



Education and Drug-Resistant Epilepsy in Adults and Children

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ABSTRACT

Background: Patients with drug-resistant epilepsy (DRE) find difficulties in completing their education due to many reasons. Education among adult and child patients suffering from drug-resistant epilepsy (DRE) has not been addressed in KFSHRC yet.

Objective: The aim of this study is to estimate the level of education that refractory epilepsy patients are receiving at school. The reason for difficulties confronted by the patients and shortage of attendance at school.

Method: An approved survey was distributed among 187 adult and children patients of refractory epilepsy at the King Faisal Specialist Hospital and Research Center, Riyadh, KSA.

Result: In our prospective cohort study, we were able to analyze the level of education that drug-resistant epilepsy (DRE) patients receive at school and the level of education acquired by the DRE patients. The responses were used to evaluate the causes of absence from school, difficulties confronted by the patients, and how drug resistance in patients hinders daily tasks. A question about the mental health of the patient, the reason for the shortage of attendance at school, or any social aspects that are making complications in attaining the right amount of education.

Conclusion: A significant number of patients had no problem while attending school. Whereas, the graph had a significant value when correlated with age and education about epilepsy. This means that the patients attend the school but lack knowledge or awareness about epilepsy. We should work on increasing awareness amongst the community.

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1. Introduction:

Epilepsy is a cluster of disorders marked by issues within the normal functioning of the brain. These issues produce uncommon body movements and a loss of consciousness or changes in consciousness. Sudden changes in behavior that occur are because of abnormal electrical activity within the brain which are referred to as seizures. It is a condition during which the brain (the cortex) channels abnormal electrical signals to the body. These signals unfold in alternative compartments of the brain and send rapid signals to the muscle, inflicting twitches or convulsions that can cause a seizure.

At the point when the body experiences a seizure, the indications are: the patient's eyes are usually open, the patient may cry or constantly move their legs and arms that

gradually slow down before stopping completely. These patients are, by and large, confused and shaken for anywhere from a moment to hours after a seizure. Patients who experience epilepsy are given medications for controlling the seizures, or occasionally, careful interventions when required which includes resective surgery, multiple subpial transections, hemispherectomy, corpus callosotomy.

Epilepsy consists of many types, some of which are based on the type of seizure the patient undergoes. These seizures are classified as generalized epilepsy, focal epilepsy, generalized and focal epilepsy, and some are unknown whether it is focal or generalized epilepsy.

Epilepsy has numerous conceivable causes and there are a few types of seizures that are idiopathic.



Anything that interferes with the typical neuron movement, from disease to mental stress to unusual mental health conditions, can prompt seizures. In patients with epilepsy, seizures are due to the frequent and uncontrollable rapid succession of action potentials. Medications used for seizures include drugs that will prolong the refractory states of the voltage-gated sodium channels, hence slowing or even stopping the action potentials. It can also develop because of irregularity in mind wiring, an asymmetry in nerve weakening or disturbance in endogenous chemicals called neurotransmitters, changes in cerebrum cells known as channels, or a combination of these and different components. Having a solitary seizure as a cause of a high fever (called febrile seizure) or from head injury does not indicate that a person has epilepsy. At the point when a person has had at least two or more seizures, he or she is considered to have epilepsy. Epilepsy can be genetic due to alterations of the genomic DNA copy number and gene regulatory elements or environmental causes like infectious diseases, head trauma, prenatal brain damage. Currently, it is one of the most common neurologic disorders in childhood (Kankirawatana, 1999).

These epilepsy patients face hardships due to seizures and determining alternative life activities for areas such as education, driving, or marriage, which they may face constraints due to their condition and as the high possibility of a sudden appearance of the seizure attack at any time of the day. Pregnancy is more complicated in DRE and antiepileptic drug users that can cause congenital malformations and developmental delay in the child. In the modern world, we live in, education, the continuous process of receiving knowledge and gaining the skill set required to carry out life activities smoothly and efficiently, has become one of the essentials of life. Patients with abnormal brain function often leave the education system due to socio-economic problems. Epilepsy accounts for 0.5% of the global burden of disease, a time-based measure that combines years of life lost due to premature mortality and time lived in less than full health. Epilepsy has significant economic implications in terms of health-care needs, premature death, and lost work productivity (World Health Organization (WHO), 2018).

Epilepsy is defined as a neurological disorder characterized by enduring predispositions to generate epileptic seizures, and it is practically applied when having two unprovoked seizures >24 hr. apart according to the International League Against Epilepsy (ILAE) about 50 million worldwide have epilepsy, it is considered one of the most common neurological disorders globally (WHO, 2018).

Drug-resistant epilepsy (DRE) is defined, as proposed by the International League Against Epilepsy (ILAE), as a type of epilepsy that has faced a failure of adequate trials of two tolerated and appropriately chosen and administered antiseizure drugs (whether as

monotherapy or in combination) to achieve seizure freedom (Kwan et al., 2010).

Many cases of academic difficulties have been reported among epileptic children even when they have normal intelligence (IQ ≥ 70); however, the true prevalence of epilepsy is unknown (Viteva, 2013).

This study focuses on how the education of children and adults is affected by the state of drug-resistant epilepsy. Children with DRE lack this opportunity due to the rapid and unpredictable nature of seizures which rises anxiety and safety concerns. Many pediatric patients feel uncomfortable with other children as they fear reactions from their peers regarding the effects and after-effects of seizures, as children do not understand the complexity; some adults who are attending to them also may not understand the situation.

Awareness of many of the brain abnormalities is not commonly understood, and many in the community do not understand how to control these types of situations and the people surrounding the suffering patient. By adulthood, people with epilepsy may or may not have completed their schooling. Thus, completion of school or lack of attendance is an important issue for children and adult patients with DRE. It is thus critical that society be educated about common disorders including seizure and epilepsy so that individuals can offer support to the patient when required.

Several population-based studies of the prevalence of epilepsy in the US showed that, in comparison to children without epilepsy, children with epilepsy exhibit higher rates of functional difficulties and academic problems. Moreover, children with epilepsy were also reported to experience more missed school days (Pastor et al., 2015).

Adults face more complications in their daily lives, such as not being advised to drive. This is because of the safety of both the patient and others. A patient with epilepsy can experience a seizure attack at any time, and if he/she is driving, it may result in the patient losing control of the vehicle, which can lead to damages that can be fatal.

Over the past few decades, increasing attention has been paid to chronic disorders that can adversely affect patients' quality of life (QoL), including physical limitations and a decreased ability to work, and subsequent financial problems. Chronic diseases are currently considered the leading cause of disability in the US and around the world. Epilepsy has a greater impact than some other chronic diseases on an individual's QoL as it has profound physical, psychological, and social consequences (Megari, 2013).

Several factors in these consequences include seizure unpredictability and the associated stigmatization, which are thought to contribute to this disability. Prior work demonstrated multiple QoL concerns and involve issues including the desire for increased independence (for example, driving, working, and social life).

Transportation/driving restrictions and anti-epileptic drug side effects were the two most commonly listed concerns (Megari, 2013).

2. Methods:

2.1. Procedure

A questionnaire was directed at the King Faisal Specialist Hospital and Research Center. The investigation was checked on and endorsed by the suitable morals' sheets before inception. People were qualified to take part if they met the accompanying incorporation criteria: they had been diagnosed with epilepsy; they were getting standard treatment for epilepsy, including antiepileptic drugs; they were age 13 and above; they had encountered seizures amid the earlier year, and they were ready to take an interest in filling the survey.

2.2. Distribution

The survey was distributed amongst the patients of King Faisal Specialist Hospital and Research Center by the authors who are students of Alfaisal University. The survey was explained and taken concern prior to distribution.

2.3. Study Measure

The participants finished the survey the same day and hand it over to the collectors. Statistic information including age, sexual orientation, marital status, occupation status, education level, seizure attack, attack recurrence, and the time since the last seizure, how long the attack last for, and compliance to epileptic medications taken; were gathered from their survey.

2.4. Data Analysis

The analysis includes two types of analysis, parametric and non-parametric. Parametric is used when the graph is distributed normally, such as the t-test. Here the biostatistician has used the non-parametric Wilcoxon/Kruskal-Wallis test after age analysis was done. Wilcoxon/Kruskal-Wallis test gives a mean and expected score. It also used contingency analysis in some graphs.

3. Discussion

During the survey collection patients requested more awareness programs about epilepsy and the different types of epilepsy; these are already ongoing in King Faisal Hospital and Research Center on a smaller scale. Through this research, it will give us chance to propose larger-scale awareness. Emails are being sent to all the patients who are registered in King Faisal Hospital and Research Center as awareness campaigns, and brochures are available at all times in the hospital in waiting areas.

Few of the patients refused to answer in consideration of their privacy or perhaps because of a cultural mindset regarding the disclosure of information or distrust on the researchers, reason for the research, and benefits they could gain. Privacy and confidentiality were

the main concern that was marked as a priority. The King Faisal Hospital and Research Center's ORA proofread and approved the questionnaire with the abstract; accepted the proposal and provided IRB approval.

4. Result:

A total of 187 patients had attended the refractory epilepsy clinic, at KFSHRC, Riyadh KSA, from January 2017-18 completed the questionnaire. Of the respondents, 160 (85.6%) attended school, 76 (40.6%) had mental stress, 66 (35.3%) of the people who attended school had mental stress. 43 (23%) had financial difficulties, 37 (20%) of people who attended school had financial difficulties. 41 (22%) had some social difficulties, 32 (17%) of people who attended school had some social difficulties. 15 (8%) had family issues, 14 (7%) of people who attended school had some family issues. 23 (12%) had all the previously mentioned domains.

Age is not a statistically significant factor in the existence of depression symptoms. But, the one-way analysis of age and symptoms of depression had not many significant results, yet the graph showed 0.942 Standard means for level 2. On the other hand, the knowledge about epilepsy is correlated with age showed (Figure 1) a significant relationship with a p (0.0075). Those who lack knowledge about epilepsy are older than those who had previous knowledge (age means 29.5 Vs 23.2). We have carried out a bivariate analysis between having surgery and school attendance and turned out to be insignificant. Most of our respondents 77% vs. 23 had attended public school ($p=0.0033$).

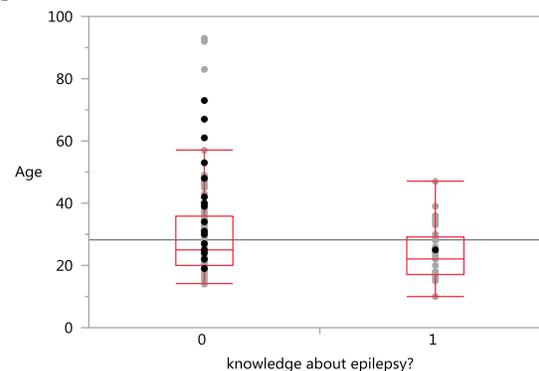


Figure 1. Describes the correlation between age and knowledge about epilepsy.

Here, 0-No and 1-Yes.

The pie chart has the percentage of DRE patients who attended the school. It explains that 86% of patients attended school regardless of the condition of DRE.

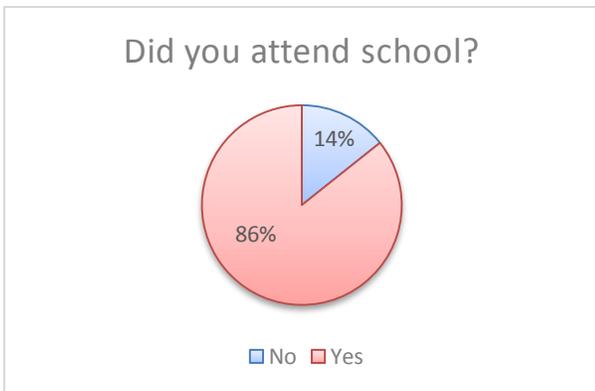


Figure 1. Describes the percentage of DRE patients who attended school.

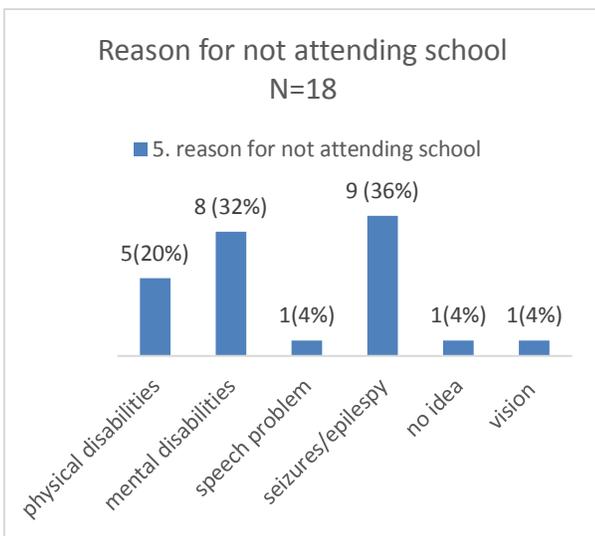


Figure 2. This table describes reasons for not attending school in Dre patients. In which, seizure/epilepsy has a high bar with 9 out of 18. Second highest of mental disability with 8 out of 18.

The graph here concludes that the majority of DRE patients avoid school due to seizures/epilepsy. This can be due to social embarrassment and a self-comforting resolution. Physical disability grades the second position which can be considered due to complications of DRE.

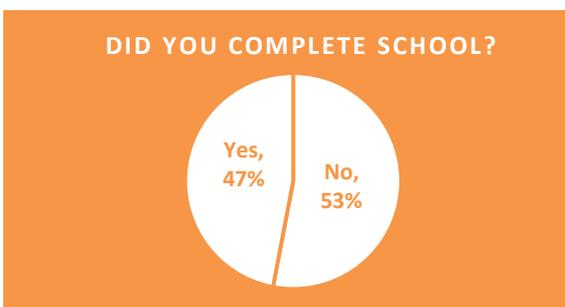


Figure 3. Pie chart explains the number of DRE patients who completed school.

The graph here explains the number of DRE patients who went to school. Here 47% completed the school whereas the majority with 53% did not complete school.

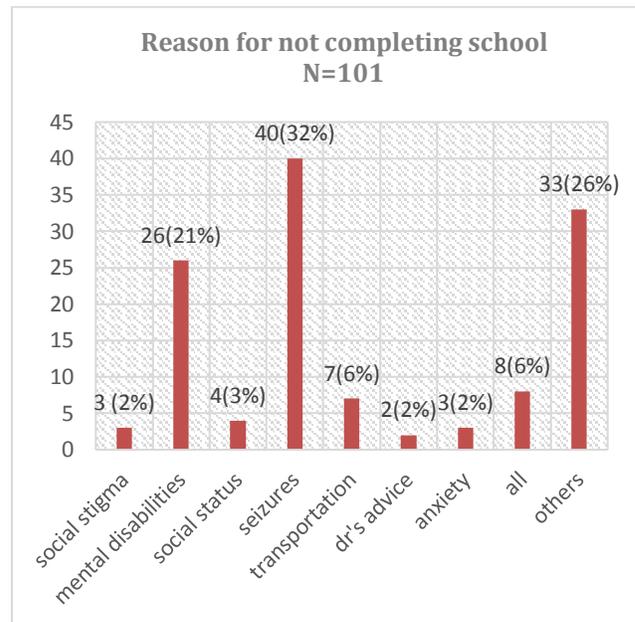


Figure 4. the bar graph includes the reasons for not to complete school.

The bar graph Figure 5 explains the reasons for not completing the school 53% in Figure 4. Here, seizures have been the major reason amongst all, with 40 participants and mental disabilities with 26 participants being the second major reason for not completing the school.

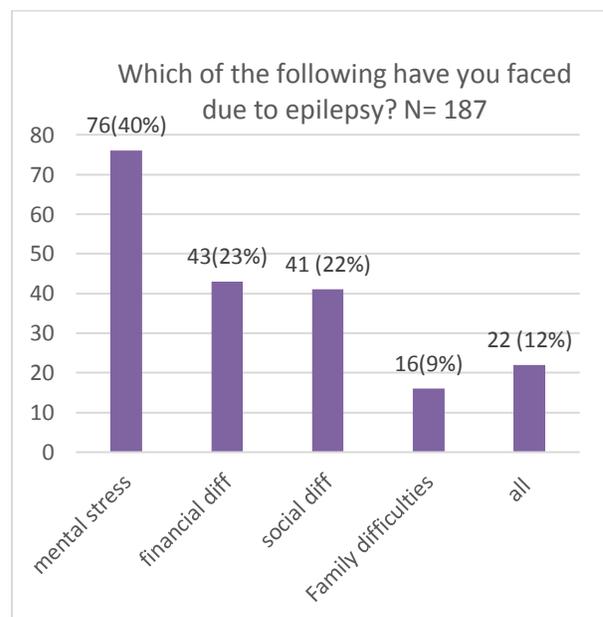


Figure 5. types and amount of each difficulty faced by the DRE patients due to epilepsy.



The above graph signifies that the DRE patients do suffer from one of the other difficulties mentioned here. Like, mental stress 40% which shows that epilepsy being a brain disorder has caused another burden on the mental state of the brain. Financial difficulties 23%, social difficulties 22%, family difficulties 9% and altogether 12%.

There was a significant relation between attending school and having all types of difficulties, the majority 91.2% didn't have all types of difficulties while attended schools compared to 8.8% who had all the difficulties.

5. Conclusion

Education is an important part of life, especially in the 21st century where technology and lifestyle are changing fast. Patients with drug-resistant epilepsy should get an equal amount, quality of knowledge, and education like any other children. From the graphs, it has been observed that there is a significant amount of DRE patients who attended the school without any difficulty. But many other DRE patients had problems while attending school. The majority amongst them answering a lack of attendance due to seizures and mental disabilities. This should be considered as even a small number is still noteworthy.

Knowledge about epilepsy is a rising topic within the communities, but the survey database has shown a great absence of basic background about epilepsy. The patient's family had little or no information about epilepsy that can be consequential and substantial.

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