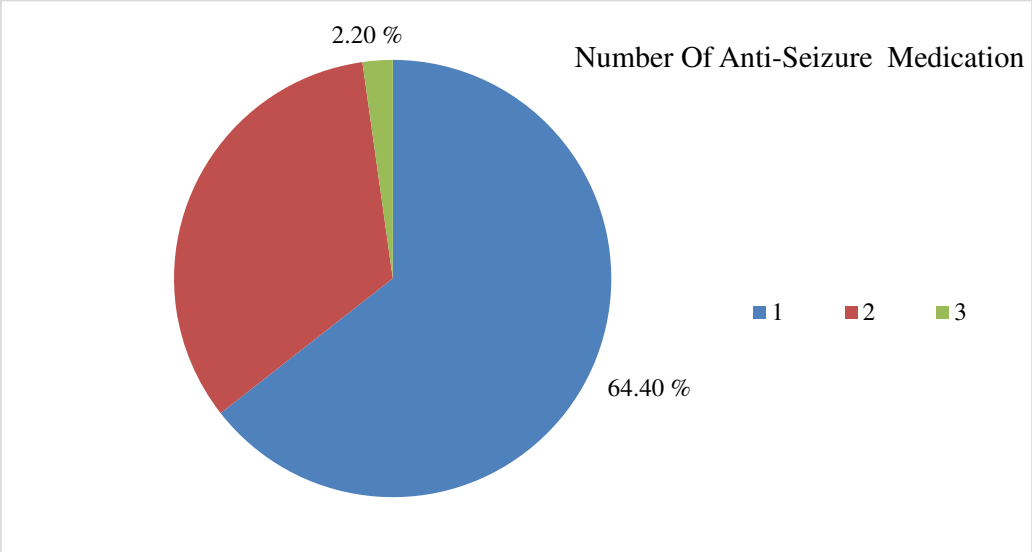
Figure 2: Bar chart of categorization of epilepsy in the study population (N=90)



Out of 90 children who were enrolled in the study, focal epilepsy was seen in 70(77.80%) and 20(22.20%) were generalised epilepsy. This was suggestive that more percentage of focal epilepsy was seen

4. Categorization of study population on the basis of number of anti seizure medication.

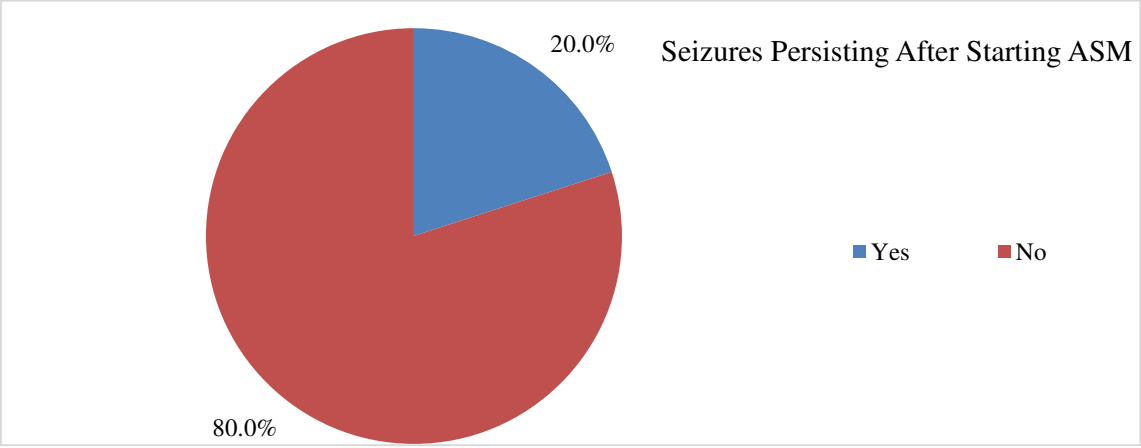
Figure 3: Pie chart of number of ASM in the study population (N=90)



In the enrolled children it was found that maximum proportion of children required one anti seizure medication for resolution of symptoms i.e. 58 (64.40%) children and only 2 (2.20%) children required 3 ASM.

5.Categorization of study population on the basis of epilepsy persisting after starting ASM(anti seizure medication):

Figure 4: Pie chart of seizures persisting after starting asm in the study population (N=90)



It was noted that in our study population, epilepsy persisted in 18 patients (20%),while 72 patients didn't have any further episodes of seizures after starting ASM(anti seizure medication).

6. Analysis of the patients on the basis of duration of symptoms:

Table 3: Descriptive analysis of duration of symptoms in study population (N=90)

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Duration Of Symptoms	2.82 ± 1.59	2.50	0.25	7.00	2.48	3.15

In the study population it was noted that mean duration of symptoms was 2.82 +/- 1.59 years, with minimum duration of presentation being 2.5 months and maximum being 7 years.

7. Analysis of the patients on the basis of EEG:

Table 4: Descriptive analysis of grouping of EEG in the study population (N=90)

Grouping Of EEG	Frequency	Percentages
Focal	47	52.22
Generalized	18	20.00
Normal	25	27.78

On the basis of this data we could find that 47 (52.22%) children were found to have focal epilepsy on EEG, with 18 (20%) children were found to have generalized picture on EEG.

8. Analysis of the children in the study on the basis of their intelligence quotient:

Table 5: Descriptive analysis of IQ of the patient in study population (N=90)

IQ Score	Frequency	Percentages
85-90	59	65.56
90-95	23	25.56
95-100	8	8.89

In the study enrolled children were found to have IQ between 85-100, out of which most of the children had an IQ of 85-90% i.e. 59 children (65.56%)

9. Psychiatric co-morbidity on the basis of RCADS

The children in the study were screened for psychiatric co-morbidities like generalized anxiety, separation anxiety, depression, social phobia, OCD, panic problem. The distributions of psychiatric co-morbidities in children on the basis of their scores are as follows:

Table 6: Descriptive analysis of T-scores in study population (N=90)

T Scores	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Social Phobia	**47.33 ± 18.13**	**45.0**	**20.0**	**85.0**	**43.5**	**51.1**
Major Depression	**43.94 ± 15.48**	**45.0**	**20.0**	**75.0**	**40.7**	**47.2**
Generalized Anxiety	**54.33 ± 17.11**	**55.0**	**20.0**	**85.0**	**50.8**	**57.9**
Separation Anxiety	**49.94 ± 17.95**	**45.0**	**20.0**	**85.0**	**46.2**	**53.7**
OCD Score	39.06 ± 10.49	40.0	20.0	55.0	36.9	41.3
Panic Score	40.67 ± 9.75	40.0	20.0	55.0	38.6	42.7

Table 7: Descriptive analysis of categorization of clinical threshold psychiatric co-morbidity in the study population (N=90)

Categorization Of Clinical Threshold	Frequency	Percentages
Social Phobia		
Normal	68	75.56
Borderline Clinical Threshold	12	13.33
Above Clinical Threshold	**10**	**11.11**
Major Depression		
Normal	72	80.00
Borderline Clinical Threshold	16	17.78
Above Clinical Threshold	**2**	**2.22**
Generalized Anxiety		
Normal	55	61.11
Borderline Clinical Threshold	14	15.56
Above Clinical Threshold	**21**	**23.33**
Separation Anxiety		
Normal	58	64.44
Borderline Clinical Threshold	18	20.00
Above Clinical Threshold	**14**	**15.56**
OCD Score		
Normal	90	100
Panic Score		
Normal	90	100

On the Basis of their scoring it was found that, out of 90 children:

12(13.33%) children met the criteria of borderline clinical threshold for social phobia,10(11.11%) had above clinical threshold.

16(17.78%) children met the criteria of borderline clinical threshold for major depression,2(2.22%) had above clinical threshold.

14(15.56%) children met the criteria of borderline clinical threshold for generalized anxiety,21(23.33%) had above clinical threshold.

18(20.00%) children met the criteria of borderline clinical threshold for separation anxiety,14(15.56%) had above clinical threshold

This data shows that Psychiatric abnormality i.e. generalized anxiety had a higher prevalence among the other groups assessed RCADS. Also the children who were grouped under borderline clinical threshold were kept on close follow up as they may progress to clinical illness and might require behavioral counseling by child psychiatrist.

10. Psychiatric co-morbidity on the basis of strengths and difficulties questionnaire (SDQ).

The children in the study were screened for psychiatric co-morbidities like conduct problem, peer problem, Emotional Problem, Hyperactivity and Pro-social scoring. The distributions of psychiatric co-morbidities in Children on the basis of their scores is as follows:

Table 8: Descriptive analysis of conduct problem score, peer problem score in study population (N=90)

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Conduct Problem Score	**2.46 ± 2.07**	**2.0**	**0.0**	**8.0**	**2.0**	**2.9**
Peer Problem Score	**2.23 ± 1.67**	**2.0**	**0.0**	**8.0**	**1.88**	**2.58**
Emotional Problem Score	2.2 ± 0.85	2.0	1.0	3.0	2.0	2.4
Hyperactivity Score	4.14 ± 0.87	4.0	2.0	5.0	4.0	4.3
Pro Social Score	8.71 ± 0.8	8.5	8.0	10.0	8.5	8.9

Table 9: Descriptive analysis of Categorization of Psychiatric co-morbidity (basis of SDQ) in the study population (N=90)

Parameter	Frequency	Percentages
Categorization Of Conduct Problem		
Close To Average	52	57.78
Slightly raised	12	13.33
High	17	18.89
Very High	9	10.00
Categorization Of Peer Problem		
Close To Average	56	62.22
Slightly raised	22	24.44
High	6	6.67
Very High	6	6.67
Emotional Problem Score		
Close to Average	90	100
Hyperactivity Score		
Close to Average	90	100
Pro Social Score		
Close to Average	90	100

On the Basis of their scoring it was found that, out of 90 children:

26 (28.89%) children met the criteria for high to very high criteria clinical problem for Conduct problem

12(13.34%) children met the criteria for high to very high clinical problem for Peer Problem

This data shows that Psychiatric abnormality i.e. Conduct problem had a higher prevalence among the other groups assessed Strengths and Difficulties questionnaire. Also the children who were grouped under high clinical categorization were kept on close follow up as they may progress to clinical illness and might require behavioral counseling by Trained child psychiatrist.

11. Other parameters assessed i.e. Compliance of medication and Worrisome of taking medication

Figure 5: Pie chart of compliance to medication in the study population (N=90)

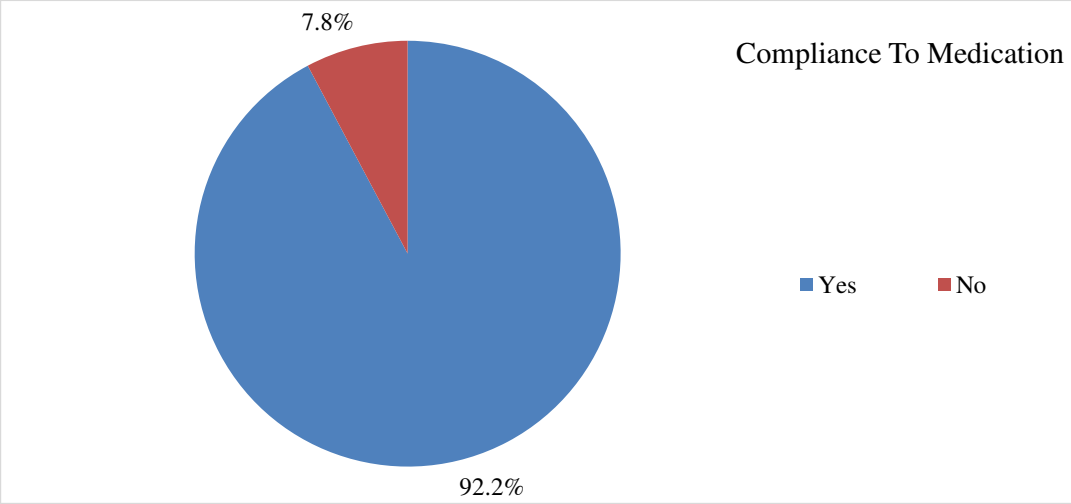
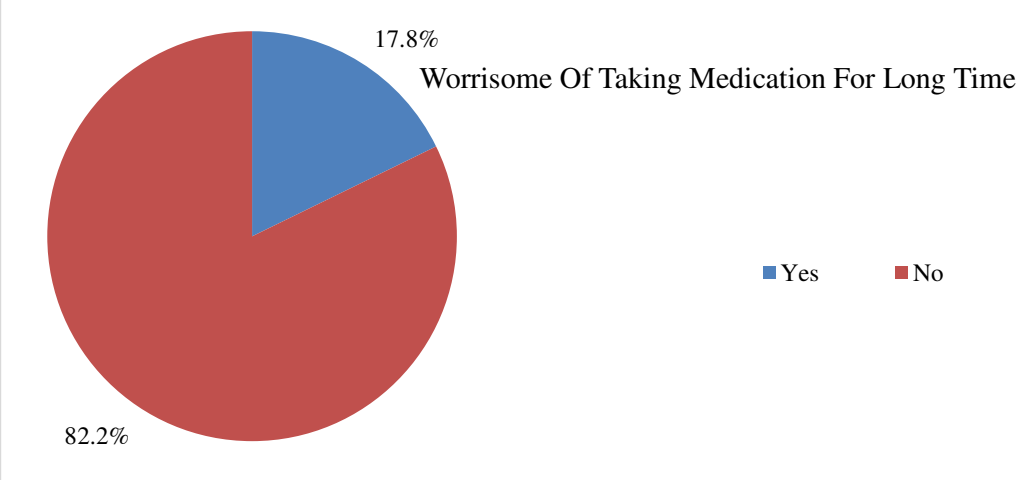


Figure 6: Pie chart of worrisome of taking medication for long time in the study population (N=90)



In the children enrolled in our study out of 90 children, it was observed that 83 (92.20%) patients were found to be compliant to medication showing that in case of idiopathic epilepsy patients, children were fairly compliant to medication. Around 16(17.80%) children were worrisome of taking medication for a longer duration.

12. Table showing Comparison of RCADS included psychiatric abnormalities with type of Epilepsy:

Table 10: Comparison of social phobia between categorization of epilepsy (N=90)

Parameter	Categorization Of Epilepsy		Chi square	P value
	Focal Epilepsy (N=70)	Generalized Epilepsy (N=20)		
Categorization Of Clinical Threshold Social Phobia				
Normal	54 (77.14%)	14 (70.00%)	8.319	**0.016**
Borderline Clinical Threshold	6 (8.57%)	6 (30.00%)		
Above Clinical Threshold	10 (14.29%)	0 (0%)		
Categorization Of Clinical Threshold Major Depression				
Normal	59 (84.29%)	13 (65.00%)	3.777	0.151
Borderline Clinical Threshold	10 (14.29%)	6 (30.00%)		
Above Clinical Threshold	1 (1.43%)	1 (5.00%)		
Categorization Of Clinical Threshold Generalised Anxiety				
Normal	44 (62.86%)	11 (55.00%)	1.754	0.416
Borderline Clinical Threshold	9 (12.86%)	5 (25.00%)		
Above Clinical Threshold	17 (24.29%)	4 (20.00%)		
Categorization Of Clinical Threshold Separation Anxiety				
Normal	45 (64.29%)	13 (65.00%)	0.649	0.723
Borderline Clinical Threshold	15 (21.43%)	3 (15.00%)		
Above Clinical Threshold	10 (14.29%)	4 (20.00%)		

Fisher Exact P-value

In our study, we had tried to find out the correlation between Psychiatric abnormalities and different types of epilepsy i.e. between focal and generalized epilepsy and other parameters of RCADS:

- In our study it was found that, there was statistically significant co-relation between children with focal epilepsy and Social Phobia.
- When analyzed other parameters of Psychiatric abnormality there was no significant co-relation found out between types of epilepsy and Psychiatric abnormality that were assessed by RCADS.

13.Table showing Comparison of strength and difficulty scale included Psychiatric abnormalities with type of Epilepsy:

Table 11: Comparison of conduct problem scale & Peer Problem Scale between categorization of epilepsy (N=90)

Parameter	Categorization Of Epilepsy		Chi square	P value
	Focal Epilepsy (N=70)	Generalized Epilepsy (N=20)		
Categorization of Conduct Problem				
Slightly Raised	9 (12.86%)	3 (15.00%)	1.239	0.744
Close To Average	41 (58.57%)	11 (55.00%)		
High	12 (17.14%)	5 (25.00%)		
Very High	8 (11.43%)	1 (5.00%)		
Categorization of Peer Problem				
Slightly Raised	16 (22.86%)	6 (30.00%)	3.728	0.292
Close To Average	46 (65.71%)	10 (50.00%)		
High	5 (7.14%)	1 (5.00%)		
Very High	3 (4.29%)	3 (15.00%)		

In our study, we have tried to find out the correlation between Psychiatric abnormalities and different types of epilepsy i.e. between focal and generalized epilepsy and parameters of strengths and difficulties questionnaire:

- When analyzed parameters of psychiatric abnormality there was no significant co-relation found out between types of epilepsy and Psychiatric abnormality i.e. Assessed by Strengths and difficulties questionnaire.

14.Table showing the co-relation between the number of anti-seizure medication with Psychiatric co-morbidities assessed by RCADS and SDQ

Table12: Comparison of Parameters across number of anti-seizure medication (N=90)

Parameters	Number Of anti-Seizure Medication			Chi square	P value
	1 (N=58)	2 (N=30)	3 (N=2)		
Categorization Of Clinical Threshold Social Phobia					
Normal	44 (75.86%)	23 (76.67%)	1 (50.00%)	3.241	0.518
Borderline Clinical Threshold	8 (13.79%)	4 (13.33%)	0 (0%)		
Above Clinical Threshold	6 (10.34%)	3 (10%)	1 (50.00%)		
Categorization Of Clinical Threshold Major Depression					
Normal	46 (79.31%)	24 (80%)	2 (100%)	0.802	0.938
Borderline Clinical Threshold	11 (18.97%)	5 (16.67%)	0 (0%)		
Above Clinical Threshold	1 (1.72%)	1 (3.33%)	0 (0%)		
Categorization Of Clinical Threshold Generalized Anxiety					
Normal	40 (68.97%)	14 (46.67%)	1 (50.00%)	6.566	0.161
Borderline Clinical Threshold	6 (10.34%)	7 (23.33%)	1 (50.00%)		
Above Clinical Threshold	12 (20.69%)	9 (30%)	0 (0%)		
Categorization Of Clinical Threshold Separation Anxiety					
Normal	34 (58.62%)	22 (73.33%)	2 (100%)	4.297	0.367
Borderline Clinical Threshold	12 (20.69%)	6 (20%)	0 (0%)		
Above Clinical Threshold	12 (20.69%)	2 (6.67%)	0 (0%)		

This table shows co-relation between the psychiatric co-morbidity with anti seizure medication. It was found that there was no statistically significant co-relation between both variables

Table 13: Comparison of conduct problem scale & Peer Problem Scale between number of anti-seizure medication (N=90)

Parameter	Number Of anti-Seizure Medication			Chi square	P value
	1 (N=58)	2 (N=30)	3 (N=2)		
Categorization Of Conduct Problem Scale					
Slightly Raised	9 (15.52%)	3 (10%)	0 (0%)	5.024	0.541
Close To Average	36 (62.07%)	15 (50.00%)	1 (50.00%)		
High	9 (15.52%)	7 (23.33%)	1 (50.00%)		
Very High	4 (6.9%)	5 (16.67%)	0 (0%)		
Categorization Of Peer Problem					
Slightly Raised	15 (25.86%)	6 (20.00%)	1 (50.00%)	5.180	0.521
Close To Average	33 (56.9%)	22 (73.33%)	1 (50.00%)		
High	4 (6.9%)	2 (6.67%)	0 (0%)		
Very High	6 (10.34%)	0 (0%)	0 (0%)		

This table shows co-relation between the psychiatric co-morbidity with anti seizure medication.

- It was found that there was no statistically significant co-relation between both variables

15. Table showing the co-relation between the Psychiatric co-morbidities assessed by RCADS and SDQ and worrisome of consuming medication for long duration

Table 14: Comparison of RCADS assessed psychiatric co-morbidity and prolonged medication in epilepsy.(N=90)

Parameter	Worrisome Of Taking Medication For Long Time		Chi square	P value
	Yes (N=16)	No (N=74)		
Categorization Of Clinical Threshold Social Phobia				
Normal	14 (87.5%)	54 (72.97%)	1.514	0.469
Borderline Clinical Threshold	1 (6.25%)	11 (14.86%)		
Above Clinical Threshold	1 (6.25%)	9 (12.16%)		
Categorization Of Clinical Threshold Major Depression				
Normal	12 (75.00%)	60 (81.08%)	1.064	0.587
Borderline Clinical Threshold	4 (25.00%)	12 (16.22%)		
Above Clinical Threshold	0 (0%)	2 (2.70%)		
Categorization Of Clinical Threshold Generalized Anxiety				
Normal	10 (62.50%)	45 (60.81%)	0.146	0.930
Borderline Clinical Threshold	2 (12.50%)	12 (16.22%)		
Above Clinical Threshold	4 (25.00%)	17 (22.97%)		
Categorization Of Clinical Threshold Separation Anxiety				
Normal	8 (50.00%)	50 (67.57%)	3.727	0.155
Borderline Clinical Threshold	6 (37.50%)	12 (16.22%)		
Above Clinical Threshold	2 (12.50%)	12 (16.22%)		

Fisher Exact P-value: This table co-relates the psychiatric abnormality with parents worried about giving their child prolonged medication. It was found that there was no statistically significant co-relation between both variables

16.Tables showing co-relation between psychiatric co-morbidity with gender:

Table 15: Comparison of Parameter between categorization of psychiatric co-morbidity assessed by RCADS and Gender (N=90)

Parameter	Gender		Chi square	P value
	Male (N=51)	Female (N=39)		
Categorization Of Clinical Threshold Social Phobia				
Normal	38 (74.51%)	30 (76.92%)	0.687	0.709
Borderline Clinical Threshold	8 (15.69%)	4 (10.26%)		
Above Clinical Threshold	5 (9.80%)	5 (12.82%)		
Categorization Of Clinical Threshold Major Depression				
Normal	40 (78.43%)	32 (82.05%)	1.567	0.457
Borderline Clinical Threshold	9 (17.65%)	7 (17.95%)		
Above Clinical Threshold	2 (3.92%)	0 (0%)		
Categorization Of Clinical Threshold Generalized Anxiety				
Normal	32 (62.75%)	23 (58.97%)	0.210	0.900
Borderline Clinical Threshold	8 (15.69%)	6 (15.38%)		
Above Clinical Threshold	11 (21.57%)	10 (25.64%)		
Normal				
Categorization Of Clinical Threshold Separation Anxiety				
Normal	34 (66.67%)	24 (61.54%)	3.326	0.190
Borderline Clinical Threshold	12 (23.53%)	6 (15.38%)		
Above Clinical Threshold	5 (9.80%)	9 (23.08%)		

Fisher Exact P-value

Table 16: Comparison of conduct problem scale& Peer Problem Scale between Gender (N=90)

Parameter	Gender		Gender	P value
	Male (N=51)	Female (N=39)		
Categorization Of Conduct Problem Scale				
Slightly Raised	8 (15.69%)	4 (10.26%)	0.694	0.875
Close To Average	28 (54.9%)	24 (61.54%)		
High	10 (19.61%)	7 (17.95%)		
Very High	5 (9.8%)	4 (10.26%)		
Categorization Of Peer Problem Scale				
Slightly Raised	9 (17.65%)	13 (33.33%)	3.354	0.340
Close To Average	35 (68.63%)	21 (53.85%)		
High	4 (7.84%)	2 (5.13%)		
Very High	3 (5.88%)	3 (7.69%)		

This table co-relates the psychiatric co-morbidity with gender.

- It was found that there was no statistically significant co-relation between both variables

17 .Descriptive analysis of quality of life in the study population on enrollment and again at 3 months after analysis(N=90)

Table 17: Comparison of mean Quality of life in Children with epilepsy 3 month follow-up period (N= 90)

Follow-up periods	(Mean± STD)	Mean Difference	95% CI of mean difference		P-value
			Lower	Upper	
Quality of Life of The Child	74.56 ± 9.73	6.67	5.07	8.27	**<0.001**
Quality of Life After 3 Months	81.22 ± 6.15				

- In our study who were enrolled Quality of life was assessed at the time of enrolment and again after 3 months of first assessment It was found that there was improvement in the quality of life noted after psychiatric intervention by qualified child psychiatrist

DISCUSSION

Epilepsy in children is known to cause huge burden on the child and the whole family. Epilepsy with associated psychiatric co-morbidity in turn increases the burden. It has been seen in the previous studies by berg et al. that there was a prevalence of 25% Psychiatric abnormality noted in children suffering from epilepsy which is 3-4 times higher than the incidence in normal population [12].

In Indian clinical settings it's been noted that many of the epilepsy patients are not approached holistically and paediatricians tend to just treat the epilepsy part, wherein the underlying psychiatric co-morbidity is missed. Also, this particular approach towards such patients is seen only in developed countries. There is paucity of such studies concerning screening of behavioural abnormalities in India for the children with epilepsy. As a result of these, widespread assessment isn't done at the grass root level because of which the prevalence of these co-morbidities is grossly under-reported compared to the actual prevalence for the given age group of children.

If addressed, many of the issues could be solved by appropriate counselling and there will no necessity of pharmacotherapy, which will further improve the response of the child towards the main therapy of anti seizure medication. This further helps in improving the quality of life of the patient.

This study was conducted in KLES Dr Prabhakar Kore Hospital and Medical Research Centre, Belagavi from December 2021 to September 2022. Ninety children with epilepsy between the age group 5-18 years attending the child development clinic were enrolled for the study after meeting inclusion criteria.

All children enrolled their detailed history was taken about the age of onset of seizures, they were all subjected to Intelligence quotient testing by a trained psychologist, following that they were all assessed using RCADS (Revised child anxiety and depression scale) which assessed the child for the various psychiatric co-morbidities like generalized anxiety, separation anxiety, major depression, social phobia, obsession and compulsion, panic. Later they were also assessed for other behavioural abnormalities like emotional problems, peer problems, conduct problem, hyperactivity, pro-social behaviour of the child using strengths and difficulty questionnaire. Lastly they were subjected to QOLIE-31 scale which was used to assess the child's quality of life. The children were followed up after 3 months for reassessment of quality of life irrespective of their positivity for RCADS or SDQ.

In our study we included children of age 5-18 years. The mean age seen in our study was 10.79+/-3.26 years. The mean age was similar to the ones seen in the study of Asadi-Pooya et al. where the mean age of presentation was 12.7+/-6.9 years [141].

In our study, the age distribution was from 5-18 years out of which, majority of the children I.e. 57.78% were in the age group of 10-14 years, 27.78% patients were aged 5-9 years and 14.44% >=15 years. Mean age group was 10.79 years. Median age was 11 years. This shows that most common age band seen in the study was 10-14 years at the Child development clinic whereas >15 years of age group tend to show to adult neurologist. This was similar to the study by Asadi-pooya et al. where the majority patients were in the group of 12-17 years [141].

Out of 90 children who were enrolled in the study, 51 (56.67%) were male and 39 (43.33%) were female. Possible reason for such a ratio could be gender bias that is commonly seen in our part of world where males are provided with better care than

the girls. Out of 90 children who were enrolled in the study, focal epilepsy was seen in 70(77.80%) and 20(22.20%) were Generalised epilepsy. This is similar to study by Camfield P et al where the prevalence of the generalized epilepsy was 25.44% and that of focal was 72.21%.[142]

In the enrolled children it was found that maximum proportion of children required one anti seizure medication for resolution of symptoms i.e. 58 (64.40%) children and only 2 (2.20%) children required 3 anti-epileptics , it shows focal seizures can be regulated by 1 anti seizure medication and doesn't require multiple medications. It was noted that in our study population, epilepsy persisted in 18 patients (20%),while 72 patients didn't have any further episodes of seizures after starting ASM (anti seizure medication).In the study population it was noted that mean duration of symptoms was 2.82 +/- 1.59 years, with minimum duration of presentation being 2.5 months and maximum being 7 years. The median age of presentation being 2.5 years.

All the children enrolled in our study underwent EEG analysis, they were group into the groups of focal, generalised and normal. In our study 47(52.22%) of children were found to have focal discharges, whereas 18 children i.e. 20.00% of children had either generalized fast or slow spike discharges in their EEG recordings. Also 25 children i.e. 27.78% electroencephalogram recording was found to be normal.

In our study it was found that, all children when assessed using RCADS. We could come to a conclusion that 47(52.22 %) children screened had a psychiatric co-morbidity .We found that 12(13.33%) children had borderline clinical threshold for social phobia,10(11.11%) had above clinical threshold. Sixteen (17.78%) children had borderline clinical threshold for major depression, 2(2.22%) had above clinical

threshold. Fourteen (15.56%) children had borderline clinical threshold for generalized anxiety, 21(23.33%) had above clinical threshold. Eighteen (20.0%) children had borderline clinical threshold for separation anxiety, 14(15.56%) had above clinical threshold.

This data shows that Psychiatric co-morbidity such as generalized anxiety had a higher prevalence followed by separation anxiety, social phobia and major depression. Also the children who were grouped under borderline clinical threshold were kept on close follow up as they may progress to clinical illness and might require behavioural counselling by child psychiatrist. According to the study by Reilly C et al. the prevalence of anxiety in children suffering from epilepsy is 30 to 35%, while the prevalence of depression is 12.7 to 36.5% [143].

In our study it was found that, children when assessed with SDQ around 38(42.23%) children has psychiatric co-morbidity. On detailed examination it showed 26 (28.89%) children had high to very high clinical problem of conduct problem, 12(13.34%) children had high to very high clinical problem of peer problem This data shows that psychiatric abnormality mainly conduct problem had a higher prevalence among the other groups assessed by SDQ. Also the children who were grouped under high clinical categorization were kept on close follow up as they may progress to clinical illness and might require behavioural counselling by child psychiatrist. Emotional problem couldn't be screened effectively as this scale is just a screening test and it would require more elaborate examination of the patient to screen for other behavioural problems. These results are similar to that of study by Freilinger M et al 22.2% of children had moderate or severe behavioural or emotional problems. Davies

et al found rates of 37% psychiatric disorders using the Development and Well-Being Assessment (DAWBA) [144].

In our study, we had tried to find out the correlation between Psychiatric abnormalities and different types of epilepsy i.e. between focal and generalized epilepsy and other parameters of RCADS. It has been noted that, there was statistically significant co-relation between children with epilepsy and social phobia in which more of focal epilepsy children were affected. When analyzed other parameters of psychiatric abnormality there was no significant co-relation found out between type of epilepsy and other psychiatric abnormality that were assessed by RCADS.

In our study, we have tried to find out the correlation between type of epilepsy i.e. between focal and generalized epilepsy and behavioural abnormality parameters of SDQ. When analyzed parameters there was no significant co-relation found out between types of epilepsy and psychiatric abnormality. This suggests we require a more elaborate scale to effectively screen for conditions like hyperactivity, emotional problems which are commonly seen in the children suffering from epilepsy.

In our study no significant co-relation was found between the psychiatric abnormality and any behavioural abnormality with that of a child using any number of anti seizure medication. Also no co-relation was found between genders affected with the behavioural problem. Also no co-relation between the psychiatric abnormality and the child worrisome of taking prolonged medication.

In our study, quality of life was measured using QOLIE-31 scale at the time of enrolment, those children screened positive for RCADS or SDQ were subjected to behavioural therapy by trained child psychiatrist and were reassessed by QOLIE on

their 3 month follow up where the children showed significant improvement in quality of life.

Hence all children with epilepsy should be thoroughly evaluated for associated psychiatric and behavioral abnormalities and child should be managed holistically and not just treat the child symptomatically with ASM. This in turn reduces emotional burden that both the child and family carries improving quality of life.

STRENGTHS.

1. The present study was a prospective observational study.
2. At our centre we had paediatric neurologist. We also had a qualified and a well trained Child psychiatrist who was helpful in confirming the presence of psychiatric co-morbidity in the screened children.
3. All children who were enrolled underwent intelligence quotient assessment by child psychologist and all the children had undergone Electroencephalography (EEG).

LIMITATIONS OF STUDY

1. Children enrolled could be screened with other scales which could assess them further in detail, can pick up the behavioral abnormalities at better rate.
2. The follow up period of 3 months was a short duration, follow up for a longer duration is required.
3. Due to COVID pandemic all cases enrolled couldn't be followed up in person and few children were assessed telephonically.

CONCLUSION:

- In our study, common age band seen was 10-14 years. It was found that the percentage of focal epilepsy was more compared to generalised epilepsy.
- Using RCADS, we had observed that children with epilepsy were suffering from generalized and separation anxiety, social phobia and depression. Generalized anxiety had a higher prevalence among the assessed co-morbidities.
- Using SDQ, children with epilepsy were observed to have conduct problem and peer problem .Conduct problem had a higher prevalence among them all.
- Those children screened positive or negative for RCADS or SDQ were subjected to intervention/counseling by trained child psychiatrist and were reassessed by QOLIE on their 3 month follow up either in person or telephonically, they showed significant improvement in quality of life.
- Hence all the children with epilepsy aged 5-18 years with epilepsy should be thoroughly evaluated for association with psychiatric and behavioral abnormalities. This will help in approaching the child holistically and also improves child's compliance to anti seizure medication and has a positive impact on quality of life.

SUMMARY

- In our study, the age distribution was from 5-18 years out of which, (57.78%) were in the age group of 10-14 years, (27.78%) patients were aged 5-9 years and (14.44%) >=15 years. Mean age group was 10.79 years. This shows that most common age band seen in the study was 10-14 years
- Out of 90 children who were enrolled in the study, 51 (56.67%) were male and 39 (43.33%) were female. Out of 90 children who were enrolled in the study, focal epilepsy was seen in 70(77.80%) and 20(22.20%) were generalised epilepsy. This was suggestive that more percentage of focal epilepsy was seen compared generalised epilepsy.
- In the enrolled children it was found that maximum proportion of children required one anti seizure medication for resolution of symptoms i.e. 58 (64.4%) children and only 2 (2.2%) children required 3 anti-epileptics, it shows focal seizures can be regulated by 1 anti seizure medication and doesn't require multiple medications. Epilepsy persisted in 18 patients (20%), while 72 patients didn't have any further episodes of seizures after starting ASM(anti seizure medication).
- Generalized anxiety had a higher prevalence among the other groups assessed RCADS. Conduct problem had a higher prevalence among the other groups assessed by SDQ. Also the children who were grouped under high clinical categorization were kept on close follow up as they may progress to clinical illness and might require behavioural counseling by child psychiatrist.
- Out of 90 children, it was observed that 83 (92.2%) patients were found to be compliant to medication showing that in case of idiopathic epilepsy patients,

children were fairly compliant to medication. Around 16(17.8%) children parents were worrisome of giving medication for a longer duration.

- There was significant co-relation seen between Children with focal epilepsy and Social Phobia. The other parameters of psychiatric co-morbidity there was no significant co-relation found. Also behavioral abnormality parameters of SDQ like hyperactivity, peer problems, emotional problems when analyzed no significant co-relation seen.
- In the study there was no significant co-relation seen among the psychiatric abnormality with gender and age proportion of the children enrolled.
- Lastly In our study, quality of life was measured at the time of enrollment, those children screened positive for RCADS or Strength and Difficulty scale were subjected to behavioural therapy by child psychiatrist and were reassessed by QOLIE on their 3 month follow up where the children showed significant improvement in quality of life.
- Hence all children with epilepsy should be thoroughly evaluated for associated psychiatric and behavioral abnormalities and child should be managed holistically and not just treat the child symptomatically with ASM. This in turn reduces emotional burden that both the child and family carries improving quality of life.

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ANNEXURE – I – CONSENT FORM

INFORMED CONSENT FORM

Title of the study: PREVELENCE OF DEPRESSION AND ANXIETY IN CHILDREN WITH EPILEPSY AGED 5 TO 18 YEARS: A PROSPECTIVE OBSERVATIONAL STUDY FOR A PERIOD OF 1 YEAR

Respected Sir/Madam,

We invite you to participate in our study as you are eligible for the same. During the study, you will be asked some questions in detail regarding your present complaints.

Purpose of the study: The awareness regarding the psychiatric co morbidities in children with epilepsy is less. On doing this study and treating both the conditions simultaneously the overall quality of life of the Child will improve. Also to regularize the policy of screening all children with epilepsy coming to pediatric neurologist.

Risks and Benefits : No risk is associated with it. Treating both the conditions simultaneously the overall quality of life of the Child will improve. The suicidal tendancies will reduce among adolescents, overall health is being taken into consideration.

Alternatives: If you decide not to participate in this study, you will still be receiving the usual standard of care.

Privacy and confidentiality:

Your privacy will be respected, and all information collected about you during this study will be kept confidential. Your identity will remain undisclosed.

Relations with the Institutional policy: The J N Medical College will provide, within the limitations of the laws of the State of Karnataka, facilities and medical attention to patients who suffer injuries because of participating in this project.

Financial incentives: You shall not be receiving any payment or any financial incentives for participating in this study.

Authorization to publish results: The results of this study may be published for scientific purpose or presented to a scientific group. Your identity, however, will always be maintained confidential.

Participant Informed Consent Form

Protocol /Study No.:

Patient Id No. for this trial:

Project Title: PREVELENCE OF DEPRESSION AND ANXIETY IN CHILDREN WITH EPILEPSY AGED 5 TO 18 YEARS: A PROSPECTIVE OBSERVATIONAL STUDY FOR A PERIOD OF 1 YEAR

Name of Principal Investigator:

Contact address: Junior Resident, Department of Paediatrics, JNMC, KLE BELAGAVI

The content of information sheet dated that was provided have been read carefully by me/explained to me in detail to me, in a language that I comprehend and have fully understood its content. I confirm that I have had opportunity to ask questions.
The nature and purpose of study and its potential risks/benefits and expected duration of study, and relevant details of study have been explained to me in detail. I understand that my participation is voluntary and that I am free to withdraw at any time without giving reasons, without my medical care or legal rights being affected.
I understand that information collected about me from my participation in this research and section of any of my medical notes, may be looked at by responsible individuals from regulatory authorities where relevant to taking part in research. I give permission for these individuals to have access to my record

Name of Participant: _____

Age: **Gender:**

Verbal/oral assent of participant (Age 7-12 years)- _____

Signature of participant(Age 13-18 years) -_____

Date : _____

Signature of the authorised representative/ parent: _____

Date: _____

Name: _____

Relation to the Subject: _____

Signature of the witness:_____

Date: _____

Name: _____

Signature of investigator:_____

Date: _____

Name: _____

Study procedure

In this study the child will be subjected to examination by the paediatric neurologist and will be assessed by RCADS scale , STRENGTH AND DIFFICULTY SCALE by the principal investigator under the guidance of trained psychiatrist.

After the assessment on the basis of score if the child is suspected of having depression or anxiety. He will be examined by paediatric psychiatrist on the basis of international classification of disorders and the final diagnosis of the child will be done and will be decided whether medication has to be given or psychotherapy has to be given .Then after this the child will be assessed by quality of life epilepsy questionnaire.

Any risk to the subject associated with the study:
No risk associated with it

Benefits:
Treating both the conditions simultaneously the overall quality of life of the Child will improve. The suicidal tendancies will reduce among adolescents, overall health is being taken into consideration.

New Information: If any new information relevant to your decision to participate becomes available during the course of this study, you will be informed.

Costs and Payments: It will not cost you extra to take part in this study. You will not be paid any amount for your contribution in this study.

Confidentiality

The identity of the participant will be kept strictly confidential both during the study and while publishing results of the study. All information about you and your community will be encoded and kept in locked files.

Results of the Analysis: The results of the analysis will not be made available to you directly.

Right to Withdraw: You are free to refuse to participate in this research study and to withdraw at any time. If you withdraw from the research study, it will have no bearing on your ongoing treatment.

Date:

Investigator's Signature

PARTICIPANT INFORMATION SHEET

Chief guide:

Principal investigator:

Contact address: Junior Resident, Department of Paediatrics, JNMC KLE BELAGAVI

Introduction:

You are invited to voluntarily take part in a research study, PREVELENCE OF DEPRESSION AND ANXIETY IN CHILDREN WITH EPILEPSY AGED 5 TO 18 YEARS: A PROSPECTIVE OBSERVATIONAL STUDY FOR A PERIOD OF 1 YEAR

Before agreeing to participate in this study, it is important that you read and understand this form. It describes the purpose and procedure of the study. If you participate, you will receive a copy of the consent form to keep for your records.

Purpose :

The prevalence of psychiatric co morbidities in children with epilepsy is – **7 to 37 percent.** The awareness regarding the psychiatric co morbidities in children with epilepsy is less. On doing this study and treating both the conditions simultaneously the overall quality of life of the Child will improve. Also to regularize the policy of screening all children with epilepsy coming to pediatric neurologist.

Participation in the study

Your participation in the study is entirely voluntary. You may refuse to take part in the study or withdraw from the study and this will not affect your treatment at JNMC KLEH. You will not have to pay any money for participating in the study.

To become part of the study and to authorize use and disclosure of your personal health information, you or your legal representative must sign and date the consent form.

Voluntary participation: Your participation in this study is voluntary. Your decision whether to participate will neither affect the care of your current disease, nor your future relations with the doctor or the hospital. In the event, if you suffer any physical injury as the result of your participation in this study, you may contact the investigator of the study.

Questions/contact details: You shall be free to contact the below mentioned name & addresses anytime during the study period for any clarification or help as you may desire for.

Principal investigator: MD (Post Graduate Student), Department of Pediatrics, Jawaharlal Nehru Medical College, Nehru Nagar, KLE Hospital Road, Belagavi 590010,

Guide: , **Professor**, Department of Pediatrics, Jawaharlal Nehru Medical College, Nehru Nagar, KLE Hospital Road, Belagavi 590010

In the event of an emergency, you should contact KLE'S Dr. Prabhakar Kore Hospital and MRC on Telephone No. 08312473777.

In case you need further information regarding your rights as a study participant, you may please contact **Dr Harsha Hegde**, Chairperson, JNMC, IEC and Scientist D, ICMR, National Institute of Traditional Medicine, Belagavi-9480422500

STATEMENT OF CONSENT

I, Mr./Ms/Mrs. _____ Parent/Guardian volunteer of _____ consent to participate in this study. I have read the consent document, or it has been read to me in my vernacular language. I accept to participate in the study. All the information regarding this study is provided to me and I have understood the same. I have been given the opportunity to ask questions and obtain appropriate answers.

The signature or left thumbprint of participants Parent/Guardian:

Signature of the investigator:

Date:

ANNEXURE – II – PROFORMA

<table>
<tr><td>Name , Age and Gender</td><td colspan="8"></td></tr>
<tr><td>Informant Name and Relation</td><td colspan="8"></td></tr>
<tr><td>Address and Phone numbers</td><td colspan="8">Phone numbers:
1)
2)
3)</td></tr>
<tr><td>Onset of epilepsy</td><td colspan="8"></td></tr>
<tr><td rowspan="3">Frequency of Seizures</td><td></td><td>1ST Yr</td><td>2ND Yr</td><td>3RD Yr</td><td>4TH Yr</td><td>5TH Yr</td><td>6TH Yr</td><td>7TH Yr</td></tr>
<tr><td>Before Treatment</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>After Treatment</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Type Of Seizures</td><td colspan="8">Generalized
Focal
Unknown
Generalized + Focal</td></tr>
<tr><td rowspan="4">Drugs Received (ASM)</td><td colspan="2">Name Of ASM</td><td colspan="2">Dosage</td><td colspan="2">Duration</td><td colspan="2">Side effects</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Mental Milestones/ Scholastic Performance</td><td colspan="8"></td></tr>
<tr><td>Behavioral AbnormalityBefore Onset Of Seizure</td><td colspan="8">A) Hyperactivity
B) Violent behaviour
C) Sleep problems
D) Others</td></tr>
<tr><td>IQ Test</td><td colspan="8">Score:

Name Of The Test:</td></tr>
<tr><td>Diagnosis</td><td colspan="8"></td></tr>
</table>

<table>
<tr><td>EEG / MRI Diagnosis</td><td colspan="3"></td></tr>
<tr><td>Examination Of the patient</td><td colspan="3">1.Head Circumference
2.Weight Of the Child
3.Neurocutaneous Markers
4.Focal Deficits</td></tr>
<tr><td rowspan="5">RCADS Scores</td><td>Type of subscale</td><td>Raw Score</td><td>T- Score</td></tr>
<tr><td>1) Major depression</td><td></td><td></td></tr>
<tr><td>2) Generalized Anxiety</td><td></td><td></td></tr>
<tr><td>3) Panic Disorder</td><td></td><td></td></tr>
<tr><td>4) Social Phobia</td><td></td><td></td></tr>
<tr><td>RCADS final score.</td><td colspan="3"></td></tr>
<tr><td>Strength and difficulty Scale score</td><td colspan="3"></td></tr>
<tr><td>Paediatric Quality Of Life In Child suffering From epilepsy</td><td colspan="3"></td></tr>
</table>

Final Psychiatric Diagnosis			
Change in the Medication After The Diagnosis	Present Medication	New Medication	
	Psychotherapy		
Psychiatric Medication/ Treatment Given			
At 3 months of follow up	Compliance: New concerns:		

RCADS SELF REPORTED

Date: _____ **Name/ID:** _____

RCADS

Please put a circle around the word that shows how often each of these things happens to you. There are no right or wrong answers.

1. I worry about things	Never	Sometimes	Often	Always
2. I feel sad or empty	Never	Sometimes	Often	Always
3. When I have a problem, I get a funny feeling in my stomach	Never	Sometimes	Often	Always
4. I worry when I think I have done poorly at something	Never	Sometimes	Often	Always
5. I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
6. Nothing is much fun anymore	Never	Sometimes	Often	Always
7. I feel scared when I have to take a test	Never	Sometimes	Often	Always
8. I feel worried when I think someone is angry with me	Never	Sometimes	Often	Always
9. I worry about being away from my parents	Never	Sometimes	Often	Always
10. I get bothered by bad or silly thoughts or pictures in my mind	Never	Sometimes	Often	Always
11. I have trouble sleeping	Never	Sometimes	Often	Always
12. I worry that I will do badly at my school work	Never	Sometimes	Often	Always
13. I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
14. I suddenly feel as if I can't breathe when there is no reason for this	Never	Sometimes	Often	Always
15. I have problems with my appetite	Never	Sometimes	Often	Always
16. I have to keep checking that I have done things right (like the switch is off, or the door is locked)	Never	Sometimes	Often	Always
17. I feel scared if I have to sleep on my own	Never	Sometimes	Often	Always
18. I have trouble going to school in the mornings because I feel nervous or afraid	Never	Sometimes	Often	Always
19. I have no energy for things	Never	Sometimes	Often	Always
20. I worry I might look foolish	Never	Sometimes	Often	Always
21. I am tired a lot	Never	Sometimes	Often	Always
22. I worry that bad things will happen to me	Never	Sometimes	Often	Always

23. I can't seem to get bad or silly thoughts out of my head	Never	Sometimes	Often	Always
24. When I have a problem, my heart beats really fast	Never	Sometimes	Often	Always
25. I cannot think clearly	Never	Sometimes	Often	Always
26. I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
27. I worry that something bad will happen to me	Never	Sometimes	Often	Always
28. When I have a problem, I feel shaky	Never	Sometimes	Often	Always
29. I feel worthless	Never	Sometimes	Often	Always
30. I worry about making mistakes	Never	Sometimes	Often	Always
31. I have to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always
32. I worry what other people think of me	Never	Sometimes	Often	Always
33. I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds)	Never	Sometimes	Often	Always
34. All of a sudden I feel really scared for no reason at all	Never	Sometimes	Often	Always
35. I worry about what is going to happen	Never	Sometimes	Often	Always
36. I suddenly become dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
37. I think about death	Never	Sometimes	Often	Always
38. I feel afraid if I have to talk in front of my class	Never	Sometimes	Often	Always
39. My heart suddenly starts to beat too quickly for no reason	Never	Sometimes	Often	Always
40. I feel like I don't want to move	Never	Sometimes	Often	Always
41. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
42. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	Never	Sometimes	Often	Always
43. I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
44. I have to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
45. I worry when I go to bed at night	Never	Sometimes	Often	Always
46. I would feel scared if I had to stay away from home overnight	Never	Sometimes	Often	Always
47. I feel restless	Never	Sometimes	Often	Always

RCADS PARENTS REPORTED

RCADS

NHS ID: .....

Child/ Young Person's NAME:

.....

Relationship to Child/Young Person : .....

Date: ☐☐/☐☐/ 20☐☐ **Time:** ☐☐ h ☐☐ m

Please put a circle around the word that shows how often each of these things happens to your child. There are no right or wrong answers.

1	My child worries about things	Never	Sometimes	Often	Always
2	My child feels sad or empty	Never	Sometimes	Often	Always
3	When my child has a problem, he/she gets a funny feeling in his/her stomach	Never	Sometimes	Often	Always
4	My child worries when he/she thinks he/she has done poorly at something	Never	Sometimes	Often	Always
5	My child feels afraid of being alone at home	Never	Sometimes	Often	Always
6	Nothing is much fun for my child anymore	Never	Sometimes	Often	Always
7	My child feels scared when taking a test	Never	Sometimes	Often	Always
8	My child worries when he/she thinks someone is angry with him/her	Never	Sometimes	Often	Always
9	My child worries about being away from me	Never	Sometimes	Often	Always
10	My child is bothered by bad or silly thoughts or pictures in his/her mind	Never	Sometimes	Often	Always
11	My child has trouble sleeping	Never	Sometimes	Often	Always
12	My child worries about doing badly at school work	Never	Sometimes	Often	Always
13	My child worries that something awful will happen to someone in the family	Never	Sometimes	Often	Always
14	My child suddenly feels as if he/she can't breathe when there is no reason for this	Never	Sometimes	Often	Always
15	My child has problems with his/her appetite	Never	Sometimes	Often	Always
16	My child has to keep checking that he/she has done things right (like the switch is off, or the door is locked)	Never	Sometimes	Often	Always
17	My child feels scared to sleep on his/her own	Never	Sometimes	Often	Always
18	My child has trouble going to school in the mornings because of feeling nervous or afraid	Never	Sometimes	Often	Always
19	My child has no energy for things	Never	Sometimes	Often	Always
20	My child worries about looking foolish	Never	Sometimes	Often	Always

RCADS —*Parent/Carer*

21	My child is tired a lot	Never	Sometimes	Often	Always
22	My child worries that bad things will happen to him/her	Never	Sometimes	Often	Always
23	My child can't seem to get bad or silly thoughts out of his/her head	Never	Sometimes	Often	Always
24	When my child has a problem, his/her heart beats really fast	Never	Sometimes	Often	Always
25	My child cannot think clearly	Never	Sometimes	Often	Always
26	My child suddenly starts to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
27	My child worries that something bad will happen to him/her	Never	Sometimes	Often	Always
28	When my child has a problem, he/she feels shaky	Never	Sometimes	Often	Always
29	My child feels worthless	Never	Sometimes	Often	Always
30	My child worries about making mistakes	Never	Sometimes	Often	Always
31	My child has to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always
32	My child worries what other people think of him/her	Never	Sometimes	Often	Always
33	My child is afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds)	Never	Sometimes	Often	Always
34	All of a sudden my child will feel really scared for no reason at all	Never	Sometimes	Often	Always
35	My child worries about what is going to happen	Never	Sometimes	Often	Always
36	My child suddenly becomes dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
37	My child thinks about death	Never	Sometimes	Often	Always
38	My child feels afraid if he/she have to talk in front of the class	Never	Sometimes	Often	Always
39	My child's heart suddenly starts to beat too quickly for no reason	Never	Sometimes	Often	Always
40	My child feels like he/she doesn't want to move	Never	Sometimes	Often	Always
41	My child worries that he/she will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
42	My child has to do some things over and over again (like washing hands, cleaning, or putting things in a certain order)	Never	Sometimes	Often	Always
43	My child feels afraid that he/she will make a fool of him/herself in front of people	Never	Sometimes	Often	Always
44	My child has to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
45	My child worries when in bed at night	Never	Sometimes	Often	Always
46	My child would feel scared if he/she had to stay away from home overnight	Never	Sometimes	Often	Always
47	My child feels restless	Never	Sometimes	Often	Always

RCADS—*Parent/Carer*

SDQ PARENT REPORTED

Strengths and Difficulties Questionnaire

P 4-17

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

Child's Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Do you have any other comments or concerns?

Please turn over - there are a few more questions on the other side

Overall, do you think that your child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	Yes-minor difficulties	Yes-definite difficulties	Yes-severe difficulties
☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

• How long have these difficulties been present?

Less than a month	1-5 months	6-12 months	Over a year
☐	☐	☐	☐

• Do the difficulties upset or distress your child?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

• Do the difficulties interfere with your child's everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

• Do the difficulties put a burden on you or the family as a whole?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

Signature ..... Date .....

Mother/Father/Other (please specify:)

SDQ SELF REPORTED

Strengths and Difficulties Questionnaire S 11-17

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Your Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	☐	☐	☐
I am restless, I cannot stay still for long	☐	☐	☐
I get a lot of headaches, stomach-aches or sickness	☐	☐	☐
I usually share with others (food, games, pens etc.)	☐	☐	☐
I get very angry and often lose my temper	☐	☐	☐
I am usually on my own. I generally play alone or keep to myself	☐	☐	☐
I usually do as I am told	☐	☐	☐
I worry a lot	☐	☐	☐
I am helpful if someone is hurt, upset or feeling ill	☐	☐	☐
I am constantly fidgeting or squirming	☐	☐	☐
I have one good friend or more	☐	☐	☐
I fight a lot. I can make other people do what I want	☐	☐	☐
I am often unhappy, down-hearted or tearful	☐	☐	☐
Other people my age generally like me	☐	☐	☐
I am easily distracted, I find it difficult to concentrate	☐	☐	☐
I am nervous in new situations. I easily lose confidence	☐	☐	☐
I am kind to younger children	☐	☐	☐
I am often accused of lying or cheating	☐	☐	☐
Other children or young people pick on me or bully me	☐	☐	☐
I often volunteer to help others (parents, teachers, children)	☐	☐	☐
I think before I do things	☐	☐	☐
I take things that are not mine from home, school or elsewhere	☐	☐	☐
I get on better with adults than with people my own age	☐	☐	☐
I have many fears, I am easily scared	☐	☐	☐
I finish the work I'm doing. My attention is good	☐	☐	☐

Do you have any other comments or concerns?

Please turn over - there are a few more questions on the other side

Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	Yes-minor difficulties	Yes-definite difficulties	Yes-severe difficulties
☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

- How long have these difficulties been present?

Less than a month	1-5 months	6-12 months	Over a year
☐	☐	☐	☐

- Do the difficulties upset or distress you?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

- Do the difficulties interfere with your everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

- Do the difficulties make it harder for those around you (family, friends, teachers, etc.)?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

Your Signature .....

Today's Date .....

QOLIE - 31

Do Not Write in This Space

QUALITY OF LIFE IN EPILEPSY
QOLIE-31 (*Version 1.0*)

Patient Inventory

Today's Date___/___/___

Patient's Name_____

Patient's ID#_____

Gender: ☐ **Male** ☐ **Female** **Birthdate**___/___/___

INSTRUCTIONS

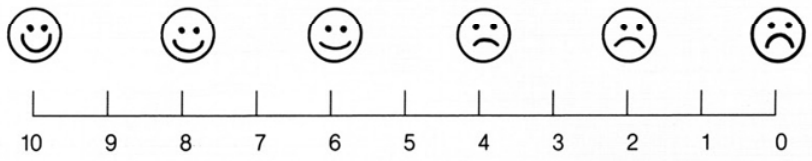
This survey asks about your health and daily activities. **Answer every question** by circling the appropriate number (1, 2, 3. . .).

If you are unsure about how to answer a question, please give the best answer you can and write a comment or explanation in the margin.

Please feel free to ask someone to assist you if you need help reading or marking the form.

1. Overall, how would you rate your quality of life?

(Circle one number on the scale below)



Best Possible Quality of Life

Worst Possible Quality of Life

(as bad as or worse than being dead)

These questions are about how you **FEEL** and how things have been for you during the **past 4 weeks**. For each question, please indicate the one answer that comes closest to the way you have been feeling.

Do Not Write in This Space

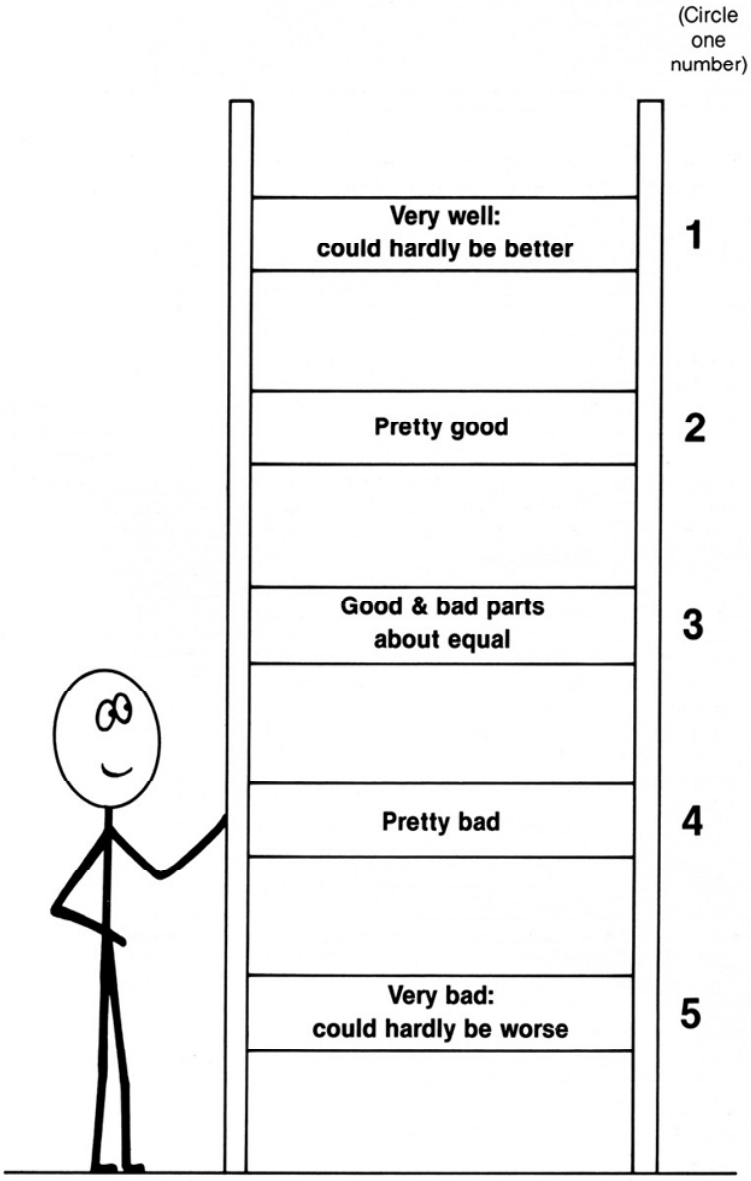
How much of the time during the **past 4 weeks**. . .

(Circle one number on each line)

		All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
2.	Did you feel full of pep?	1	2	3	4	5	6
3.	Have you been a very nervous person?	1	2	3	4	5	6
4.	Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
5.	Have you felt calm and peaceful?	1	2	3	4	5	6
6.	Did you have a lot of energy?	1	2	3	4	5	6
7.	Have you felt downhearted and blue?	1	2	3	4	5	6
8.	Did you feel worn out?	1	2	3	4	5	6
9.	Have you been a happy person?	1	2	3	4	5	6
10.	Did you feel tired?	1	2	3	4	5	6
11.	Have you worried about having another seizure?	1	2	3	4	5	6
12.	Did you have difficulty reasoning and solving problems (such as making plans, making decisions, learning new things)?	1	2	3	4	5	6
13.	Has your health limited your social activities (such as visiting with friends or close relatives)?	1	2	3	4	5	6

14. How has the **QUALITY OF YOUR LIFE** been during the **past 4 weeks** (that is, how have things been going for you)?

Do Not Write in This Space



The following question is about **MEMORY**.

(Circle one number)

Do Not Write in This Space

		Yes, a great deal	Yes, somewhat	Only a little	No, not at all
15.	In the past 4 weeks, have you had any trouble with your memory?	1	2	3	4

Circle one number for **how often** in the **past 4 weeks** you have had trouble *remembering* or **how often** this memory problem has interfered with your normal work or living.

		All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
16.	Trouble remembering things people tell you	1	2	3	4	5	6

The following questions are about **CONCENTRATION** problems you may have. Circle one number for **how often** in the **past 4 weeks** you had trouble concentrating or **how often** these problems interfered with your normal work or living.

		All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
17.	Trouble concentrating on reading	1	2	3	4	5	6
18.	Trouble concentrating on doing one thing at a time	1	2	3	4	5	6

The following questions are about problems you may have with certain **ACTIVITIES**. Circle one number for **how much** during the **past 4 weeks** your epilepsy or antiepileptic medication has caused trouble with. . .

		A great deal	A lot	Somewhat	Only a little	Not at all
19.	Leisure time (such as hobbies, going out)	1	2	3	4	5
20.	Driving	1	2	3	4	5

The following questions relate to the way you **FEEL** about your **seizures**.
(Circle one number on each line)

Do Not Write in This Space

		Very fearful	Somewhat fearful	Not very fearful	Not fearful at all
21.	How fearful are you of having a seizure during the next month?	1	2	3	4

		Worry a lot	Occasionally worry	Don't worry at all
22.	Do you worry about hurting yourself during a seizure?	1	2	3

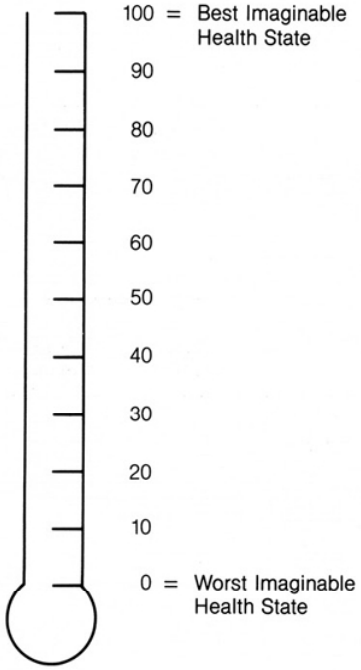
		Very worried	Somewhat worried	Not very worried	Not at all worried
23.	How worried are you about embarrassment or other social problems resulting from having a seizure during the next month?	1	2	3	4
24.	How worried are you that medications you are taking will be bad for you if taken for a long time?	1	2	3	4

For each of these **PROBLEMS**, circle one number for **how much they bother you** on a scale of 1 to 5 where 1 = Not at all bothersome, and 5 = Extremely bothersome.

		Not at all bothersome				Extremely bothersome
25.	Seizures	1	2	3	4	5
26.	Memory difficulties	1	2	3	4	5
27.	Work limitations	1	2	3	4	5
28.	Social limitations	1	2	3	4	5
29.	Physical effects of antiepileptic medication	1	2	3	4	5
30.	Mental effects of antiepileptic medication	1	2	3	4	5

31. How good or bad do you think your health is? On the thermometer scale below, the best imaginable state of health is 100 and the worst imaginable state is 0. Please indicate how you feel about your health by circling one number on the scale. **Please consider your epilepsy as part of your health when you answer this question.**

Do Not Write in This Space



SR. NO	Age of the patient	Gender of the patient	Type of epilepsy	categorisation of epilepsy	NUMBER OF ANTI SEZURE MEDICATION	SEIZURES PERSISTING AFTER STARTING ASM	DURATION OF SYMPTOMS	EEG Report	GROUPING OF EEG	MRI Report	IQ of the patient	Social Phobia	T SCORE SOCIAL PHOBIA	TEGORISATION OF CLINICAL THRESHOLD SOCIAL PHOI	Panic Disorder	Major depression	T SCORE MAJOR DEPRESSION	ATEGORISATION OF CLINICAL THRESHOLD DEPRESSIO	Generalised anxiety	T SCORE GENERALISED ANXIETY	TEGORISATION OF CLINICAL THRESHOLD GEN. ANXIE	Seperation anxiety	T SCORE SEPRATION ANXIETY	TEGORISATION OF CLINICAL THRESHOLD SEP. ANXIE	OCD	Emotional problem scale	Conduct Problem scale	CONDUCT PROBLEM SCORE	CATEGORISATION OF CONDUCT PROBLEM	Hyperactivity scale	Peer problem scale	PEER PROBLEM SCORE	CATEGORISATION OF PEER PROBLEM	Pro-social scale	Compliance To Medication	worrisome of taking medication for long time	Quality of life of the child	QUALITY OF LIFE AFTER 3 MONHS	obsession and compulsion	OCD T SCORE	CATEGORISATION OF CLINICAL THRESHOLD	PANIC	PANIC T SCORE	CATEGORISATION OF CLINICAL THRESHOLD FOR PANI	EMOTIONAL PROBLEM	EMOTIONAL PROBLEM SCORE	CATEGORISATION OF EMOTIONAL PROBLEM SCORE	HYPERACTIVITY PROBLEM	HYPERACTIVITY SCORE	CATEGORISATION OF HYPERACTIVITY SCORE	PRO SOCIAL	PRO SOCIAL SCORE	CATEGORISATION OF PRO SOCIAL CATEGORY
1	7 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	NO	25	NORMAL	NO	NO	30	NORMAL	NO	40	NORMAL	NO	35	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	90	90	NO	35	NORMAL	NO	25	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
2	16 YRS	FEMALE	JUVENILE MYOCLONIC EPILEPSY	GTCS	1	NO	1 YEAR	GENERALISED POLYSPIKE AND WAVE DISCHARGES 3HZ	GENERALISED	NORMAL	87%	NO	20	NORMAL	NO	NO	25	NORMAL	NO	50	NORMAL	NO	30	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	80	NO	40	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
3	5 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	1	NO	1 YEAR	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	89%	NO	35	NORMAL	NO	NO	40	NORMAL	NO	45	NORMAL	NO	25	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	40	NORMAL	NO	55	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
4	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	6 MONTHS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	95%	NO	45	NORMAL	NO	NO	45	NORMAL	NO	35	NORMAL	NO	45	NORMAL	NO	NO	NO	4	HIGH	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	90	NO	25	NORMAL	NO	40	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
5	8 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	YES	2 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	90%	NO	30	NORMAL	NO	NO	55	NORMAL	NO	40	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	90	NO	30	NORMAL	NO	45	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
6	5 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	LT. CENTERO-TEMPORAL DISCHARGES	FOCAL	NORMAL	90%	NO	40	NORMAL	NO	NO	50	NORMAL	NO	50	NORMAL	NO	55	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	YES	90	90	NO	20	NORMAL	NO	55	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
7	12 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	93%	NO	45	NORMAL	NO	NO	40	NORMAL	NO	55	NORMAL	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	60	80	NO	30	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
8	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	NORMAL	NORMAL	NORMAL	92%	NO	55	NORMAL	NO	NO	20	NORMAL	YES	80	ABOVE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	55	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
9	14 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	96%	NO	25	NORMAL	NO	NO	30	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	35	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	NO	NO	80	80	NO	40	NORMAL	NO	35	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
10	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	NORMAL	NORMAL	NORMAL	88%	NO	20	NORMAL	NO	NO	35	NORMAL	NO	40	NORMAL	NO	40	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	70	80	NO	30	NORMAL	NO	25	NORMAL	NO	2	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
11	10 YRS	FEMALE	COMPLEX FEBRILE SEIZURES	GTCS	2	YES	5 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	90%	NO	20	NORMAL	NO	NO	45	NORMAL	YES	85	ABOVE CLINICAL THRESHOLD	NO	20	NORMAL	NO	NO	NO	4	HIGH	NO	NO	2	CLOSE TO AVERAGE	NO	NO	YES	70	90	NO	20	NORMAL	NO	20	NORMAL	NO	1	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
12	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	90%	NO	30	NORMAL	NO	NO	55	NORMAL	NO	40	NORMAL	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	YES	8	VERY HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	YES	60	80	NO	30	NORMAL	NO	50	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
13	9 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1.5 YEARS	LT. CENTERO-TEMPORAL DISCHARGES	FOCAL	NORMAL	95%	NO	35	NORMAL	NO	NO	55	NORMAL	NO	35	NORMAL	NO	30	NORMAL	NO	NO	NO	4	HIGH	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	50	NORMAL	NO	55	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
14	10 YRS	FEMALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	YES	1YR 8 MONTHS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	90%	NO	45	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	75	ABOVE CLINICAL THRESHOLD	NO	20	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	60	90	NO	55	NORMAL	NO	40	NORMAL	NO	1	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
15	13 YRS	MALE	BENIGN PAROXYSMALSEIZURE OF ADOLESCENCE	FOCAL EPILEPSY	1	NO	1 YEAR	NORMAL	NORMAL	NORMAL	88%	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	85	ABOVE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	25	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
16	10 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	20	NORMAL	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	45	NORMAL	NO	40	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
17	17 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	1	NO	3 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	YES	75	ABOVE CLINICAL THRESHOLD	NO	55	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	4	HIGH	NO	NO	4	HIGH	NO	YES	NO	60	80	NO	35	NORMAL	NO	50	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
18	7 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	88%	NO	50	NORMAL	NO	NO	45	NORMAL	NO	60	NORMAL	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	90	NO	25	NORMAL	NO	20	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
19	15 YRS	MALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	5 YEARS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED SLOW SPIKES	NORMAL	92%	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	40	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	55	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	4	HIGH	NO	YES	NO	70	80	NO	25	NORMAL	NO	30	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
20	12 YEARS	FEMALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	1	NO	4 YEARS	NORMAL	NORMAL	NORMAL	96%	NO	55	NORMAL	NO	NO	35	NORMAL	NO	45	NORMAL	NO	40	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	90	NO	35	NORMAL	NO	55	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
21	14 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	5 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	88%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	35	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	30	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	45	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
22	10 YRS	FEMALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	1	NO	6 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	88%	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	40	NORMAL	NO	45	NORMAL	NO	20	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	70	80	NO	55	NORMAL	NO	55	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
23	11 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	3 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	90%	NO	50	NORMAL	NO	NO	20	NORMAL	NO	30	NORMAL	NO	35	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	45	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
24	7 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	2	YES	5 YEARS	LT. CENTERO-TEMPORAL DISCHARGES	FOCAL	NORMAL	90%	NO	60	NORMAL	NO	YES	70	ABOVE CLINICAL THRESHOLD	NO	50	NORMAL	NO	45	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	60	80	NO	45	NORMAL	NO	35	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
25	13 YRS	FEMALE	JUVENILE MYOCLONIC EPILEPSY	GTCS	1	NO	1 YEAR	GENERALISED POLYSPIKE AND WAVE DISCHARGES >3HZ	GENERALISED FAST SPIKES	NORMAL	98%	NO	20	NORMAL	NO	NO	55	NORMAL	NO	60	NORMAL	NO	55	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	90	NO	35	NORMAL	NO	45	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
26	11 YRS	MALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	2	YES	6 MONTHS	NORMAL	NORMAL	NORMAL	87%	NO	25	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	55	NORMAL	NO	50	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	YES	90	90	NO	35	NORMAL	NO	45	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
27	14 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1.5 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	60	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	60	80	NO	35	NORMAL	NO	35	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
28	11 YRS	FEMALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	YES	2.5 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	89%	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	40	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	YES	6	VERY HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	45	NORMAL	NO	25	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
29	12 YRS	MALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	1	NO	4.5 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	20	NORMAL	NO	NO	30	NORMAL	NO	45	NORMAL	NO	30	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	NO	NO	90	90	NO	45	NORMAL	NO	40	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
30	15 YRS	MALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	2	NO	5 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	90%	NO	60	NORMAL	NO	NO	25	NORMAL	NO	55	NORMAL	NO	40	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	20	NORMAL	NO	40	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
31	10 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	88%	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	35	NORMAL	NO	35	NORMAL	NO	35	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	25	NORMAL	NO	30	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
32	18 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	YES	4 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	96%	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	35	NORMAL	NO	35	NORMAL	NO	45	NORMAL	NO	NO	YES	8	VERY HIGH	NO	NO	2	CLOSE TO AVERAGE	NO	YES	YES	70	80	NO	45	NORMAL	NO	30	NORMAL	NO	1	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
33	16 YRS	MALE	JUVENILE MYOCLONIC EPILEPSY	GTCS	1	NO	2 YEARS	GENERALISED POLYSPIKE AND WAVE DISCHARGES <3HZ	GENERALISED SLOW SPIKES	NORMAL	97%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	40	NORMAL	NO	45	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	45	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
34	6 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	2	YES	3 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	NO	20	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	80	ABOVE CLINICAL THRESHOLD	NO	55	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	55	NORMAL	NO	45	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
35	8 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	2	NO	3.5 YEARS	LT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	89%	NO	60	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	70	ABOVE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	YES	70	70	NO	50	NORMAL	NO	55	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
36	10 YRS	MALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	1	NO	4 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	55	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	40	NORMAL	NO	45	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
37	5 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	2 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	90%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	20	NORMAL	YES	70	ABOVE CLINICAL THRESHOLD	NO	30	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	55	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
38	12 YRS	FEMALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	NO	5 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	87%	NO	35	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	NO	20	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	35	NORMAL	NO	45	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
39	5 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	2	YES	3 YEARS	GENERALISED EPILEPTIFORM DISCHARGES (>3HZ)DURING PHOTIC STIMULATION	GENERALISED FAST SPIKES	NORMAL	88%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	60	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	35	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	4	HIGH	NO	YES	NO	70	70	NO	25	NORMAL	NO	50	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
40	6 YRS	FEMALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	1	NO	3 YEARS	NORMAL	NORMAL	NORMAL	87%	NO	45	NORMAL	NO	NO	45	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	4	HIGH	NO	YES	NO	90	90	NO	40	NORMAL	NO	20	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
41	10 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	4.5 YEARS	NORMAL	NORMAL	NORMAL	88%	NO	50	NORMAL	NO	NO	40	NORMAL	NO	35	NORMAL	NO	55	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	NO	NO	80	80	NO	45	NORMAL	NO	25	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
42	12 YRS	FEMALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	1	NO	3.5 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	89%	NO	55	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	35	NORMAL	NO	25	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	4	HIGH	NO	YES	NO	80	80	NO	40	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
43	5 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	3	YES	2 YEARS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	89%	NO	60	NORMAL	NO	NO	35	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	35	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	80	NO	45	NORMAL	NO	55	NORMAL	NO	1	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
44	10 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	3 YEARS	NORMAL	NORMAL	NORMAL	88%	NO	55	NORMAL	NO	NO	25	NORMAL	NO	35	NORMAL	NO	45	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	70	80	NO	40	NORMAL	NO	45	NORMAL	NO	1	CLOSE TO AVERAGE	NO	2	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
45	17 YRS	FEMALE	BENIGN PAROXYSMALSEIZURE OF ADOLESCENCE	FOCAL EPILEPSY	1	NO	2 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	60	NORMAL	NO	NO	25	NORMAL	NO	35	NORMAL	NO	45	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	70	80	NO	55	NORMAL	NO	35	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
46	8 YRS	MALE	COMPLEX FEBRILE SEIZURES	GTCS	2	NO	5 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	45	NORMAL	NO	NO	20	NORMAL	NO	40	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	NO	YES	80	80	NO	50	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
47	7 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED FAST SPIKES	NORMAL	91%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	35	NORMAL	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	70	80	NO	25	NORMAL	NO	40	NORMAL	NO	1	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
48	8 YRS	FEMALE	COMPLEX FEBRILE SEIZURES	GTCS	2	NO	4 YEARS	LT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	92%	NO	25	NORMAL	NO	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	YES	6	VERY HIGH	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	60	80	NO	25	NORMAL	NO	50	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
49	9 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	3 MONTHS	NORMAL	NORMAL	NORMAL	94%	NO	20	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	85	ABOVE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	YES	8	VERY HIGH	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	80	NO	40	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
50	10 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	9 MONTHS	NORMAL	NORMAL	NORMAL	92%	NO	50	NORMAL	NO	NO	55	NORMAL	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	70	NO	45	NORMAL	NO	50	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
51	7 YRS	FEMALE	COMPLEX FEBRILE SEIZURES	GTCS	2	YES	5 YEARS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	94%	NO	55	NORMAL	NO	NO	55	NORMAL	NO	35	NORMAL	YES	70	ABOVE CLINICAL THRESHOLD	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	80	NO	55	NORMAL	NO	40	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
52	13 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	4 YEARS	NORMAL	NORMAL	NORMAL	92%	NO	45	NORMAL	NO	NO	35	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	70	NO	35	NORMAL	NO	50	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
53	12 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	4.5 YEARS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED SLOW SPIKES	NORMAL	94%	NO	60	NORMAL	NO	NO	25	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	2	BORDERLINE	NO	YES	NO	80	80	NO	45	NORMAL	NO	45	NORMAL	NO	2	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
54	15 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	3	YES	7 YEARS	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	87%	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	20	NORMAL	NO	35	NORMAL	NO	45	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	45	NORMAL	NO	50	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
55	18 YRS	MALE	BENIGN PAROXYSMALSEIZURE OF ADOLESCENCE	FOCAL EPILEPSY	1	NO	6 MONTHS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	NO	40	NORMAL	NO	NO	40	NORMAL	NO	30	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	NO	YES	70	80	NO	55	NORMAL	NO	55	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
56	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	YES	5 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	91%	NO	35	NORMAL	NO	NO	45	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	45	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
57	10 YRS	FEMALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	1	NO	3 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	90%	NO	30	NORMAL	NO	NO	55	NORMAL	NO	35	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	80	NO	45	NORMAL	NO	55	NORMAL	NO	2	CLOSE TO AVERAGE	NO	2	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
58	12 YRS	FEMALE	BENIGN CHILDHOOD EPILEPSY	FOCAL EPILEPSY	2	NO	4 YEARS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	87%	NO	25	NORMAL	NO	NO	40	NORMAL	YES	80	ABOVE CLINICAL THRESHOLD	NO	35	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	70	NO	25	NORMAL	NO	35	NORMAL	NO	1	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
59	10 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	NO	5 YEARS	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	88%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	35	NORMAL	NO	35	NORMAL	NO	35	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	35	NORMAL	NO	25	NORMAL	NO	1	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE

60	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	3 MONTHS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED SLOW SPIKES	NORMAL	92%	NO	35	NORMAL	NO	NO	25	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	55	NORMAL	NO	20	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
61	16 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	6 YEARS	LT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	90%	NO	40	NORMAL	NO	NO	20	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	YES	8	VERY HIGH	NO	NO	0	CLOSE TO AVERAGE	NO	NO	YES	70	80	NO	25	NORMAL	NO	40	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
62	10 YRS	FEMALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2.5 YEARS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	NO	40	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	85	ABOVE CLINICAL THRESHOLD	NO	55	NORMAL	NO	NO	YES	6	VERY HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	55	NORMAL	NO	50	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
63	11 YRS	FEMALE	ABSENCE SEIZURES	GTCS	1	NO	4 YEARS	GENERALISED 3HZ SPIKES AND WAVE DISCHARGES SEEN	GENERALISED	NORMAL	90%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	25	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	NO	4	HIGH	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	90	90	NO	50	NORMAL	NO	30	NORMAL	NO	1	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
64	12 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	YES	3 YEARS	NORMAL	NORMAL	NORMAL	92%	NO	45	NORMAL	NO	NO	55	NORMAL	NO	60	NORMAL	NO	35	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	80	80	NO	40	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
65	13 YRS	MALE	BENIGN SEIZURE OF ADOLESCENCE	FOCAL EPILEPSY	1	NO	3 YEARS	NORMAL	NORMAL	NORMAL	93%	NO	30	NORMAL	NO	NO	20	NORMAL	YES	40	NORMAL	NO	20	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	4	HIGH	NO	YES	YES	70	80	NO	55	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
66	10 YRS	MALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	NO	5 YEARS	NORMAL	NORMAL	NORMAL	93%	NO	25	NORMAL	NO	NO	40	NORMAL	NO	45	NORMAL	NO	25	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO		2	CLOSE TO AVERAGE	NO	YES	NO	60	80	NO	30	NORMAL	NO	30	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
67	5 YRS	FEMALE	COMPLEX FEBRILE SEIZURES	GTCS	1	NO	2 YEARS	OCCASIONAL BIFRONTAL SHARP WAVES SUGGESTIVE OF EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	96%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	30	NORMAL	NO	35	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	YES	6	VERY HIGH	NO	YES	NO	60	80	NO	20	NORMAL	NO	40	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
68	6 YRS	FEMALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	LT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	NO	25	NORMAL	NO	NO	20	NORMAL	NO	25	NORMAL	NO	45	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	60	80	NO	30	NORMAL	NO	50	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
69	5.5 YRS	MALE	ABSENCE SEIZURES	GTCS	1	NO	2 YEARS	GENERALISED 3HZ SPIKES AND WAVE DISCHARGES SEEN	GENERALISED	NORMAL	90%	NO	30	NORMAL	NO	NO	25	NORMAL	NO	20	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	2	CLOSE TO AVERAGE	NO	YES	6	VERY HIGH	NO	YES	YES	70	70	NO	40	NORMAL	NO	40	NORMAL	NO	2	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
70	7 YRS	MALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	LT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	88%	NO	40	NORMAL	NO	NO	30	NORMAL	NO	35	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	30	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
71	8.5 YRS	MALE	ABSENCE SEIZURES	GTCS	2	YES	3 YEARS	GENERALISED 3HZ SPIKES AND WAVE DISCHARGES SEEN	GENERALISED	NORMAL	90%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	25	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	40	NORMAL	NO	35	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
72	8 YRS	MALE	JUVENILE MYOCLONIC EPILEPSY	GTCS	1	NO	2 YEARS	GENERALISED POLYSPIKE AND WAVE DISCHARGES	GENERALISED SLOW SPIKES	NORMAL	87%	NO	55	NORMAL	NO	NO	50	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	35	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	20	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
73	14 YRS	MALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	45	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	60	NORMAL	NO	55	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	YES	8	VERY HIGH	NO	YES	YES	60	70	NO	40	NORMAL	NO	55	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
74	11 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	RT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	92%	NO	35	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	60	70	NO	20	NORMAL	NO	35	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
75	12 YRS	MALE	JUVENILE MYOCLONIC EPILEPSY	GTCS	1	NO	3 YEARS	GENERALISED POLYSPIKE AND WAVE DISCHARGES	GENERALISED FAST SPIKES	NORMAL	90%	NO	40	NORMAL	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	35	NORMAL	NO	25	NORMAL	NO	NO	NO	4	HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	60	80	NO	40	NORMAL	NO	25	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
76	10 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	5 YEARS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED SLOW SPIKES	NORMAL	88%	NO	40	NORMAL	NO	NO	50	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	35	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	60	70	NO	30	NORMAL	NO	45	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
77	7 YRS	FEMALE	ABSENCE SEIZURES	GTCS	1	NO	5.5 YEARS	GENERALISED 3HZ SPIKES AND WAVE DISCHARGES SEEN	GENERALISED	NORMAL	94%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	NO	2	CLOSE TO AVERAGE	NO	YES	7	VERY HIGH	NO	YES	YES	70	70	NO	45	NORMAL	NO	40	NORMAL	NO	1	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
78	13 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	2	YES	1 YEAR	OCCASIONAL TRANSIENTS OVER BILATERAL PARIETO-OCCIPITAL LEADS	FOCAL	NORMAL	95%	NO	45	NORMAL	NO	NO	20	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	4	HIGH	NO	NO	0	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	50	NORMAL	NO	50	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
79	10 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	95%	NO	55	NORMAL	NO	NO	25	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	55	NORMAL	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	55	NORMAL	NO	35	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
80	11 YRS	FEMALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	3 YEARS	NORMAL	NORMAL	NORMAL	93%	NO	55	NORMAL	NO	NO	35	NORMAL	NO	45	NORMAL	YES	85	ABOVE CLINICAL THRESHOLD	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	40	NORMAL	NO	55	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
81	16 YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	4 YEARS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENARALISED FAST SIKES	NORMAL	92%	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	45	NORMAL	YES	85	ABOVE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	4	HIGH	NO	YES	8	VERY HIGH	NO	YES	NO	80	90	NO	30	NORMAL	NO	40	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	9	CLOSE TO AVERAGE
82	13 YRS	MALE	BENIGN SEIZURE OF ADOLESCENCE	FOCAL EPILEPSY	1	NO	5 YEARS	NORMAL	NORMAL	NORMAL	97%	NO	25	NORMAL	NO	NO	55	NORMAL	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	3	SLIGHTLY RAISED	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	40	NORMAL	NO	50	NORMAL	NO	3	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
83	10 YRS	FEMALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED FAST SPIKES	NORMAL	96%	NO	30	NORMAL	NO	NO	55	NORMAL	NO	45	NORMAL	YES	80	ABOVE CLINICAL THRESHOLD	NO	NO	NO	4	HIGH	NO	NO	3	SLIGHTLY RAISED	NO	YES	NO	70	80	NO	50	NORMAL	NO	50	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
84	11 YRS	FEMALE	BENIGN SEIZURE OF ADOLESCENCE	FOCAL EPILEPSY	1	NO	2 YEARS	NORMAL	NORMAL	NORMAL	90%	NO	20	NORMAL	NO	NO	45	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	0	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	YES	70	70	NO	30	NORMAL	NO	40	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
85	10 YRS	FEMALE	ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	3 YEARS	NORMAL	NORMAL	NORMAL	88%	NO	20	NORMAL	NO	NO	40	NORMAL	NO	55	NORMAL	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	1	CLOSE TO AVERAGE	NO	YES	6	VERY HIGH	NO	YES	YES	60	80	NO	40	NORMAL	NO	35	NORMAL	NO	1	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
86	16 YRS	FEMALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	YES	2 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	87%	NO	25	NORMAL	NO	NO	45	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	65	BORDERLINE CLINICAL THRESHOLD	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	YES	70	80	NO	50	NORMAL	NO	25	NORMAL	NO	3	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE
87	11YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	2 YEARS	NORMAL	NORMAL	NORMAL	89%	NO	55	NORMAL	NO	NO	50	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	25	NORMAL	NO	NO	YES	6	VERY HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	80	80	NO	40	NORMAL	NO	30	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
88	12YRS	MALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	LT. CENTRO-TEMPORAL EPILEPTIFORM DISCHARGES	FOCAL	NORMAL	90%	NO	60	NORMAL	NO	NO	45	NORMAL	NO	60	NORMAL	NO	35	NORMAL	NO	NO	NO	2	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	30	NORMAL	NO	50	NORMAL	NO	2	CLOSE TO AVERAGE	NO	3	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
89	13 YRS	FEMALE	BENIGN ROLANDIC EPILEPSY	FOCAL EPILEPSY	1	NO	1 YEAR	GENERALISED EPILEPTIFORM DISCHARGES DURING PHOTIC STIMULATION	GENERALISED SLOW SPIKES	NORMAL	88%	YES	75	ABOVE CLINICAL THRESHOLD	NO	NO	50	NORMAL	YES	75	ABOVE CLINICAL THRESHOLD	NO	45	NORMAL	NO	NO	NO	1	CLOSE TO AVERAGE	NO	NO	2	CLOSE TO AVERAGE	NO	YES	NO	60	70	NO	40	NORMAL	NO	30	NORMAL	NO	2	CLOSE TO AVERAGE	NO	4	CLOSE TO AVERAGE	YES	8	CLOSE TO AVERAGE
90	16 YRS	MALE	OCCIPITAL LOBE EPILEPSY	FOCAL EPILEPSY	2	YES	3 YEARS	BILATERAL OCCIPITAL SPIKE AND WAVE DISCHARGES	FOCAL	NORMAL	90%	NO	60	NORMAL	NO	NO	55	NORMAL	NO	60	NORMAL	NO	50	NORMAL	NO	NO	YES	8	VERY HIGH	NO	NO	1	CLOSE TO AVERAGE	NO	YES	NO	70	80	NO	50	NORMAL	NO	40	NORMAL	NO	3	CLOSE TO AVERAGE	NO	5	CLOSE TO AVERAGE	YES	10	CLOSE TO AVERAGE