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Evaluation of sleep quality in spouses of people with epilepsy

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ABSTRACT

Objective: The objective of this study was to evaluate the spouses of people with epilepsy with and without a history of seizures during sleep in terms of depression, anxiety, and sleep quality.
Methods and materials: This prospective, cross-sectional study was conducted in three groups of 18–55 year olds, who were at least primary school graduates.
The 1st group consisted of healthy spouses of 30 healthy volunteers with age and sex matched with the other groups.
The 2nd group comprised spouses of 30 people with epilepsy who had been married for at least one year and had no history of seizures during sleep.
The 3rd group consisted of spouses of 30 people with epilepsy who had been married for at least one year and had a history of at least one seizure during sleep in the course of the previous year.
The questionnaire including demographic data, Pittsburgh Sleep Quality Index (PSQI), Beck Depression Inventory (BDI), and the Beck Anxiety Inventory (BAI) was applied to all participants.
Results: The mean age of the 1st group was 35.07 ± 8.33 years, that of the 2nd group was 36.47 ± 7.63 years, and that of the 3rd group was 35.33 ± 6.05 years. There was no significant age difference between the groups ($p = 0.740$). The depression scores of the 2nd and the 3rd groups were significantly higher than that of the 1st group ($p < 0.001$, for both). The anxiety scores of the 3rd group were significantly higher than those of the 1st and the 2nd groups ($p < 0.001$ and $p = 0.001$, respectively). Thirty percent ($n = 9$) of the 1st group, 40% ($n = 12$) of the 2nd group, and 70% ($n = 21$) of the 3rd group had poor sleep quality. The sleep disorder rate in the 3rd group was significantly higher than in the 1st and the 2nd groups ($p = 0.002$ and $p = 0.020$, respectively). When the PSQI subscales were examined, the sleep quality, sleep latency, usual sleep efficiency, daytime dysfunction, and the total sleep total score were significantly higher in the 3rd group than the 1st and the 2nd groups. The patients in the third group had significantly higher scores of sleep duration, sleep disturbance, and sleep medication use than those in the 1st group.
Conclusion: We found out that the PSQI score, which reflected the sleep quality, was poor in the spouses of people with epilepsy, who had seizures during sleep.
To the best of our knowledge, these findings are the first in the literature on this subject.

1. Introduction

Epilepsy is a neurological disorder that can be seen in men and women of all ages [1]. It is estimated to affect at least 50 million people in the world [2,3]. However, classifying epilepsy only as a neurological disorder is to ignore many social aspects of the situation [2]. Dealing with these psychosocial issues may be sometimes more complex than dealing with the seizures. Regarding the psychosocial field, education, employment, and factors working against marriage are among the problems experienced by people with epilepsy [4,5]. Marriage may be a source of social support and may increase the potential of an individual to cope with adverse events [6]. Therefore, it was suggested that a happy marriage will have a very positive effect on people with epilepsy, who suffer from bad mood [6,7]. It is known that people with epilepsy have a lower chance of getting married, higher divorce rates, and worse relationship between spouses compared to those without epilepsy [4,7].

Seizure onset time cannot be predicted in people with epilepsy [4,8]. This situation can be intimidating for both the patient and the family, and the seizures that may occur when dealing with any activity at home or at work, cause the patient and his family to experience stress [8,9]. Having a seizure in public places causes embarrassment and fear of rejection among the patients and their families [10,11].

In general, the caregivers of pediatric and adolescent people with epilepsy are their parents, whereas the caregivers of adult people with

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epilepsy may be their spouses, children, siblings or any other individual [12]. The most common psychological disorders among people with epilepsy were depression and anxiety. Previous studies had demonstrated that the risk of depression and anxiety was also high among caregivers [12,13]. It was shown that the diagnosis of epilepsy and epileptic seizures had a negative effect on the quality of life of people with epilepsy [6,12,13]. Furthermore, it was reported that the caregivers also had a poor quality of life just like people with epilepsy [6,12].

It is well-known that depression causes sleep disturbances. Therefore, it is very important to investigate this comorbidity in individuals suffering from sleep disorders [14,15]. Sleep disorders secondary to anxiety disorder are quite common [15,16]. Symptoms such as insomnia or nightmares are included in the diagnostic criteria for some anxiety disorders such as generalized anxiety disorder and posttraumatic stress disorder [16]. Insomnia is also considered a risk factor that contributes to the development or worsening of medical problems such as depression and anxiety [17].

In this study, our objective was to evaluate the spouses of people with epilepsy with and without a history of seizure during sleep in terms of depression, anxiety, and sleep quality.

2. Materials and methods

This was a cross-sectional case–control study. The individuals who had agreed to participate in the study were informed about the study and all signed the informed consent form. The study was approved by the local Ethics Committee of Yozgat Bozok University with a protocol number of 2017-KAEK-189_2018.06.06_06.

2.1. Study population

In this study, people with epilepsy married for at least one year, whose epilepsy diagnoses were according to the International League Against Epilepsy criteria [18] and followed up at the Department of Neurology, Yozgat Bozok University, and their spouses were included in the study. Furthermore, healthy volunteers and their healthy spouses, who had been married for at least one year of similar age and gender, formed the control group.

A total of 30 patients without a history of seizure during sleep (group 2) and 30 (group 3) patients with at least one seizure during sleep were enrolled in the study together with their spouses who were at 18–55 years of age and at least primary school graduate, could understand the research and fill the questionnaires. Only the people with epilepsy with a history of generalized seizures and their spouses were included. We asked the couples whether they regularly share the same bed or not, and we excluded couples who were not sharing the same bed or were not in the same bed during the seizure. The spouses of people with epilepsy who had alcohol–substance or caffeine addiction, chronic physical disease, epilepsy diagnosis, a history of neurological diseases that affected the cognitive skills, any physical or psychiatric illness causing sleep disturbance, and those who used regular sleeping pills (more than 4 sleeping pills use per month) were excluded from the study. In addition, the patients or their spouses during pregnancy or lactation, working in a job at night shift and spouses of people with epilepsy who had not had seizures during the course of the previous year had been excluded from the study. The Pittsburgh Sleep Quality Index (PSQI), the Beck Depression Inventory (BDI), and the Beck Anxiety Inventory (BAI) were administered to the spouses of people with epilepsy and the controls.

The Control Group (group 1) comprised 30 healthy volunteers similar to the study group in terms of age, gender, and marriage duration. All the exclusion criteria mentioned above were also valid for the control group. If one of the spouses had a history of seizures, the couple was excluded from the study.

2.2. Assessment tools

2.2.1. Data collection form

The Data Collection Form was prepared by the researchers for the purpose of the study. It is a detailed interview form with questions about the life history of the patients. It contains general information about the participant. This form was applied at the first administration and included age, gender, marital status, and total education duration, place of residence, level of economic income, habits, drugs used, and history of concomitant diseases.

2.2.2. Beck depression inventory (BDI)

This was developed by Beck et al. [19] to evaluate the physical, emotional, and cognitive symptoms and motivation seen in depression. The validity and reliability study was performed by Hisli [20].

2.2.3. Beck anxiety inventory (BAI)

The BAI was developed by Beck et al. [21] in order to assess the extent of anxiety symptoms of an individual. The validity and reliability study was carried out by Ulusoy et al. [22].

2.2.4. Pittsburgh sleep quality index (PSQI)

The PSQI was developed by Buysse et al. [23], and the Turkish validity and reliability study was conducted by Ağargün et al. [24]. The 18 questions scored on the scale consist of 7 components. These subscales comprise Subjective Sleep Quality, Sleep Latency, Sleep Duration, Sleep Efficiency, Sleep Disturbance, Use of Sleep Medications, and Daytime Dysfunction. A total PSQI score of 5 or more points indicates poor sleep quality.

2.3. Statistical analysis

Statistical analysis was performed using the SPSS 22.0 (Statistical Package for Social Sciences, IBM Inc., Chicago, IL, USA) package program. The descriptive statistics of the data were calculated and the Kolmogorov–Smirnov and the Shapiro–Wilk tests were applied for testing the normality distribution. The Chi-Square test was used for comparison of groups regarding the categorical variables. The Mann–Whitney *U* test was used for the two-group comparisons of continuous variables that did not fit the normal distribution, and the analysis of variance (ANOVA) (Kruskal–Wallis H) test was used in comparisons between more than two groups. Pearson's correlation test was used for the normally distributed data, and the Spearman's correlation test was used for data not showing a normal distribution. A regression model was established for the variables showing a significant correlation, and diagnostic tests of this model were carried out. A p value of less than 0.05 was considered statistically significant.

3. Results

3.1. Demographic characteristics

The demographic characteristics of sixty people with epilepsy with and without seizure during sleep were summarized in Table 1. The demographic characteristics of the spouses of 60 people with epilepsy and spouses of 30 subjects in the control group were demonstrated in Table 2.

3.2. The analysis of BDI and BAI scores of spouses of people with epilepsy

The BAI and BDI scores of spouses of people with epilepsy reflecting their symptoms of mood disturbance and anxiety are displayed in Table 3.

When the groups were compared regarding the BDI scores, the 3rd group, and the 2nd group had significantly higher scores than the control group ($p < 0.001$, for both). There was no significant difference between the 3rd and the 2nd groups in terms of depression scores ($p > 0.05$).

When the groups were compared regarding the BAI scores, the mean anxiety score of the 3rd group was significantly higher than the

Table 1
Demographic characteristics of people with epilepsy.

	People with epilepsy without seizures during sleep	People with epilepsy with seizures during sleep	p value
Sex, n (%)			
Female	14 (46.7%)	12 (40%)	$X^2 = 0.271$
Male	16 (53.3%)	18 (60%)	$p = 0.602$
Age, years (mean ± SD)	36.77 ± 7.39	36.13 ± 6.40	U = 439.5 p = 0.876
Education duration, years (mean ± SD)	9.50 ± 3.75	10.93 ± 4.35	U = 373.4 p = 0.238
Annual number of seizures (mean ± SD)	2.13 ± 1.33	2.27 ± 1.55	U = 43.6 p = 0.840
Number of AEDs, n (%)			$X^2 = 1.95$ p = 0.377
1	23(76.7%)	18(60%)	
2	5 (16.7%)	9 (30%)	
≥3	2(6.7%)	3(10%)	
Age of epilepsy onset, years (mean ± SD)	25.40 ± 10.05	24.87 ± 7.73	t = 0.230 p = 0.819
Disease duration, years (mean ± SD)	11.40 ± 8.28	11.37 ± 8.06	U = 448.5 p = 0.982

AEDs: Antiepileptic drugs, U: Mann–Whitney *U* Test, t: Student *t*-test, X^2 = Chi-square Test.

1st group ($p < 0.001$) and the 2nd group ($p = 0.001$). There was no significant difference between the 2nd group and the control group (1st group) in terms of anxiety scores ($p > 0.05$).

The onset of seizures was before the marriage in 40 patients and after the marriage in 20 patients. The median value of BAI was 7 (min:5, max:45) in partners of people with epilepsy, who had seizures before marriage. The median value of BAI was 10 (min:4, max:27) in partners of people with epilepsy, who had seizures after marriage. The difference between these two groups was not significant (U:2.88, $p = 0.076$).

3.3. Results of PSQI scores analysis of spouses of people with epilepsy

Regarding the PSQI scores, 30% of Group 1 ($n = 9$), 40% of Group 2 ($n = 129$), and 70% of Group 3 had scores reflecting poor sleep quality. The mean PSQI score of Group 3 was significantly higher than Groups 1 and 2 ($p = 0.002$ and $p = 0.02$ respectively). Findings of PSQI scores indicated that 20 females (58.8%) and 13 males (50%) had scores reflecting poor sleep quality. However, this difference was statistically not significant ($p = 0.675$).

The subjective sleep quality score and scores of all PSQI, all subcomponents except for sleeping pill and total PSQI score of Group 3, were significantly higher compared to Groups 1 and 2 ($p < 0.05$). In addition, the sleep disturbance score of Group 2 was significantly higher than Group 1 ($p < 0.05$).

Sleep Quality Index total scores and the subscale scores have been demonstrated in Table 4.

3.4. The analysis of the correlation between the PSQI scores of people with epilepsy and the demographic characteristics and the BAI and BDI scores of the spouses of people with epilepsy

The total PSQI scores of the spouses of people with epilepsy, subcomponents and demographic characteristics, and the analysis of the correlation between BAI and BDI scores have been demonstrated in Table 5.

There was a strong positive correlation between the PSQI total score and the BAI score ($r = 0.745$, $p < 0.001$). There was a moderately strong positive correlation between the PSQI total score and the BDI score ($r = 0.655$, $p < 0.001$). There was a weak positive correlation between the PSQI total score and the number of antiepileptic drugs used ($r = 0.446$, $p < 0.001$).

3.5. The effects of BDI and BAI variables on PSQI

The regression model established to explain the effects of BDI and BAI on PSQI has been demonstrated in Table 6. Multiple regression analysis was performed to explain the effects of BDI and BAI on the PSQI. The effects of BDI and BAI on the PSQI were statistically significant ($F = 37.204$, $p < 0.001$), and 46.1% of the total variance were explained by these variables. According to the results of this analysis, the effect of BDI on PSQI was statistically significant ($p = 0.017$), which explained the 19.5% of the total variance. The effect of BAI on PSQI was statistically significant ($p = 0.002$) which explained 30.9% of total variance. The mean PSQI score increased by 0.314 times as the BDI score increased, and by 0.403 times as the BAI score increased.

4. Discussion

Marriage is an important social and personal issue, and it is a formidable struggle in the lives of people with epilepsy and their spouses [2]. There are only a few articles in the literature on marriage and epilepsy [7]. Mostly, the researchers have examined the impact of epilepsy on social life, quality of life, and about social support [2]. In a meta-analysis published by Kinariwalla and Sen [2] and based on our search

Table 2
Demographic characteristics of the spouses of people with epilepsy and the controls.

	Group 1	Group 2	Group 3	p value
Sex, n (%)				
Women	18 (60%)	16 (53.3%)	18 (60%)	$X^2 = 0.364$
Men	12 (40%)	14 (46.7%)	12 (40%)	$p = 0.833$
Age, years (mean ± SD)	35.07 ± 8.33	36.47 ± 7.63	35.33 ± 6.05	$X^2 = 0.909$ $p = 0.635$
Education duration, years (mean ± SD)	8.90 ± 4.51	9.17 ± 4.57	9.47 ± 4.24	$X^2 = 0.290$ $p = 0.865$
Marital duration, years (mean ± SD)	11.40 ± 7.69	10.43 ± 7.33	9.76 ± 6.02	$X^2 = 0.376$ $p = 0.828$

Group 1: Healthy volunteers; Group 2: Spouses of people with epilepsy who had no history of seizures during sleep; Group 3: Spouses of people with epilepsy who had a history of seizure during sleep; X^2 = Chi-square Test.

Table 3
BDI and BAI scores of the spouses of people with epilepsy and the control group.

BDI groups	BDI score n	Group 1 n (%)	Group 2 n (%)	Group 3 n (%)
None	0–9	23 (76.7%)	16(53.3%)	15(50%)
Mild	10–16	6 (20%)	9(30%)	10 (33.3%)
Moderate	17–29	1(3.3%)	3(10%)	4(13.3%)
Severe	30–63	–	2(6.7%)	1 (3.3%)
BAI groups	**BAI score n**	**Group 1 n (%)**	**Group 2 n (%)**	**Group 3 n (%)**
None	0–7	23 (76.7%)	22(73.3%)	10(33.3%)
Mild	8–15	6 (20%)	6(20%)	15 (50%)
Moderate	16–25	1(3.3%)	2(6.7%)	2(6.7%)
Severe	26–63	–	–	3 (10%)

BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory; Group 1: Healthy volunteers; Group 2: Spouses of people with epilepsy who had no history of seizures during sleep; Group 3: Spouses of people with epilepsy who had a history of seizure during sleep.

Table 4
Comparison of groups in terms of the total Pittsburg Sleep Quality Scale Score and subscale scores.

	Group 1 Median (Interquartile range)	Group 2 Median (Interquartile range)	Group 3 Median (Interquartile range)	p*
Total PSQI score	2 (5)	3.5 (4)	7 (9)[a,b]	<**0.001**
Subjective sleep quality	1 (1)	1 (1.3)	1 (0.3)	0.102
Sleep latency	1 (1)	1 (1)	2 (1.3)[a,b]	<**0.001**
Sleep duration	0.5 (1)	1 (1)	1 (1)[a,b]	**0.002**
Usual sleep activity	0 (1)	1 (1)	1 (1)[a,b]	<**0.001**
Sleep disorder	0 (1)	0.5 (2)	1 (1)[a,b]	<**0.001**
Sleeping medication use	0 (0)	0 (0)	0 (0)[a]	**0.021**
Daytime dysfunction	0 (1)	0 (1)	1 (2)[a,b]	**0.001**

PSQI: Pittsburg Sleep Quality Index.
* Kruskal–Wallis Test.
[a] Statistically significant for one pair-wise comparison.
[b] Statistically significant for two pair-wise comparison.

on Pubmed (Medline) and EMBASE databases, the direct impact that seizures may have on the partner of a patient with epilepsy is barely addressed.

In this study, the mean number of seizures per year of people with epilepsy was slightly above 2, and only 5 of 60 people with epilepsy were taking three or more antiepileptic drugs. It was reported that the rate of unemployment increased, and the rate of marriage decreased with the increase of seizures in people with epilepsy [25]. As a result of this, the number of seizures per year, and the number of antiepileptic drugs might be small in this study.

In this study, BDI scores were significantly higher in the spouses of people with epilepsy (group 3) who had a history of seizures during sleep compared to the healthy control group, and the BAI scores were significantly higher compared to the control group (group 1) and the spouses of people with epilepsy without a history of seizures during sleep (group 2).

Depression and anxiety disorders are two of the most common medical diseases [26]. The depression and anxiety rates have been reported to be significantly higher among first-degree relatives and caregivers of people with epilepsy [12,27,28]. In a recent study on caregivers of people with epilepsy, the rate of individuals suffering from anxiety and depression symptoms was determined as 31.30% and 33.59%, respectively [12].

There are studies showing that caregivers of people with epilepsy are at high risk of depression and anxiety comorbidity of up to 50% or even more (58%) [29,30]. In the literature, the majority of previous studies have focused on the parents of people with epilepsy. In previous studies, 21–47% of the parents providing care to children with epilepsy and adolescents had anxiety symptoms, while 33–55% had depression symptoms [29,31].

In this study, on the spouses of people with epilepsy, who had seizures during sleep, BDI and BAI scores were higher than normal in 50% and 66.7% of them respectively. Our BAI scores were higher than the scores in the literature. This might depend on how this study was focused on the effects of sleep seizures on the spouses of people with epilepsy. These findings demonstrated that spouses of people with epilepsy were under the risk of psychological problems like the people with epilepsy. Furthermore, these results pointed to the correlation between sleep seizures and depression and anxiety index scores.

The prevalence of anxiety and depressive disorders among people with epilepsy has been reported to be between 20% and 50% [32–34]. In a meta-analysis, 21.9% of people with epilepsy had major depressive disorder [35]. In this study, we found the anxiety and depression index scores of spouses of people with epilepsy were as high as the scores of people with epilepsy. This shows that the spouses of people with epilepsy are under similar psychological stress and that this stress increases with the experience of seizures during sleep.

According to the results of this study, we emphasize that clinicians should not only focus on psychological problems in adult people with epilepsy but also pay more attention to the psychological problems experienced by their spouses considering the history of seizures during sleep.

In this study, the PSQI scores showed that 30% of the control group, 40% of the spouses of people with epilepsy, who had no sleep seizures and 70% of the spouses of people with epilepsy, who had sleep seizures, had poor sleep quality.

Table 5
Correlation analysis between variables and the PSQI subscales and the total score.

		Subjective sleep quality	Sleep latency	Sleep duration	Sleep efficiency	Sleep disturbance	Use of sleep medications	Daytime dysfunction	PSQI total
BDS	r:value	0.634	0.561	0.457	0.447	0.596	0.328	0.533	0.655
	p:value	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**
BAS	r:value	0.556	0.702	0.620	0.611	0.607	0.411	0.636	0.745
	p:value	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**	<**0.001**
Spouse age	r:value	−0.076	−0.132	−0.060	−0.122	−0.063	−0.003	−0.034	−0.111
	p:value	0.477	0.213	0.574	0.253	0.555	0.976	0.748	0.296
Spouse gender	r:value	−0.036	−0.045	0.085	0.071	0.024	0.049	0.067	0.008
	p:value	0.737	0.671	0.428	0.506	0.826	0.646	0.533	0.942
Education duration of spouse	r:value	0.038	0.200	0.162	0.144	0.134	0.048	0.163	0.154
	p:value	0.723	0.059	0.132	0.177	0.209	0.656	0.125	0.148
Epilepsy duration	r:value	0.118	−0.041	0.094	0.027	−0.022	0.002	−0.120	−0.001
	p:value	0.370	0.754	0.477	0.837	0.867	0.987	0.360	0.992
Annual number of seizures	r:value	0.094	0.123	0.168	−0.183	0.130	0.176	0.189	0.175
	p:value	0.477	0.349	0.200	0.161	0.322	0.180	0.148	0.182
AEDs	r:value	0.265	0.438	0.413	0.406	0.355	0.173	0.380	0.446
	p:value	**0.041**	<**0.001**	**0.001**	**0.001**	**0.005**	0.187	**0.003**	<**0.001**

BDS: Beck Depression Scale, BAS: Beck Anxiety Scale, PSQI: Pittsburg sleep quality index.
AEDs: The number of antiepileptic drugs.
Bold values represent significant findings at $p < 0.05$.

Table 6
The Effects of BDS and BAS variables on the PSQI score.

	B[a]	Std. Error	β[b]	t	p
Constant	0.624	0.664	0.403	0.657	0.350
BDS	0.195	0.080	0.314	2.373	0.017
BAS	0.309	0.099	0.403	3.080	0.002

F:37.204, p:0.000, R^2: 0.461.
B[a]: nonstandardized regression coefficient.
β[b]: standardized regression coefficient.
BDS: Beck depression scale, BAS: Beck Anxiety Scale, PSQI: Pittsburg Sleep Quality Index.

Sleep is a highly regulated brain function in which active, complex, and different neuron groups are affected [36,37]. Sleep disorders can be considered as a disease, or as a symptom of various physical or mental illnesses [36,37]. It is known that anxiety and depression have a negative effect on sleep, while sleep disturbances increase anxiety and depression [16,17,38]. At the same time, the tension in individuals with anxiety disorders may prevent the expected relaxation at the onset of sleep [16,37]. Previous studies have shown that depression and anxiety are associated with PSQI score [15,39]. This study also showed that depression and anxiety index scores were also related to sleep quality index scores in spouses of people with epilepsy.

The coexistence of sleep disorders and epilepsy is common. A prospective study showed that poor sleep quality was 2- to 3-times more frequent in adults with epilepsy than in healthy controls [40]. Seizures during sleep in people with epilepsy are known to adversely affect the sleep quality in individuals with epilepsy [41,42]. In a previous study, 48% of people with epilepsy complained of overt somnolence during the daytime, and this symptom was mostly correlated with the anxiety level [43]. In this study, there was a strong correlation between the BAI scores and PSQI scores of the spouses of people with epilepsy. We also determined that the PSQI scores were negatively affected in spouses of people with epilepsy, which was proportional to the sleep disturbance in people with epilepsy. We found that seizures during sleep in people with epilepsy disturbed the PSQI scores of their spouses similar to the patients. When the results of this study were evaluated together with the previous studies in the literature, it could be concluded that similar pathophysiological mechanisms play a role in the disruption of sleep quality in people with epilepsy and their spouses. We can also conclude that the worry about a potential seizure during sleep could cause high anxiety scores and consequent sleep disturbance in the spouses of people with epilepsy.

Since this study required spouses to be evaluated together, the small number of spouses of people with epilepsy involved in the study was a limitation. In this study, only the spouses of people with epilepsy with generalized seizures were evaluated; other types of seizures were excluded from the study. The fact that other types of seizures do not provide information on how sleep quality of spouses of people with epilepsy is affected is another limitation of our study. Snoring because of sleep apnea, which is common in people with epilepsy, may impair sleep quality in their spouses. In addition, sleep apnea in spouses of people with epilepsy also impairs sleep quality. Sleep apnea treatment generally improves sleep quality in patients and their spouses. For these reasons, the lack of ability to evaluate sleep apnea is a limitation of our study. Another limitation is that our study only included married couples and did not include same-sex couples or unmarried cohabitating couples. Epileptic seizures that start later in life may affect the sleep quality of older people more than others. This study did not include elderly people, which limited the study in that regard. In our study, the sleep quality scale scores of spouses of people with epilepsy were similar to the scores of people with epilepsy reported in the literature. Since this study was the first of its kind on this issue, this data could not be predicted. The scores of the spouses of people with epilepsy were compared to those of people with epilepsy reported in the literature. In our study, people with epilepsy and their spouses were not compared in terms of sleep quality, which is another limitation of our study. Lastly, absence of sleep diary data, wrist actigraphy monitoring, and polysomnography is also a limitation of the study.

We did not find a similar previous study on this issue in our search on Pubmed (Medline) and EMBASE databases. We are of the opinion that studies are needed, which will eliminate or reduce the limitations of this study. Furthermore, considering the fact that many factors affect sleep quality, the importance of using a multicomponent approach such as cognitive behavioral therapy emerges. Cognitive behavioral therapy alone has been shown to provide a more effective and longer treatment response compared to drugs used in sleep disorders [44,45]. Considering this information and the results of our study, further studies including the pre- and post-treatment results of cognitive behavioral therapy would significantly contribute to the literature.

5. Conclusion

In conclusion, we obtained the following results in our study:

We found out that the depression and anxiety index scores were increased in the spouses of people with epilepsy, who had sleep seizures. We determined that the spouses of people with epilepsy suffered from poor sleep quality according to the PSQI scores. The characteristics of the sleep seizures had a negative effect on the index scores reflecting the anxiety, depression, and sleep quality in the spouses of people with epilepsy. We demonstrated that the spouses of people with epilepsy had index scores reflecting anxiety, depression and poor sleep quality similar to people with epilepsy. Furthermore, sleep seizures had a similar effect on the index scores related to sleep quality in both people with epilepsy and their spouses.

In light of this information, clinicians should not only focus on the psychological status and sleep problems of adult people with epilepsy, but also consider epilepsy as a social and familial health problem, and pay more attention to the psychological and sleep problems of their spouses.

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Conflict of interest

None.

The contribution of authors

Asst. Prof. Dr. Mehmet Hamamcı was involved in data synthesis, study drafting, study design, study conceptualization, data collection, analysis or interpretation of the data, manuscript preparation, and manuscript revision.

Asst. Prof. Dr. Yunus Hacimusalar was involved in data synthesis, data collection, analysis or interpretation of the data, manuscript preparation, and manuscript revision.

Asst. Prof. Dr. Ozgul Karaaslan was involved in data synthesis, data collection, analysis or interpretation of the data, manuscript preparation, and manuscript revision.

Prof. Dr. Levent Ertuğrul İnan was involved in data synthesis, study conceptualization, data collection, interpretation of the data, and manuscript preparation.

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Interest declaration

The summary of our study results was accepted and presented as oral presentations at the 54th Congress of Neurology with international participation on 1–5 December 2018/Rixos Sungate Hotel, Antalya/Turkey.

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