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ORIGINAL RESEARCH

Quality of Life in Children Diagnosed with Epilepsy: An Analysis of Comorbid Psychiatric Disorders, Psychiatric Symptoms of Parents and Family Functionality

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Abstract

Objective: The aim of this study is to evaluate the comorbid psychiatric disorders, psychiatric signs and symptoms of the mother and family functionality in children with epilepsy, as well as to examine the relationship between the mentioned variables and quality of life.

Methods: The study was conducted with 31 children between the ages 8-11 with a diagnosis of epilepsy for at least 6 months and their mothers; and 30 healthy children of the similar age group and their mothers as the control group. Childhood Depression Inventory (CDI), Children State-Trait Anxiety Inventory (STAI-CH), Pediatric Quality of Life Inventory (PedsQL) was used for children in the Epilepsy and control groups, State-Trait Anxiety Inventory (STAI), Symptom Checklist-90-Revised (SCL-90-R) and Family Assessment Device (FAD) was used for mothers in both groups.

Results: According to the results of our study the CDI scores of children in the epilepsy group were found to be significantly higher than of those in the control group. No significant difference was found between both groups in terms of their STAI-CH scores, as well as in terms of total STAI and SCL-90-R scores of mothers in both groups. However, the Ange and Hostility subscale scores of mothers in the epilepsy group were found to be significantly higher than of those in the control group. In addition, the PedsQL total and subscale points of children in the epilepsy group were found to be significantly lower than of those in the control group. A negative correlation has been detected between the PedsQL scores of the epilepsy group and the children's CDI and STAI-CH scores, the STAI and SCL-90-R scores of the mothers and the FAD scores. Moreover, it was determined that the depression level of the children in the epilepsy group had a significant effect on the quality of life.

Conclusion: Our findings suggest a correlation between the quality of life in children with epilepsy and the psychiatric symptoms of children and mothers as well as family functionality.

Keywords: Epilepsy, Psychiatric Disorders, Quality of Life, Family Functionality

INTRODUCTION

Epilepsy is one of the most prevalent childhood chronic diseases (1). The prevalence of epilepsy in the general population is 0.5-0.8%, while it is 0.8% in the 0-16 age group (2). The main factors impacting the prognosis of epilepsy in the pediatric age group include age, type of epilepsy, etiology, treatment initiation period, accompanying EEG disorder, neuropsychological development of the patient, and multiple drug therapy (3). Epilepsy significantly affects the quality of life of pediatric patients, albeit the success of treatment is high (4).

Many studies have revealed that children with epilepsy have a greater deterioration in health-related quality of life compared to the healthy controls and children with non-neurological chronic diseases (5, 6, 7). The age of the child, the frequency of seizures, as well as the adverse effects of the anti-epileptic medications used were found to be the factors directly associated with the quality of life in children with epilepsy (8, 9, 10). Moreover, studies on this issue suggest that the quality of life in children with epilepsy is also associated with the mental health problems of the children and their parents (11, 12, 13, 14, 15). Another factor that is known to adversely affect the quality of life is family functioning (16).

In general terms, family functioning involves family members' emotional attachment to each other, communication, roles, adaptation, and problem-solving

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skills. The presence of chronic disease in children impacts family functioning by causing many changes in the family (16, 17). Studies on the subject reveal that together with the child diagnosed with epilepsy in the family, parents and other family members are adversely affected by this situation, family functions are impaired due to the disease, and the quality of life of the family is adversely affected as well (18, 19,20).

It is noticed in studies investigating the quality of life of children with epilepsy in Turkey, that the clinical characteristics of the child are evaluated more, whereas studies investigating the mental disorders and family functioning of the child and parent are relatively limited (13, 14, 20, 21, 22, 23). It is considered that a detailed assessment of the factors associated with the quality of life of a common neurological disease such as epilepsy is crucial in terms of a holistic treatment approach.

The aim of this study is to evaluate the comorbid psychiatric disorders, psychiatric symptoms-findings of their mothers and family functioning in children with epilepsy, and also to scrutinize the relationship between the mentioned variables and quality of life. The primary hypothesis of this study is that the level of accompanying psychopathology, psychiatric symptoms in their mothers and deterioration in family functionality in children diagnosed with epilepsy will be significantly higher than in those without epilepsy. The secondary hypothesis of the study is that the level of deterioration in quality of life will increase significantly in children with epilepsy in the presence of the three risk factors.

MATERIALS AND METHODS

Participants

The case group of the study was selected among 42 children who applied to Ankara University Faculty of Medicine, Department of Pediatric Neurology between October 2010 and November 2011 and were followed up with a diagnosis of epilepsy for at least 6 months. Since 8 of the participants did not attend the intelligence test for children, and 3 of the mothers were not included in the study because they filled in the evaluation scales incompletely. As a result, 31 children and their mothers were included in the epilepsy group. For the control group, 30 healthy children in the same age group who met the inclusion criteria were selected by simple random sampling method from different educational institutions at primary education level and included in the study with their mothers.

Inclusion criteria for the epilepsy group were determined as being between 8-11 years of age, having idiopathic epilepsy, no chronic disease other than epilepsy, a normal IQ level, and no use of psychotropic medications. Inclusion criteria for the control group were determined as being between 8-11 years of age, having no chronic disease, a normal IQ level, and no use of psychotropic medications. Exclusion criteria of the study were determined as the presence of any chronic medical disease other than epilepsy, accompanying pervasive developmental disorder, psychotic disorder, mental retardation (having an IQ less than 80 points), and use of psychotropic medications.

Ethics committee approval of the study was obtained from Ankara University Faculty of Medicine Clinical Research Evaluation Committee on November 29th, 2010 (Decision No: 19–403).

Measures

Sociodemographic Data Form: This form, which was prepared by the researchers, consists of questions describing the demographic characteristics of the child such as age, sex, maternal age, and educational status.

Epilepsy Information Form: This form, prepared by the researchers, involves information such as seizure type, frequency, age of onset of the disease, medications used, and adverse effects.

Wechsler Intelligence Scale for Children – Revised Version (WISC-R): It was developed by Wechsler in 1949 to quantify the intelligence level of children aged 6–16, and standardization studies were conducted in 1974. Its standardization study on Turkish children was conducted by Savasir and Sahin (24).

Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version (K-SADS-PL): This assessment tool was developed by Kaufmann et al. Turkish validity and reliability studies of this interview tool were conducted by Gokler et al (25).

Childhood Depression Inventory (CDI): CDI is a 27-item self-assessment scale that can be administered to children and adolescents aged 6-17. Each sentence set contains statements about the symptoms of childhood depression. The answers given are scored between 0 and 2 points. The highest score of the inventory is 54. The cut-off score was suggested as 19. Turkish validity and reliability studies of the inventory were performed by Oy (26).

State-Trait Anxiety Inventory for Children (STAI-CH): Trait Anxiety Inventory (TAI) consists of 20 items. The

child is asked to assess how he or she "generally" feels and to select the most appropriate option based on the frequency of occurrence of the situation given in the item. The State Anxiety Inventory, which aims to assess emotions such as anxiety, nervousness, haste, and uneasiness, consists of 20 items. The highest score that can be obtained from the Trait Anxiety Inventory and the State Anxiety Inventory is 60, and the lowest score is 20. Turkish validity and reliability study of STAI-CH was conducted by Ozusta (27).

Pediatric Quality of Life Inventory (PedsQL): PedsQL consists of 7 forms including parent form for children or adolescents aged 2–4, 5–7, 8–12, 13–18 years, and Self-report form for children or adolescents aged 5–7, 8–12, and 13–18 years. PedsQL consists of 23 items and scoring is done in 3 sub-domains: Scale Total Score (STS), Physical Health Total Score (PHTS), Psychosocial Health Total Score (PSTS), which assesses emotional, social, and school functioning. The form of the scale used for children and adolescents between the ages of 8-18 is a 5-point Likert type scale. The higher the total PedsQL score, the better the health-related quality of life is considered. Turkish validity and reliability studies of the scale were performed by Memik et al (28).

State-Trait Anxiety Inventory (STAI): This scale, which was developed for adults, consists of two subscales, trait (TAI) and state anxiety inventories (SAI), each containing 20 questions. A high score indicates a high level of anxiety, whereas a low score indicates a low level of anxiety. The Turkish validity and reliability study of the scale was conducted by Oner and Le Compte (29).

Symptom Checklist-90-Revised (SCL-90-R): This scale, which measures psychiatric symptoms, consists of 90 questions. The SCL-90-R consists of 10 subtests including Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Anger and Hostility, Phobic Avoidance, Paranoid Ideation, Psychoticism, and Additional Symptoms. There are five options to mark for each item. A score above 1 indicates that there might be a disorder. The Turkish validity and reliability study of the scale was performed by Dag (30).

Family Assessment Device (FAD): FAD, which assesses family functioning, can be administered to every family member over the age of 12. FAD has 60 items and seven subtests including Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, Behavioral Control, and General Family Functions. An increase in each scale score indicates more impairment in functioning. The test-retest reliability of the scale varies between 0.62 to 0.90. It was adapted to Turkish by Bulut (31).

Process

The children and their mothers who made up the study group were informed about the objective and method of the study and their written consent was obtained. Psychiatric diagnostic evaluations of the children in epilepsy and control groups were performed via the K-SADS-PL administered by a child psychiatrist. Psychiatric symptoms of mothers included in the study were assessed via inventories, and no diagnostic evaluation was made by a psychiatrist. The epilepsy information of the epilepsy group was assessed using the "Epilepsy Information Form" prepared by the researchers. The IQ levels of the children in epilepsy and control groups were assessed via the WISC-R administered by a specialist psychologist. Besides, the children were administered CDI, STAI-CH, PedsQL, and mothers were administered the STAI, SCL-90-R, and FAD.

Statistical Analysis

All data were analyzed using the software of Statistical Package for Social Science (SPSS) (IBM Inc.) Windows version 22.0. The evaluation of the data was made at the 95% confidence interval and at the $p<0.05$ significance level. In the analysis of descriptive data, percentage, frequency, mean and standard deviation were taken into account. "Chi-square and/or Fisher's Exact test" was used to compare categorical variables in groups. In the comparison of continuous variables of the groups, "Student t-test" was used when parametric assumptions were met, and "Mann-Whitney U test" was used when parametric assumptions were not met. The level of correlation in continuous data was analyzed via the "Pearson correlation test". The predictive effect of independent variables on the dependent variable was evaluated with "multiple linear regression analysis".

RESULTS

The mean age of the children in the epilepsy group was 10±1.03 years, and the mean age of the control group was 9.9±1.13 years. While 18 (58.1%) of the epilepsy group were females and 13 (41.9%) were males, 15 (50%) of the control group were females and 15 (50%) were males and no significant difference was found ($p>0.05$). The mean age of the mother in the epilepsy group was 34.81±5.71 years, and the mean age of the mother in the control group was 35.03±5.31 years.

When the educational status of the mothers in the group was analyzed, 21 (67.7%) of the mothers in the epilepsy group were primary school graduates, 8 (25.8%) were high school graduates, and 2 (6.5%) were university graduates, while in the control group, 16 (53.3%) of the mothers in was primary school graduates, 9 (30%) of them was high school graduates, and 5 (16.7%) were university graduates. When the family income level of the groups was analyzed, it was determined that 12 (38.7%) individuals from the epilepsy group had poor (income level is lower than expenditure level), 13 (41.9%) of them had moderate (income-expenditure levels are equal), and 6 (19.4%) (income-expenditure levels are equal) had a good (income level higher than expenditure level) income level, while in the control group, 12 (40%) had a poor income level, 12 (40%) had a medium-income level, and 6 (20%) had a good income level. No significant difference was found between the groups in terms of maternal age, maternal educational status, and family income level (p>0.05). The mean age of the first seizure of the children in the epilepsy group was 7.39±2.12 years, and the mean duration elapsed after the last seizure was 15.61±8.65 months. It was found that 29 (94%) of the children in the epilepsy group were treated with a single medication, and 2 (6%) received dual medication therapy, while 4 (13%) of the children had adverse effects due to anti-epileptic medications, and 27 (87%) had not any side effects.

It was determined that 17 (54.8%) of the children in the epilepsy group had at least one psychiatric disorder, and 9 (30%) of the children in the control group had at least one psychiatric disorder, whereas 14 (45.2%) of the children in the epilepsy group had no psychiatric disorder and 21 (70%) of the children in the control group had no psychiatric disorder. No significant difference was found between the two groups regarding psychiatric disorder rates, the number of comorbid psychiatric diseases, and diagnosis distributions (p> 0.05) (Table 1).

When the mean CDI scores of the groups were compared, the CDI scores of the epilepsy group were found to be significantly higher (p=0.02). No significant difference was found between epilepsy and control groups in terms of mean TAI-CH and SAI-CH scores (p>0.05). When the PedsQL scores of the groups were compared, PHTS (p=0.01), PSTS (p=0.02), and STS (p=0.02) were found to be significantly lower in the epilepsy group (Table 2).

Evaluation of PedsQL Scores According to Epilepsy Type in Epilepsy Group given in Table 3. No statistical difference was found between PedsQL scores according to epilepsy type (p>0.05).

Table 1. Comparisons of Epilepsy and Control Groups in terms of Psychiatric Disorders

	Epilepsy Group (n=31)		Control Group (n=30)		p
	n	%	n	%	
Psychiatric Disorder					
Yes	17	54.8	9	30	0.05
No	14	45.2	21	70	
Number of Psychiatric Diagnoses					
One	9	52.9	5	55.6	0.61
Two-Three	8	47.1	4	44.4	
Psychiatric Disorders					
Depression	2	6.5	0	0	0.49
Anxiety Disorders	6	19.4	4	13.3	0.73
ADHD	11	35.5	5	16.7	0.09
Oppositional Defiant Disorder	3	9.7	0	0	0.23
Tic Disorder	2	6.5	2	6.7	0.99
Enuresis	1	3.2	2	6.7	0.61
Encopresis	1	3.2	0	0	0.99

*p <0.05; Fisher's Exact Test, Chi-Square Test; ADHD: Attention Deficit Hyperactivity Disorder, ODD: Oppositional Defiant Disorder

Table 2. CDI, STAI-CH and PedsQL Scores of Epilepsy and Control Groups

		Epilepsy Group (n=31) (Mean±SD)	Control Group (n=30) (Mean±SD)	p
CDI		9.58 ± 6.56	5.67 ± 4.03	0.02*
STAI-CH		27.94 ± 6.66	25.33 ± 3.53	0.16
PedsQL	PHTS	74.70 ± 15.06	83.33 ± 10.55	0.01*
	PSTS	73.44 ± 16.36	81.67 ± 10.85	0.02*
	STS	73.88 ± 14.81	82.25 ± 9.20	0.02*

*p <0.05; Mann-Whitney U Test, T Test; CDI: Childhood Depression Inventory, STAI-CH: State-Trait Anxiety Inventory for Children, PedsQL: Pediatric Quality of Life Inventory, PHTS: Physical Health Total Score, PSTS: Psychosocial Health Total Score, STS: Scale Total Score

No significant difference was found between epilepsy and control groups in terms of mothers' TAI and SAI scores (p>0.05). When the psychiatric symptom screening list subscale scores of the mothers in both groups were analyzed, the Anger and Hostility subscale scores of the mothers in the epilepsy group were found to be significantly higher than the mothers in the control group (p=0.02). When the family assessment scale subscale scores of the groups were compared, the General Family Functions scores of the epilepsy group were found to be significantly higher than the control group (p=0.04) (Table 4).

Table 3. Evaluation of PedsQL Scores According to Epilepsy Type in Epilepsy

Epilepsy Type	Epilepsy Group (n=31) (Mean±SD)	p
Simple partial	80.02 ± 8.77	0.084
Complex partial	77.17 ± 18.16	
Generalized tonic clonic	73.18 ± 15.10	
Absence	50.54 ± 8.45	

*p <0.05; Kruskal Wallis-H Test; PedsQL: Pediatric Quality of Life Inventory

Table 4. SAI, TAI, SCL-90-R, FAD Scores of Mothers in Epilepsy and Control Groups

	Epilepsy Group (n=31) (Mean±SD)	Control Group (n=30) (Mean±SD)	p
SAI	36.77 ± 9.32	34.50 ± 7.81	0.30
TAI	45.42 ± 9.47	42 ± 9.01	0.15
SCL-90-R			
Somatization	1.13 ± 0.86	0.76 ± 0.71	0.06
Obsessive-Compulsive	1.67 ± 0.79	0.98 ± 0.72	0.32
Interpersonal Sensitivity	1 ± 0.68	0.86 ± 0.63	0.41
Depression	1.05 ± 0.70	0.86 ± 0.76	0.31
Anxiety	0.82 ± 0.70	0.58 ± 0.56	0.15
Anger and Hostility	1.01 ± 0.78	0.58 ± 0.58	0.02*
Phobic Avoidance	0.59 ± 0.78	0.31 ± 0.36	0.27
Paranoid Ideation	1.08 ± 0.81	0.81 ± 0.68	0.16
Psychoticism	0.51 ± 0.58	0.35 ± 0.36	0.20
Additional Symptoms	1.07 ± 0.69	0.74 ± 0.78	0.08
General Symptom Level	0.95 ± 0.64	0.69 ± 0.54	0.10
FAD			
Problem Solving	1.94 ± 0.66	1.76 ± 0.51	0.23
Communication	1.89 ± 0.65	1.67 ± 0.49	0.14
Roles	2 ± 0.46	2.03 ± 0.48	0.74
Affective Responsiveness	1.77 ± 0.73	1.60 ± 0.43	0.62
Affective Involvement	2.34 ± 0.39	2.32 ± 0.35	0.89
Behavioral Control	2.06 ± 0.29	2 ± 0.35	0.51
General Family Functions	1.90 ± 0.60	1.63 ±0.43	0.04*

*p <0.05; Mann-Whitney U Test, T Test; SAI: State Anxiety İnventory, TAI: Trait Anxiety Inventory, SCL-90-R: Symptom Checklist-90-Revised FAD: Family Assessment Device

When the relations between PedsQL and CDI, STAI-CH, mother's TAI, and FAD were analyzed, it was found that there was a negative and strong correlation between PedsQL and CDI (r= – 0.60, p<0.01) and STAI-CH (r=-0.57, p<0.01) scores, a moderate negative correlation between PedsQL and maternal TAI scores (r=-0.49, p<0.01), while there was a negative moderate correlation between PedsQL and SCL-90-R's Somatization subscale scores (r=-0.48, p<0.01), a negative strong correlation between all other subscale scores (p<0.01) and a moderate negative correlation was found between the PedsQL and the subscales of Roles (r=-0.37, p=0.04), Affective Involvement (r=-0.40, p=0.02) and General Family Functions (r=-0.38, p=0.03) scores of FAD (Table 5).

When regression analysis is applied between between epilepsy group's PedsQL scores and children's CDI, STAI-CH scores, and mothers' TAI, SCL-90-R, FAD scores, it was found that CDI levels predicted PedsQL levels (F=29.526 p=0.000). 1 unit increase in the CDI levels decreases PedsQL levels by 0.058 units of the epilepsy group. It was found that children's STAI-CH scores, mother's TAI levels, SCL-90-R total score and sub-dimensions, FAD sub-dimensions did not predict PedsQL levels (p>0.05) (Table 6).

Table 5. The Relationship between The PedsQL Scores of The Epilepsy Group and the Children's CDI, STAI-CH Scores, and The Mothers' TAI, SCL-90-R, FAD Scores

PedsQL	r	p
CDI	– 0.60	<0.01**
STAI-CH	-0.57	<0.01**
Maternal TAI	-0.49	<0.01**
SCL-90-R		
Somatization	-0.48	<0.01**
Obsessive-Compulsive	-0.64	<0.01**
Interpersonal Sensitivity	-0.73	<0.01**
Depression	-0.55	<0.01**
Anxiety	-0.60	<0.01**
Anger and Hostility	-0.60	<0.01**
Phobic Avoidance	-0.68	<0.01**
Paranoid Ideation	-0.55	<0.01**
Psychoticism	-0.80	<0.01**
Additional Symptoms	-0.50	<0.01**
General Symptom Level	-0.70	<0.01**
FAD		
Problem Solving	-0.21	0.25
Communication	-0.34	0.06
Roles	-0.37	0.04*
Affective Responsiveness	-0.23	0.19
Affective Involvement	-0.40	0.02*
Behavioral Control	-0.23	0.21
General Family Functions	-0.38	0.03*

*p <0.05; **p <0.01; Pearson's Correlation Test; PedsQL: Pediatric Quality of Life Inventory, CDI: Childhood Depression Inventory, STAI-CH: State-Trait Anxiety Inventory for Children, TAI: Trait Anxiety Inventory, SCL-90-R: Symptom Checklist-90-Revised, FAD: Family Assessment Device

Table 6. The Regression Results Between The PedsQL Scores of The Epilepsy Group and the Children's CDI, STAI-CH Scores, and The Mothers' TAI, SCL-90-R, FAD Scores

	B	SH	β	p	F	R^2	Adjusted R^2
CDI	-0.31	0.05	-0.71	<0.01**	29.52	0.50	0.48
STAI-CH	-0.54	0.60	-0.16	0.37	2.65	0.20	0.08
Maternal TAI	-0.73	0.36	-0.35	0.06	2.57	0.15	0.09
SCL-90-R							
Somatization	-4.25	7.58	-0.48	0.34			
Obsessive-Compulsive	-5.22	8.86	-0.27	0.56			
Interpersonal Sensitivity	1.94	10.60	0.09	0.85			
Depression	-16.43	15.64	-0.77	0.30			
Anxiety	-4.67	12.56	-0.22	0.71			
Anger and Hostility	2.18	9.73	0.11	0.82	1.21	0.37	0.06
Phobic Avoidance	-6.72	9.07	-0.35	0.46			
Paranoid Ideation	0.30	5.58	0.01	0.95			
Psychoticism	-27.35	16.54	-1.07	0.11			
Additional Symptoms	-3.03	8.26	-0.14	0.71			
General Symptom Level	44.69	51.22	1.91	0.39			
FAD							
Problem Solving	6.07	8.89	0.27	0.58			
Communication	-3.34	9.74	-0.14	0.73			
Roles	-5.19	14.41	-0.12	0.72			
Affective Responsiveness	5.38	6.75	0.26	0.43	0.76	0.18	0.06
Affective Involvement	-5.77	8.21	-0.15	0.48			
Behavioral Control	-6.58	12.72	-0.12	0.61			
General Family Functions	-9.13	12.28	-0.36	0.46			

*p <0.01; Regression Test; PedsQL: Pediatric Quality of Life Inventory, CDI: Childhood Depression Inventory, STAI-CH: State-Trait Anxiety Inventory for Children, TAI: Trait Anxiety Inventory, SCL-90-R: Symptom Checklist-90-Revised, FAD: Family Assessment Device

DISCUSSION

Based on the results of our study, it was found that there was no significant difference between the children in the epilepsy group and the children in the control group in terms of the prevalence of psychiatric illness, the number of psychiatric diagnoses, and the distribution of diagnoses and as a result of scale-based assessments, the depression levels of the children in the epilepsy group were significantly higher than the control group, there was no significant difference between the two groups in terms of anxiety levels, there was no significant difference in the anxiety levels and psychiatric symptom levels of the mothers in the groups, and the anger and hostility levels of the mothers in the epilepsy group were significantly higher. Moreover, it was determined that the physical and psychosocial quality of life levels of the children in the epilepsy group were significantly lower than the control group, and the quality of life of the epilepsy group was found to be negatively correlated with the depression and anxiety level of the children, the anxiety and psychiatric symptom level of the mothers, and the level of impairment in family functioning. In addition, it was determined that the depression level of the children in the epilepsy group had a significant effect on the quality of life.

Studies demonstrate that the prevalence of psychiatric disorders is higher in children with epilepsy (32, 33). In a study conducted in our country on the issue, it was found out that 48% of children with epilepsy were diagnosed with at least one mental disorder (34). In a prospective study carried out by Gatta et al. (2018) with 49 children aged 4–18 years, the rate of comorbid psychiatric diseases was higher in epileptic children and the most common psychiatric disorders were depression, anxiety disorders, and attention deficit hyperactivity disorder (ADHD) (35). In our study, no significant difference was determined between the epilepsy group and the control group, regarding the prevalence of psychiatric disorders. However, it was observed that the difference was almost at the level of statistical significance. Depression, anxiety disorders, and ADHD are among the most common mental disorders in studies implemented on children with epilepsy (36, 37, 38). When the psychiatric diagnoses of the patients were analyzed separately in our study, no significant difference was found between the groups in terms of the distribution of psychiatric diagnoses, though depression, anxiety disorders, ADHD, oppositional defiant disorder (ODD) were more common in the epilepsy group. Epidemiological studies have revealed that children with mental retardation and epilepsy have higher rates of psychopathology compared to those with normal IQ (39). The fact that no difference was found between the groups in terms of psychiatric diagnoses in our study may be due to the exclusion criterion of mental retardation.

In numerous studies conducted in the field, it was determined that the mothers of children with epilepsy had higher levels of depression and anxiety, and the results of the studies were varying (13, 14, 15, 40). In

a study by Baki et al. (2004), it was found out that the depression and anxiety symptoms of mothers of epileptic children were not different from those of mothers of non-epileptic children (41). The results of our study are partially compatible with the previous studies, and no significant difference was found between the groups in terms of mothers' anxiety levels. In some studies, it has been demonstrated that the anxiety levels of parents of children whose seizures are not under control are particularly higher (42). Given that the last seizure time of the children in the study group in our study was 15 months on average, it is considered that the lack of difference in maternal anxiety symptoms between the groups may be due to the fact that the seizures of the children in the epilepsy group were under control. In our study, when the severity of psychiatric symptoms of the mothers was compared, it was determined that all psychiatric symptoms in the epilepsy group tended to be higher than in the control group; however, this difference was significant only in the Anger and Hostility subscale. When the studies in the literature are reviewed, it is noticed that parents consider epilepsy as the loss of the ideal child and experience feelings such as anger and guilt, mothers can display hostile and rejecting attitudes (43). In line with the current information, it can be suggested that our results are compatible with the studies.

It is well documented that the family functioning of children with epilepsy is adversely affected as in many chronic diseases (43,44). In a study by Fazlıoglu et al. (2010), it was reported that children with epilepsy had deterioration in family functions (roles, affective responsiveness, affective involvement, and general functions) (14). The presence of a child with a chronic illness in the family leads to stress in the family and can impair family functions (16). The results of our study indicate that family functioning in the epilepsy group is at a lower level compared to the control group, consistent with the literature. Psychiatric disorders in children and their mothers have a negative impact on family functioning as well (45). In our study, the rate of psychiatric disorders in children with epilepsy and the level of psychiatric symptoms in their mothers were determined to be higher. While family functioning is impacted due to the stress caused by chronic disease in children with epilepsy, it is considered that the potential effects of psychiatric problems in mothers and/or children on family functioning should be taken into account as well.

Health-related quality of life is defined as the patient's perception of a disease and the effects of its treatment. Health-related quality of life does not directly assess psychopathology, it assesses the patient's perception of well-being in physical, mental, and social domains (46). Many studies have revealed that children with epilepsy have an impaired health-related quality of life compared to healthy controls (5, 6, 7, 47, 48). In our study, it was determined that the level of quality of life in the epilepsy group was significantly lower than in the control group. Our results suggest that the physical and psychosocial quality of life in children with epilepsy is adversely impacted, consistent with the literature.

In our study, it was found that the quality of life of children in the epilepsy group was negatively correlated with their depression and anxiety levels. Moreover, it was determined that the depression level of the children in the epilepsy group had a significant effect on the quality of life.Studies demonstrate that mental illnesses such as anxiety disorders and depression are associated with low quality of life in children and adolescents (49). Psychiatric conditions such as anxiety and depression that adversely impact children's coping skills might increase the impairment in quality of life in children with epilepsy. Studies in the literature suggest that depression and anxiety symptoms of parents adversely impact the quality of life of children (50, 51). It is well known that as the anxiety level of the parents' increases, they exhibit attitudes that are overprotective and restrict the child's activities, thus the quality of life of the child is negatively affected. Likewise, in the results of our study, a significant negative correlation was found between the quality of life in the epilepsy group and the psychiatric symptoms and anxiety levels of the mothers. Our results, which are in line with the literature, suggest that high anxiety levels of mothers in children with epilepsy might impact the quality of life of children. In our study, it was found out that there was a significant negative correlation between the roles and the ability of affective Involvement, and the quality of life of the children, as well as the general family functioning in children in the epilepsy group. General family functioning involves cohesion, orientation, and conflict resolving skills. These features significantly influence the child's experiences, choices, and emotional development (52). It is well established that it is healthy for individuals in the family to show moderate interest in each other, excessive interest and excessive involvement in each other's business, uncertainty in roles, or inadequate attention are unhealthy family characteristics. In children with epilepsy, low family functioning, excessive or inadequate attention, and uncertainty in roles might be negatively

impacting children's ability to adapt by gaining sufficient autonomy and quality of life.

CONCLUSION

According to the results of our study, it was found out that the physical and psychosocial quality of life levels of the children in the epilepsy group were significantly lower than the control group, and that the quality of life of the epilepsy group was significantly and negatively correlated with the depression and anxiety level of the children, the anxiety and psychiatric symptom levels of the mothers, as well as the level of deterioration in family functioning Our findings suggest that quality of life in children with epilepsy is associated with psychiatric symptoms and family functions of children and mothers. In the treatment process of children with epilepsy, it is considered that the assessment of the potential effects of the mental well-being of the children and their parents as well as the family functioning on the quality of life is crucial in terms of following a holistic treatment approach.

Limitations

Our study has several limitations. The small sample size is a considerable limitation. Another limitation is that the anxiety and psychiatric symptoms of the mothers included in our study were only assessed via inventories and that no diagnostic evaluation was made by a psychiatrist. The fact that clinical evaluations were not made when assessing the family functioning of the groups and that fathers and siblings were not assessed are also considered to be an important limitation. Our research is a cross-sectional study. It is thought that long-term follow-up studies are needed to find out the potential factors impacting the quality of life in children with epilepsy and to elucidate the cause-effect relationship.

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