ANALYZING THE RELATIONSHIP BETWEEN EPILEPSY AND ITS PSYCHO-SOCIAL IMPAIRMENTS OF DIAGNOSED EPILEPTIC COLLEGE STUDENTS WITH NORMAL STUDENTS

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INTRODUCTION
Epilepsy is a neurological illness that causes seizures, which are rapid, involuntary, and time-limited changes in behavior, such as changes in consciousness, motor activity, autonomic functioning, or sensation caused by an excessive electrical discharge in the brain [1]. Epilepsy is diagnosed when two or more seizures occur within 24 hours of each other without a known trigger (unprovoked seizures) for the majority of persons with epilepsy, treatment with drugs and occasionally surgery can control phases. Seizures might last a lifetime for some people, but for others, it fades away with time. Some children with epilepsy may outgrow it as they get older [2].

Recurrent aspects of epilepsy are brief periods of uncontrollable movement involving a part of the body (partial) or full body (generalized) and are sometimes accompanied by loss of awareness and control of bowel or bladder function [3].

ABSTRACT
Background: Epilepsy is a neurological disorder in which there are abnormal electrical discharges, causing seizures or periods of unusual behavior, sensations, and sometimes loss of awareness. Epilepsy is a disorder that mainly affects the physical functioning of the patients but it also shows significant psychological and social consequences for everyday living. The primary objective of this study was to analyze the psychosocial impairments faced by the diagnosed epileptic college students compared with normal students. A total of 10 control group (group A) and a total of 10 experimental group (group B) were assessed and compared by using a questionnaire to find out the underlying psycho-social impacts. Short Form Healthy Survey (SF-36) questionnaire is used for this study. By considering various factors the experimental group was selected and the criteria have been discussed below.

Results: Based on this study, there is a significant statistical difference between the two groups regarding all the 8 domains Short Form healthy survey (SF-36). In this study, we chose both males and females, in which all of the diagnosed epileptic students of the experimental group are under treatment epilepsy. Subject’s age ranges between 18 - 23 years. The mean age of the experimental group is 21.5 years and the mean age of the control group is 21.8. 60% were females and 40% were males in the experimental group. 70% were females and 30% were males in the control group. In the experimental group, most of them were affected by social stigma (80%). However all the experimental subjects are under medication, they are unable to control the disease.

Discussion: The results of this study suggest that there is significant psychosocial impairment in the diagnosed epileptic students’ independent medications. This conclusion has been obtained from the statistical values which showed significant differences between the two groups. This study promoted the awareness of the impacts of epilepsy and related psycho-social & behavioral impairments among normal college students. By analyzing the results of this study, it is obvious that the physician must be aware of the patient’s mental state, social behavior, and emotional well-being. Music therapy, positive reinforcement, techniques to improve appropriate behavior and techniques to inhibit inappropriate behavior, improve affiliation are some of the many techniques which can be used to reduce the psycho-social and emotional impact of epilepsy in the experimental group.

Keywords: Psycho-Social Impairment, Epilepsy, Sf-36, Complications of Epilepsy, Social Behavior, Behavioral Changes.
types a divided into four major groups: 1. Generalized, 2. partial (sometimes referred to as focal or localized), 3. Complex partial (awareness impaired) and 4. Partial seizure with secondary generalization.

1. Generalized:
   - Seizures are caused by aberrant electrical impulses that run through the entire brain. Generalized tonic-clonic (grand-mal), Absence, Myoclonic, Tonic-clonic, Atonic [4].

2. Partial:
   - Electrical impulses generated from a relatively limited or localized area of the brain cause seizures (referred to as the focus). Motor, Sensory, Autonomic, Psychological [4].

3. Complex partial:
   - During these convulsions, patients appear to be “out of touch”, “out of it” are “starring into spaces” during these seizures [4].

4. Partial seizure with a secondary generalization:
   - It is a type of seizure that develops into a generalized seizure (typically a generalized, tonic-clonic, clonic seizures are common in the area (Erode, Tamilnadu) where the research was conducted. as a result, it was chosen as the epilepsy type in this study. There are so many factors that trigger generalized epilepsy such as genetics, fever, Autism, head injury, brain tumor, Alzheimer’s disease, stroke, meningitis, encephalitis, some congenital conditions such as down syndrome or tuberous sclerosis. In modern culture, using smartphones video games, watching TV or computer for a prolonged time along with more intake of junk foods, lifestyle style, and sleep quality also leads to epilepsy.

   - In generalized seizures, there will be loss of consciousness may that be accompanied by spasms, stiffening, violent involuntary muscle contraction, loss of muscle tone. In nearly half of those who suffer from epilepsy, there is no known etiology. The condition in the other half can be attributed to a variety of circumstances, including Genetic influence, Head trauma, Brain abnormalities, Infections, Prenatal injury, Developmental disorders [2]. Epilepsy can be triggered by a variety of factors. They are Age, Family history, Head injury, Stroke, and other vascular injuries, Dementia, Brain infections, Seizures in childhood [3].

   - Recurrent seizures are the most common symptom of epilepsy. However, a person can have one or more of the following symptoms: convulsion without a fever, a brief blackout or a jumbled memory, or intermittent fainting spells in which they lose bowel or bladder control, which are frequently followed by seizures. Extreme exhaustion appears perplexed, staring into places, making weird movements and, being unable to respond to questions or speak [5].

   - Epilepsy affects 0.5 to 1 % of the population, with 60% of them suffering from partial epilepsy [6]. Approximately 12 million people with epilepsy are anticipated to live in India, accounting for nearly a sixth of the world’s epilepsy population (70 million) [7]. The cases of epilepsy in older adults have been rising recently [8].

   - In some cases, epilepsy resolves but many people with epilepsy (PWE) spend their lives in community/home set up. In addition to epileptic seizures, PWE faces more challenges in daily living such as problems with school, employment, independent life, and obtaining a driver’s license. To resolve these hurdles, psycho-social support is required in addition to medical treatment [9].

   - Despite being defined by the presence of recurring seizures, epilepsy includes much more and a wide range of impairments in cognition, psychiatric status, and social adaptive functioning. National Commissions, Public Health Agencies, and Special Action Groups have issued calls for action in the past about its psycho-social impairments. “Possibly the least understood and most neglected aspects of epilepsy are the social, psychological and behavioral problems that are so common” [10].

   - Grief occurs at the recognition of being incapacitated comes through stages of shock, anxiety, bargaining and denial, mourning and depression, the internalized and externalized acknowledgment, and finally, acceptance and adjustment are attained [11]. Identification of the disease can result in many psychological issues. Anxiety arising from the unpredictability of seizures and feelings of loss of control and dependence are the other emotional states that may re-occur guilty conscience can result in affective disorder. Anxiousness combined with a guilty conscience can grow to become depression of the patient. Lack of energy and vigor may result from disrupted sleep patterns, while defensiveness can lead to the need for concealment, anger, and resentment [12].

   - Identification of epilepsy in their child leads to tension in parents, which results in a greater divorce rate. Parents’ focus on their epileptic kid can lead to a strained relationship between the child with epilepsy and his or her siblings, and then it will create psychological issues between the siblings. This kind of focus creates a negative impact on the family and relations among the family and its community is damaged, and this will result in patients with epilepsy that might make terrible parent themselves [13].

   - A higher prevalence of learning impairments and memory problems is found in people with epilepsy, frequently caused by comorbidity such as severe brain damage. During absence seizures, especially in school children, attention deficits occur. The
side effects of anti-epileptic drugs such as somnolence, attention deficit can affect educational achievement and are commonly worsened by poly-therapy  

In college students, epilepsy affects much more psycho-social, emotional and behavioral aspects than school children. Due to the unpredictability of epilepsy, the epileptic college students were not able to engage in their regular college lifestyle such as trekking, outing with their friends, traveling, bike riding, partying, etc. The preponderance estimation was found to range from 3.0 to 11.9 per 1000 population when either standard study instrument or ILEA case definition was used among the general population and it is found through the recent studies in the past 20 years, [15,16,17,18,19,20,21,22,23,24,25,26]  

According to the studies conducted through the World Health Organization (WHO) 2000, it is found that the worldwide physical, social, and economical consequences of epilepsy are high which accounts for 0.5% of the global burden of the disease [27]. Epileptic patients encounter many uncertainties, which include the diagnosis of their disease, the occurrence, and timing of the seizures, the nature of the seizures, and the best ways that they can be controlled [28].  

Patients with epilepsy have a 40-50% greater suicide rate when compared with healthy people [29]. Recent studies have found that people with epilepsy are more likely to be unemployed or underemployed and have lower rates of marriage and higher social isolation have been found in adults than the general population [30]. In epilepsy, the most serious hazard is not the disease itself, but the related behavior and psycho-social issues of the illness that are more likely to develop in patients with this disorder [31]. The International League Against Epilepsy (ILAE) combined with World Health Organization (WHO) recommends that removing the barriers of epilepsy will lead to a better life for the patients [32, 33].  

Epilepsy patients have been found to have a higher rate of psychological problems than persons with other chronic illnesses such as asthma, cardiac disorders, and diabetes [34]. In the past years, control of seizures in epileptic patients is seen as the most crucial clinical outcome. 30%-40% of the cases remained uncontrolled despite pharmacological intervention such as anti-epileptic drugs. These anti-epileptic drugs do not always control them [35].  

Social problems such as unemployment, social isolation, and psychiatric anguish contribute to the overall side effects of the therapy [32]. The associated problems of epilepsy may affect the quality of life of people with epilepsy. They have categorized themselves as having a lower quality of life and also more psycho-social problems than other disabled people [36]. Quality of medical management, over-protection, education, employment, marriage, and pregnancy is the major psychosocial problems related to epilepsy. The main reason for these psycho-social problems in epilepsy is inadequate treatment [37].  

In the USA, European countries, Canada, and other different countries have conducted numerous studies that have researched the psychosocial functioning and the quality of life in epilepsy, and the majority of the past researcher’s conclusions were obtained from wider international countries. Even though case findings in one country are used to support the health care practice in other countries, Differences in cultural regulations and practice in other countries make it difficult to generalize the results [38].  

Therefore, in addition to the care that is focused on the treatment and prevention of further episodes, physicians must also be aware of the patient’s psycho-social health includes the patient’s mental state, pre-morbid personality, behavioral changes, social adaptive problems, employment, and issues in the families.  

This study aims to:  

a) Analyze the diagnosed epileptic college students who suffer from the psycho-social impacts of the disease.  
b) Measure the extent of the psycho-social impacts by comparing the experimental group with the controlled group of the control group with the help of a basic questionnaire (SF-36).  
c) Awareness to the normal college students about the disease and its psycho-social, emotional and behavioral impacts  

PROCEDURE:  

Ten students were chosen as a control group who are free from any major health issues and ten students who are diagnosed with epilepsy were chosen to participate in the study. Formal consent is given by all the participants of the study. They were selected in various colleges across Erode district. All the diagnosed epileptic students were asked about their psychological and social well fare. These students were selected based on their Residence, Nationality, and lifestyle. The short-form health survey (SF-36) was given to all the patricians and their responses have been collected. The mean time for filling the form is 4 minutes. All the responses were collected from the form and converted to score values. These values have been interpreted into mean difference, standard deviation (SD), and one sample T-test value by using SPSS 28.0 version. The final values have been tabulated and graphs are drawn.  

The experimental group who were recruited are according to the following criteria;  

1. Participants must be diagnosed with epilepsy  
2. Their age should be between 18-23  
3. The participants must not have any acute disease, or chronic diseases such as diabetes, renal failure, hypertension, cardiac diseases, and physical deformities.  
4. Participants must be free from a brain tumor and not treated for psychiatric conditions.  
5. All the participants must be receiving treatment for epilepsy.
6. The participants must be free from any surgical treatments.
7. The patients must have had more than 10 episodes in the past 5 years.
8. All the experimental groups must be under the category of Generalized epilepsy
9. Patients must not have any underlying neurological disorder or any type of head injury.

The finalized sample size (10) was compared with the control group to find out the psychological, social, and behavioral problems faced by the experimental group and how it affects the student’s well-being in the college.

Parameters:
Short-form healthy survey - 36 (SF-36). A questionnaire format was chosen from the previous studies. [Reference related to this questionnaire is 39&40]

This questionnaire provides individual values for eight categories such as general health (GH), Physical functioning (PF), Role-limitation due to physical (RP), Role-limitation due to emotional (RE), Bodily Pain (BP), Energy/ Fatigue (E/F), Emotional/ Well-being (E/W), Social Functioning (SF). It provides its scores in three different domains as emotional, physical, and social.

Each question was given scores between 0-100. Values were obtained as 8 different domains. Mean, standard deviation (SD), and one sample T-test values were obtained for each domain. All the values of the different domains are compared as two different groups. The graph is drawn to compare the final values of the two groups.

Statistical analysis:
Statistical analysis was done using the Statistical Package for Social Sciences (SPSS) version 28.0. A descriptive statistic was used to the psycho-social characteristics of the sample. By using the obtained values “One-Sample T-Test” was used to find out the differences between the two groups.

Data analyzation:
Mean difference, standard deviation (SD), one sample T-test value has been obtained using the SPSS software 28.0 version and the test used was “One-Sample T-Test”. 3 graphs were a plot to show the values calculated for the 2 different groups and the variations between them. Graph 1 shows the mean difference of the 2 groups for all 8 domains. Graph 2 shows the standard deviation of the 2 groups based on all 8 domains. Graph 3 shows the one-sample t value of both the groups based on all the 8 domains.

Data Presentation
Table 1: This table shows the characteristics of both groups

<table>
<thead>
<tr>
<th>S.no</th>
<th>Characteristics of the sample</th>
<th>patients</th>
<th>control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>1</td>
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<tr>
<td></td>
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<td></td>
<td>23</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>3.</td>
<td>Duration of the disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 months - 1 year</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>1 year - 2 years</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Above 2 years</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>4</td>
<td>Number of episodes in past 5 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 - 12</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>13-15</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Above 15</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>5.</td>
<td>Sleep deprivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>7</td>
<td>70</td>
</tr>
</tbody>
</table>
Table 2: This table explains the calculated mean, standard deviation, and t value of the two groups

<table>
<thead>
<tr>
<th>Domains</th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MD</td>
<td>SD</td>
</tr>
<tr>
<td>GH</td>
<td>312.5</td>
<td>85.2</td>
</tr>
<tr>
<td>Physical limitation</td>
<td>745</td>
<td>177.1</td>
</tr>
<tr>
<td>RP</td>
<td>310</td>
<td>99.4</td>
</tr>
<tr>
<td>RE</td>
<td>240</td>
<td>69.9</td>
</tr>
<tr>
<td>Social</td>
<td>119.5</td>
<td>41.1</td>
</tr>
<tr>
<td>E/F</td>
<td>192</td>
<td>83.9</td>
</tr>
<tr>
<td>E/W</td>
<td>312</td>
<td>62</td>
</tr>
<tr>
<td>Pain</td>
<td>148</td>
<td>39</td>
</tr>
</tbody>
</table>

Graph 1: Mean Difference of the 2 groups based on all the 8 domains
Graph 2: Standard Deviation of the 2 groups based on all the 8 domains
Graph 3: One-Sample T Value of both the groups based on all the 8 domains
Results:

A sample of 10 diagnosed epileptic students (experimental group) and a sample of 10 normal subjects (control group) were obtained and assessed by the SF-36 questionnaire. All the participants have given the consent form and each of them has been accepted to participate in this study. The total duration of this study is one month. Each question was given the appropriate values and calculated the final score.

In the experimental group, 40% were male and 60% were female and the age group of subjects varies between 18-23. The percentage of the age group of subjects were 18 years - 0, 19 years - 20%, 20 years - 10%, 21 years - 10%, 22 years - 20%, 23 years - 40%. The duration of the disease among the experimental group is 6 months to 1 year - 30%, 1 year to 2 years - 40%, above 2 years - 30%.

In the control group, 30% were male and 70% were female and the age group of the control group varies between 18 to 23 and the percentage of their age group is 18 years - 0, 19 years - 20%, 20 years - 0%, 21 years - 0%, 22 years - 40%, 23 years - 40%.

In the experimental group, the students who had 10 - 12 episodes during their episode period are 30%, 13 - 15 episodes - 40%, above 15 - 30%. Triggering factor of the epilepsy: unknown - 50%, Stress - 20%, emotional instability - 10%, anxiety - 20%.

Between the 2 groups, the patient’s group expressed more emotional and social distress than the control group. About 60% of patients expressed that in a state of an emotional breakout, 30% were said to have depression, 20% of them were having anxiety.

Sleep deprivation of the experimental group is 70% and the control group is 60%. Usage of electronic gadgets of the experimental group is 1-2 hours is 20%, 2-3 hours is 50% and above 3 hours is 30%. Usage of gadgets in the control group is 1-2 hours is 10%, 2-3 hours is 30% and above 3 hours is 60%.

These scores were categorized as said in the above eight aspects. Mean, standard deviation (SF), one sample T-test value for all the eight domains was calculated and compared.

In Table 1, the characteristics of the participants are given which include age, sex, and duration of the disease. Table 2 shows the calculated mean difference, standard deviation (SD), and one sample T-test value of the two groups has been given.

Discussion:

After selecting 10 members for each group (control group and experimental group), all of them were given normal consent and participated in this study. Each of them was given a questionnaire (SF-36) and asked to fill it up. After getting the scores for the two groups, it is calculated as eight different domains as in the SF-36 format. All the values are calculated using the SPSS software and compared between the two groups.

After comparing the results which are obtained through the SPSS software, there is a significant difference between the two groups.

Pravina shah. J (Indian medical association 2002 May), States that social attitude towards the patient causes more psycho-social impact on the patient or their loved ones than the disease ever causes. There are many psycho-social issues related to this condition is to be unemployed or underemployed, and have lower rates of marriage and higher social isolation have been found in adults than the general population.

Michael D HILLS states that the impact of the disease on the person’s body is an integral part of the treatment process. It is an important part of the person’s self-integrity and identification. When the patient’s self-perception alters, self-esteem decrease. That will be traumatic to the adults. Self-identification as “epileptic” has its consequent perception of stigma.

J A Collings. Concluded that the self-perception of the patient’s condition is strongly related to overall well-being, seizure frequency, time since diagnosis, and good interpersonal relationship.

Rob Newsom., found that sleep deprivation increases the frequency of seizure duration and episodes also for those who didn’t have any previous history of seizures.
According to R C Ibekwe et al., the overall academic performance of the epileptic school-children without any other chronic illness is not very much different from the control group though they are under-achieving in some subjects. According to Venkatraman Saminathan, the relation to the higher inferiority complex and low academic performance has high inter-relations to one another.

Hidetaka Tamune et al. concluded that modulation of the emotional circuit of the amygdala may be associated with this phenomenon. Certain forms of emotional stimuli can trigger epilepsy episodes. Accurate findings to the emotional factor which stimulates epilepsy can lead to a reduction in epilepsy frequency.

Asma Khalid and Naeem Aslam., Concluded that comorbidity in patients with epilepsy is occurred due to psychological distress. Counseling to the patients and their family at the time of treatment can improve the coping of the distress during their illness.

The final result of my study is “There is a significant difference between the emotional, behavioral and psycho-social functioning of the experimental group and the control group”. Based on this study, it is found that there are significant variations in the psycho-social and emotional aspects.

After great effort and considering various factors, this study is finalized as a relevant study. This study will contribute to the student’s community awareness about epilepsy and its associated psychosocial behavioral impacts in which the diagnosed epileptic students are suffering.

This study’s findings have implications for psycho-social, emotional, behavioral aspects of epilepsy which are extracted from the patient’s experience can be used for future research on epilepsy disorders and associated disabilities.

Conclusion:

Based on the results, an alternate hypothesis is accepted based on the values obtained by the short-form healthy survey (SF-36) questionnaire which is given to both the experimental group and the control group. The values were obtained for all 8 domains. In all the 8 domains there is a significant difference, which implies the psycho-social well-being of the experimental group.

So that the study could be finally concluded that there is a significant difference between the emotional, behavioral, and psycho-social functioning of the experimental group and the control group.

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