

ORIGINAL ARTICLE

# Evaluation of School Absenteeism and Affecting Factors in Child Patients with Epilepsy

## Epilepsili Çocuk Hastalarda Okul Devamsızlığı ve Etkileyen Faktörlerin Değerlendirilmesi

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### ABSTRACT

**Aim:** Epilepsy is one of the common chronic diseases in childhood and puberty with a prevalence of nearly 0,5%. The children with epilepsy may suffer from such problems as school absenteeism and drop-out. This study is, therefore, intended to determine the frequency of school absenteeism in the children with epilepsy and the factors affecting it.

**Material-Method:** The children ranging from 12 to 17 years of age, diagnosed with epilepsy for at least one year in the department of pediatric neurology at Konya City Hospital and Bolu Abant İzzet Baysal University, were included in the study. Patients with no mental and motor comorbidities that would prevent them from attending school, and with school enrollment in the 2021-2022 academic year were included in the study. As the control group, the volunteers of the same age admitted to the department of pediatric health and diseases of our hospital for routine control in the absence of any health problem were included in the same study.

**Results:** 59 children diagnosed with epilepsy, ranging from 12 to 17 years of age, were admitted to the study and 51 children of the same age and sex group with no chronic diseases admitted to pediatric polyclinics were included in the study. 34 (56.7%) of the patients with epilepsy and 23 (45.1%) of the control group were males. All of the patients were absent from the school for more than one day and 4 (6.8%) patients had dropped out of the school due to their long absenteeism. None of the children in the control group dropped out of the school. The median number of the days of patients' absenteeism was 4, while that of the control group was 1. The term number of the days of patients' absenteeism was higher than that of the control group, and it was statistically significant ( $p<0.001$ ).

**Conclusion:** School education is quite important for the children diagnosed with epilepsy as for all children in terms of better adaptation to the society. It is thought out that school absenteeism should be as minimum as possible among the child patients with epilepsy.

**Keywords:** Childhood epilepsy, seizure, school absenteeism

### ÖZ

**Giriş:** Epilepsi, çocukluk ve ergenlik döneminde yaygın görülen kronik hastalıklardan birisi olup yaygınlığı yaklaşık olarak %0,5 kadardır. Epilepsili çocuklarda okula devamsızlığı ve okulu bırakma gibi sorunlar görülmektedir.

**Amaç:** Bu çalışmayla epilepsili çocuklarda okul devamsızlığı sıklığı ve etkileyen faktörlerin belirlenmesi amaçlanmıştır.

**Materyal-metod:** Konya şehir hastanesi ve Bolu Abant İzzet Baysal Üniversitesi çocuk nöroloji bölümlerinde en az 1 yıldır epilepsi tanısı ile takipli 12-17 yaş arası hastalar çalışmaya dahil edildi. Okula devam etmesine engel olacak mental yada motor bir komorbiditesi olmayan ve 2021-2022 eğitim öğretim yılında okul kaydı olan hastalar çalışmaya dahil edildi. Kontrol grubu olarak herhangi bir sağlık problemi olmayan rutin kontrol amacıyla hastanemiz çocuk sağlığı ve hastalıkları bölümüne başvuran aynı yaş grubundan gönüllüler çalışmaya dahil edildi.

**Bulgular :** Çalışmamıza yaşları 12-17 yıl arasında değişen 59 epilepsi tanılı çocuk hasta ile benzer yaş ve cinsiyette olup sağlam çocuk polikliniklerine başvuran ve herhangi bir kronik hastalığı bulunmayan 51 çocuk hasta kontrol grubu olarak çalışmaya alındı. Epilepsili hastaların 34'ü (%56.7), kontrol grubunun ise 23'ü (%45.1) erkekti. Hastaların hepsinde bir günden fazla okul devamsızlığı vardı ve devamsızlığının fazla olması nedeniyle 4 (%6,8) hasta okulu bırakmıştı. Kontrol grubundaki katılımcıların ise hiçbir okulu bırakmamıştı. Hastaların devamsızlık yaptığı gün sayısı ortanca 4 gün olup, kontrol grubunun devamsızlık yaptığı gün sayısı ise ortanca 1 gün idi. Hastaların okul devamsızlığı gün sayısı kontrol grubuna göre daha fazla olup istatistiksel olarak anlamlıydı ( $p<0.001$ ).

**Sonuç:** Toplumda daha iyi uyum sağlama açısından okul eğitimi tüm çocuklarda olduğu gibi epilepsi tanılı çocuklarda da çok önemlidir. Epilepsili çocuk hastalarda okul devamsızlığının mümkün olduğu kadar az olması gerektiğini düşünmekteyiz.

**Anahtar Kelimeler:** Epileptik nöbet, çocukluk çağı, okul devamsızlığı

### Introduction

Epilepsy is one of the common chronic diseases in childhood and puberty with a prevalence of nearly 0,5% (1). Epilepsy is a chronic disease that affects both the child and his/her family. Children with epilepsy may face neurocognitive and psychosocial problems, depending on its diagnosis and treatment. These neurocognitive and psychosocial problems,

concomitant with epilepsy and its treatment, affect the children's school life in a negative way (2). The causes of academic failure may be such comorbid cognitive disorders as school absenteeism, effects of seizure, effects of anti-epileptic drugs, and attention deficit, and such cases as the attitude of family and teacher (3). Children with epilepsy may be able to suffer from such

problems with their school life as school absenteeism, drop-out, grade repetition, lowered academic success, deteriorated and reduced friendships, failure to adapt to new friends' groups, and so on. The school life of the child with epilepsy is affected by the child's age, age of diagnosis, duration of the disease, seriousness of the disease, frequency of seizure, parental education level and parents' attitudes to the disease itself (4). Even though most of the studies examining the academic performance of the school-age children with epilepsy focus on the academic achievement and life quality of children with epilepsy, few studies have dealt with the impact of epilepsy on school attendance. In a prospective study conducted at a pediatric epilepsy clinic in Brazil, it was found that 88% of the patients did not attend the school at least for one day due to the seizures. Almost half of the parents (46%) believed that their children were required to drop out if they have a seizure at school (5). In another study, it was shown that the children with epilepsy had a high frequency of being hospitalized and not attending school and that they had inadequate and inefficient friendships. Not only do children themselves refuse to go to school but their parents may not want their children to go to school. It was reported that mothers got anxious and worried when their children were at the age of starting school and therefore they delayed sending them to school; it was also remarked that one third of the teachers did not know that their student was an epilepsy patient (6). In our country, there are few studies designed to determine the school life of the children with epilepsy. This study is intended to determine the factors affecting the frequency of school absenteeism among the children with epilepsy.

### Material-Method

The patients ranging from 12 to 17 years of age, who were followed with the diagnosis of epilepsy at the department of Pediatric Neurology at Konya City Hospital and Bolu Abant İzzet Baysal University for at least one year, were included in the study. While the patients without a mental or motor comorbidity that could prevent them from attending school, were registered at a school in 2021-22 training and education year, were included in the study, the patients with a mental or motor comorbidity that could prevent them from attending school, who were not registered at a school in 2021-22 academic year, were not included in the study. As the control group of the study, volunteers from the same-age group of children who came to the department of pediatric health and diseases of our hospital for routine control with no medical problems were included in the study. Comorbid conditions that may affect school absenteeism (eg, metabolic diseases, cerebral palsy) are more common in primary school age children with epilepsy, so they were not included in the study.

The patients' demographic findings such as their age, sex, epilepsy diagnosis period, number of seizures and response to the treatment as well as the anti-epileptic medicines they used were recorded in the standard

research form. Moreover, questionnaire questions investigating the patients' school absenteeism were recorded by asking the parents and families who agreed to take place in the study. The patients who reported that they were absent from the school at times were asked about the reasons for their absenteeism. Also, the number of days when the control group members were absent from the school was recorded with the information obtained from them and their parents.

Epilepsy is defined as the probability >60% of two unprovoked or reflex seizures occurring at a 24-hour interval at least or of a recurrence of seizure along with a single seizure (like the risk after two untriggered seizures), or as the diagnosis of an epilepsy syndrome (7).

The study was first approved by the University of KTO Karatay (EC number: E-2022/040). We collected no data that could be used to identify patients. As this was a non-interventional retrospective study, informed consent forms were considered not necessary.

### Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics Version 22.0 for Windows statistical software package (IBM Corp., Armonk, NY). Numbers and percentages were reported for discrete variables; continuous variables were expressed as mean and standard deviation for the data with normal distribution and as median and interquartile range (IQR) for non-normally distributed data. Chi-square (X<sup>2</sup>) test was used to compare nonparametric data; the Mann-Whitney U test was used in comparisons of non-normally distributed continuous data and independent-samples t test for normally distributed continuous data. P value < 0.05 was considered statistically significant.

Since no similar studies have been conducted previously on the frequency of school absenteeism in children with epilepsy, the case/control ratio was planned as 1:1. For the case group of 59 children with epilepsy, 51 healthy children were included in the control group. The power analysis of the study was retrospectively done with OpenEpi, v3, an open-source calculator, and the power was found 100%.

### Results

Fifty-nine children diagnosed with epilepsy, ranging from 12 to 17 years of age, were included in our study. In addition, 51 child patients were included in the study as the control group on condition that they were of the same age group and sex as the child patients with epilepsy and they applied to pediatric polyclinics without any chronic diseases. 34(56.7%) of the epilepsy patients were male, while 23 (45.1%) of the control group were male. A comparison between two groups in terms of sex distribution showed no statistically significant differences between the two

groups ( $p= 0.251$ ). The mean age of the patients with epilepsy included in the study was  $13.9\pm 1.38$  years (min-max: 12-17). The mean age of the control group was  $14.3\pm 1.4$  years (min-max: 13-15). There were no statistically significant differences between the two groups ( $p= 0.196$ ).

Considering the type of patients' seizure, it was determined that 37 (62.7%) of them were generalized, and 22 (37.3%) were focal. The characteristics of the patients are given in Table 1.

Thirty-eight (64.4%) of the patients were at a high-school, and 21 (35.6%) of them were at a secondary school. All of our patients were attending public schools. All of the patients were absent from the school for more than one day, and 4 (6,8%) of the patients had dropped out because their absent days were more. However, none of the participants in the control group had dropped out. The median number of the patients' absent days was 4 (interquartile range: 3-12), while the median number of the control group's absent days was one (interquartile range: 1-2). The patients' absent days at school was more than that of the control group, and this difference was statistically significant ( $p<0.001$ ). A comparison between the patients and the control group is given in Table 2.

No statistically significant differences were determined between the two groups in terms of absenteeism of two sexes ( $p= 0.604$ ). Also, no statistically significant differences were found between the patients who received polytherapy and those who received monotherapy in terms of absenteeism ( $p= 0.975$ ). When we compared patients at high-school, and patients at secondary school, no statistically significant difference was observed in terms of school absenteeism ( $p=0.767$ ).

When the patients were asked why they were absent from the school, all of them said that they were absent partly because they went to hospital for a control by their doctor; 35 (59.3%) of them said that they were absent because they felt bad and ill on some days; 16 (27.1%) of them said that they were absent because they were captured by the fear and anxiety that they could have a seizure at school; 15 (25.4%) of them said that they were absent because they had an epileptic seizure.

When the control group was asked why they were absent from the school, all of them said that they were at hospital that day for routine medical control; 21 (41.2%) of them said, however, that they were absent because they felt sick for various reasons, such as upper respiratory tract infection, acute gastroenteritis, and so on.

It was determined in our study that 7 (11.8%) of the parents had a labor loss for 3.6 days (2-8 days) on average because of their child's absenteeism due to his/her current disease.

All of our patients stated that their disease was known

to their teachers and they did not face any negative attitude from them as regards their disease.

**Table 1.** Characteristics of Patients

<b>Age (years)</b>	
Mean $\pm$ SD	13.9 $\pm$ 1.38
Min-max	12-17
<b>Sex, n(%)</b>	
Male	34 (57.6)
<b>Duration of epilepsy in years</b>	
Median (IQR)	3 (1-10)
<b>Seizure type, n(%)</b>	
Focal onset	22 (37.3)
Generalized onset	37 (62.7)
<b>Seizure frequency</b>	
$\leq 1$ per month	34 (57.6)
$> 1$ per month	25 (42.4)
<b>Type of therapy, n(%)</b>	
Monotherapy	36 (61)
Poly-therapy	23 (39)

**Table.2.** Comparison of Patients and Control Group

	Patients (n:59)	Control Grup (n:51)	P
<b>Age (years)</b>			
Mean $\pm$ SD	13.9 $\pm$ 1.3	14.3 $\pm$ 1.4	0.196
Min-max	12-17	12-17	
<b>Sex, n(%)</b>			
Male	34 (%57.6)	23 (%45.1)	0.251
<b>Childs level of education, n(%)</b>			
Secondary school	21 (%35,6)	16 (%31,1)	0.685
High school	38(%64,4)	35 (%68,6)	
<b>Number of days missed</b>			
Median (IQR)	4 (3-12)	1 (1-2)	<b>&lt; 0.001</b>

## Discussion

Epilepsy is a common neurologic disease in childhood, thus having a significant effect on the child's school life (8). In our study, the number of the patients' absent days at school was higher than that of the control group and this difference was statistically significant ( $p<0.001$ ). When the causes of their absenteeism were examined and assessed, all of them said that they were absent partly because they went to hospital

for a control by their doctor; 35 (59.3%) of them said that they were absent because they felt bad and ill on some days; 16 (27.1%) of them said that they were absent because their parents were captured by the fear and anxiety that they could have a seizure at school; 15 (25.4%) of them said that they were absent because they had an epileptic seizure at school.

A literature review showed, however, that in a study by Aguiar et al. 88% of the children with epilepsy could not attend their school one day at least due to the medical appointment, seizure and the tests related to epilepsy (EEG, MRI, blood test, etc.) (5). Ali D. et al. reported in their study that 51% of the children with epilepsy were absent from their school for five days and more a month (9). It appears that the rate of absenteeism among the children with epilepsy is high and their school attendance is affected by the treatment process, seizures, family's attitude to the disease and the child. Protective family attitude can be a reason for the increase in the child's school absenteeism. And in turn, school absenteeism can enhance the epileptic children's academic difficulties. In our study, 4 (6.8%) patients were obliged to drop out due to the high frequency of their seizures. In their study, Hassen O. et al. reported that 4 (2.2%) patients dropped out for the same reasons (10), while Duggan M.B. et al. determined in their study that 43.2% of 162 epileptic children dropped out because of frequent seizures, their families' refusal to send them to school, and their own rejection of going to school (4). The school dropout rate was lower because our patients had better seizure control compared to the literature.

In the previous studies in which teachers' knowledge of and attitudes to the children diagnosed with epilepsy were evaluated, it was observed that some teachers adopted a negative response to epilepsy (9,11,12). In our study, we did not evaluate the teachers' knowledge and attitudes by directly asking them, but we asked the patients and their parents about the teachers' responses to their disease, and received the reply that they received no negative attitudes and behaviors from their teachers.

In the previous studies on the effect of antiseizure drugs on school absenteeism, a negative effect of polytherapy (the use of more than one anti-epileptic drug for treatment) was observed (3,8), while in our study a comparison between the patients who took a polytherapy and those who took a monotherapy revealed no statistically significant differences in terms of absenteeism from school.

It was determined in our study that 7 (11.8%) of the parents had a labor loss for 3.6 days (2-8 days) on mean because of their child's school absenteeism due to his/her current disease. This finding shows that epilepsy can affect not only the child's school life but also the parents' work life.

The limitation of our study was that there were fewer patients in our study than in literature. However,

despite this limitation, our study is multicenter, we are of the belief that our study has some strengths, which are that a specific age group (school-aged epileptic children with no mental or motor comorbidity) were examined, that a comparison was made between our patients and a healthy control group of the same age group.

In conclusion, school education is quite important for the epileptic children as well as for all children in terms of adaptation to the society around them. We are of the conviction that school absenteeism should be as low as possible among the children with epilepsy. In our study, the patients' school absenteeism was significantly higher than that of the healthy control group. The most frequent cause of school absenteeism was medical appointment, followed by the parents' apprehension of the likelihood that their child may have a seizure at school and by the child's experience of epileptic seizure at school. Therefore, epileptic child patients' school absenteeism might be lessened by the doctor's encouragement that they should go to school after the medical appointment, by providing a treatment for a more effective control of the seizure, and by providing the parents and/or family with psychological consultancy, if necessary, about their apprehension over their child's possible seizure at school.

#### Ethical Approval

The study was first approved by the University of KTO Karatay (EC number: E-2022/040). We collected no data that could be used to identify patients. As this was a non-interventional retrospective study, informed consent forms were considered not necessary. This study was approved by the Ethics Committee at the promoting hospital.

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**Declaration of competing interest:** The authors have no conflicts of interest.

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