

ORIGINAL ARTICLE

# The Quality of Life, Sleep Disorders and Psychological Conditions of Spouses of Women Patients with Fibromyalgia Syndrome

## Fibromiyalji Sendromlu Kadın Hastaların Eşlerinin Yaşam Kalitesi, Uyku Bozuklukları ve Psikolojik Durumları

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### ABSTRACT

**Objective:** To compare the quality of life (QoL), sleep disorders, and psychological status of female fibromyalgia syndrome (FMS) patients/their spouses with those of healthy controls/their spouses.

**Material and Method:** One hundred female FMS patients/their spouses were compared with 100 healthy controls/their spouses regarding Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Visual Analogue Scale (VAS), Pittsburgh Sleep Quality Index (PSQI), Short Form-36 (SF-36) scores and tender point counts (TPC).

**Results:** A statistically significant difference was found concerning body mass index (BMI), VAS, TPC, BDI, BAI, PSQI scores, and employment status ( $p < 0.001$ ). While SF-36 subscores and summary scores of FMS patients/their spouses were statistically significantly lower than controls/their spouses ( $p < 0.001$ ), total PSQI scores were statistically significantly higher than those of controls/their spouses ( $p < 0.001$ ). A positive correlation between VAS-fatigue and PSQI, BDI and BAI scores; a negative correlation between SF-36 scores; a positive correlation between BAI scores of VAS-pain; a negative correlation between SF-36 scores, and a negative correlation between TPC and SF-36 scores were found among FMS patients/their spouses.

**Conclusion:** Compared to controls/their spouses, an increase in the frequency of depression, anxiety, sleep disorders, and deterioration in QoL was detected in FMS patients/their spouses, and the increase was associated with increased pain and fatigue.

**Keywords:** Fibromyalgia syndrome; psychological condition; quality of life; sleep quality; spouses

### ÖZ

**Amaç:**FMS'li bayan hastaların eşlerinin; yaşam kalitesi, uyku bozukluğu düzeyi ve psikolojik durumlarını araştırmak ve sağlıklı kontrollerin eşleri ile karşılaştırmak.

**Gereç ve yöntem:**Çalışmaya 1990 Amerikan Romatizma Birliği(ACR) kriterlerine göre, FMS tanısı konulan, 100 FMS hasta ve eşleri, 100 sağlıklı kontrol ve eşleri dahil edildi. Beck Depresyon Ölçeği(BDÖ), Beck Anksiyete Ölçeği(BAÖ), Vizüel Analog Skala(VAS), Hassas Nokta Sayısı(HNS), Pittsburgh Uyku Kalitesi İndeksi(PUKİ), Short Form-36(SF-36) skorları bakımından hasta ve kontrol grubu ve eşleri arasında fark olup olmadığı araştırıldı.

**Bulgular:**Hasta ve kontrol grupları arasında; VKİ, VAS, HNS, BDÖ, BAÖ, PUKİ skor ortalamaları ve çalışma durumu yönünden istatistiksel olarak anlamlı fark vardı ( $p < 0.001$ ).Hasta eş ve kontrol eş grupları arasında VAS, HNS, BDÖ, BAÖ, PUKİ skor ortalamaları yönünden istatistiksel olarak anlamlı fark vardı ( $p < 0.001$ ).Hasta ve eşlerinin SF-36 alt skor ortalamaları ve özet skor ortalamaları, kontrol ve eşlerinin skor ortalamalarından istatistiksel olarak anlamlı düşüktü. ( $p < 0.001$ ).Hasta ve eşlerinin total PUKİ skor ortalamaları, kontrol ve eşlerinin skor ortalamalarından istatistiksel olarak anlamlı yüksekti ( $p < 0.001$ ).

**Sonuç:**Bu çalışmada FMS'li hasta ve eşlerinde yaşam kalitesinde bozulma, depresyon, anksiyete ve uyku bozukluğu sıklığında artış tespit edilmiştir. İlaveten,FMS'li hasta ve eşlerindeki depresyon, anksiyete ve uyku bozukluğu;artmış ağrı ve yorgunluk düzeyleri ile ilişkili olduğu saptanmıştır. Bu bulgular FMS'li kadın hastaların partnerlerinin de hastalarla birlikte değerlendirilmesi gerektiğini düşündürmektedir.

**Anahtar Kelimeler:** Fibromiyalji Sendromu, eşler, yaşam kalitesi, psikolojik durumlar, uyku kalitesi

## Introduction

Fibromyalgia syndrome (FMS) is a clinical syndrome characterized by the palpation of painful tender point counts (TPC), indicating chronic widespread pain, sleep problems, fatigue, morning stiffness, somatic complaints, and cognitive deficits together with the table of unknown etiology (1,2). The prevalence of FMS varies between 2% and 6% of the world population (3). For most patients suffering from FMS, pharmacological treatment alone is insufficient. Therefore, considering the different mechanisms of pain sensitivity, the treatment modalities should include multidisciplinary programs targeting the peripheral, central, cognitive-

emotional, and interpersonal causes of chronic pain characterized by the pathophysiology of FMS (4).

Depression has been reported as the most comorbid psychiatric disorder with FMS at a frequency of approximately range from 20%-80% (5). In several studies, it has been demonstrated that the general health and psychological status, and quality of life (QoL) of relatives and spouses of female FMS patients may be affected (6,7); chronic pain observed in FMS patients may cause other problems in such social areas as family and professional life (6), and deterioration

may be witnessed in QoL and sexual functions of the spouses of female FMS patients (8,9). Although the number of studies investigating the accompanying symptoms in patients with FMS is high, the number of studies investigating sleep disorders, QoL, and psychological status in the spouses of FMS patients is limited. In a study investigating the same entity, it is stated that the general health status, psychological conditions, and QoL of the relatives and spouses of female FMS patients can be affected negatively (10). In another studies, the spouses of female FMS patients also declared that their QoL and sexual function are affected by the challenges experienced by their spouses (11).

Although there are many studies investigating the challenges in FMS patients, the number of studies evaluating the challenges experienced by the relatives of FMS patients is limited. One of the challenges neglected during the follow-up and treatment of FMS patients is ignoring the effects of the condition on the spouses of FMS patients. Thus, we included in our study the spouses sharing the same house, as well as female FMS patients. Compared with previous studies, much more patients and controls were recruited in the present study. As different from the studies in the literature, we collected both sleep quality, and depression and anxiety levels in one study and investigated the correlations of those entities with the severity of FMS. Our aim in the study was to compare QoL, psychological status, and sleep quality of the female FMS patients' spouses with those of the spouses of female healthy controls and to investigate the effects of FMS on those participants.

## Materials and Methods

Our study with a cross-sectional and observational design was conducted by obtaining consent from the patients admitted to Meram Training and Research Hospital between 2015 and 2016. Composed of the spouses of 100 female FMS patients and the spouses of 100 healthy women, a total of 200 participants between 20-55 years of age constituted the study and control groups in the study. One hundred female patients and their spouses were evaluated in terms of FMS and diagnosed with FMS under the 1990 criteria released by The American Association of Rheumatism (ACR). Among the patients and their spouses included in the study, those diagnosed previously with psychiatric diseases and so receiving treatment, those with sleep disorders and accompanying comorbidities, and those above or below the specified age levels were excluded from the study. The subjects accepting to participate in the study were informed about the design of the study, and written consent forms were obtained from the participants. Additionally, the study was carried out under the principles of the 1964 Declaration of Helsinki and its later amendments.

The sociodemographic and clinical features of the patient and control groups were recorded in a form prepared in the light of the literature. Such data as age, height, weight, body mass index (BMI), and educational

status were determined for each participant. BMI was calculated as body weight (kg)/height (m<sup>2</sup>). While the Beck Depression Inventory (BDI) was used to determine the levels of depression, the anxiety levels were assessed with the Beck Anxiety Inventory (BAI). The Short Form-36 (SF-36) was used to determine the levels of QoL, and the Checklist Individual Strength (CIS) test was utilized to assess chronic fatigue. The scores of sleep quality and deterioration over the past month were also evaluated through the Pittsburgh Sleep Quality Index (PSQI). The subjective parameters of female FMS patients' spouses obtained through the scales were compared with those of the controls' spouses.

## Categories for Obesity

The values of BMI were calculated for each participant, and the participants were classified as normal (BMI <25), overweight (between BMI 25-30), and obese (BMI ≥30) under the clinical guidelines released by the National Institutes of Health in 1998 (12).

## The Beck Depression Inventory (BDI)

BDI is an inventory developed by Beck in 1961 to evaluate the level, reliability, and validity of the severity of depression, such as social withdrawal in patients, and the Turkish version of BDI was created and validated by Tegin in 1980 and later by Hisli in 1988. BDI is a self-report inventory including 21 items, and each item in BDI includes a four-level self-assessment statement determining depression-specific behaviors (9). During the study, the patients were asked to choose the best responses to the questions most appropriate for their situation, and the scores ranging from 0 (no depression) to 63 (severe depression) were obtained by assigning the score of 0, 1, 2, 3 to each question. Those having a BDI score of 17 and above were evaluated in favor of depression(9).

## The Beck Anxiety Inventory (BAI)

In 1988, BAI was created by Beck et al., and the Turkish version was created by Ulusoy et al. in 1998. BAI is a self-assessment inventory used to determine the frequency of anxiety symptoms experienced by individuals. It is a Likert-type scale consisting of 21 items, including "never", "mild", "moderate", and "severe" and scored between 0 and 3. The score ranges from 0 to 63, and as the total score increases, it indicates the severity of the anxiety experienced by the individual (13). While those with BAI scores between 8-15 are considered as mild anxiety, individuals with BAI scores between 16-25 and 26-63 are categorized as moderate and severe anxiety patients, respectively.(13)

## The Short Form-36 (SF-36)

SF-36 is the scale most frequently used to measure QoL in medical science and consists of eight subscales questioning 36 items including physical and mental health status. Those items include physical function, limitation of the role due to physical problems, the general perception of pain and health status

constituting the physical health components, energy/vitality, social function, role limitation due to emotional problems, and mental health constituting the mental health component. SF-36 has also been adapted into the Turkish version, and its scores range from 0 to 100; in the form, 100 and 0 points indicate the best and worst health status (14,15). SF-36 is composed of two summary scales: the physical and mental components.(14)

### **The Checklist Individual Strengths (CIS)**

Consisting of 20 questions, CIS is used to evaluate chronic fatigue status in individuals. Each question is evaluated with a 7-point Likert-type scale. CIS has four dimensions defining subjective experience of fatigue (eight items), decrease in motivation (four items), decrease in activity (three items), and decrease in concentration (four items). The total score reveals the sum of those four dimensions, and higher scores indicate a higher degree of fatigue, more impairment in concentration, and lower motivation and activity (16). The reliability and validity of CIS were performed in 2009 by Ergin and Gulbin (17).

### **The Pittsburgh Sleep Quality Index (PSQI)**

PSQI was developed by Buysse et al. in 1989 (15) and adapted to Turkish by Agargun et al. in 1996 (18). PSQI is a self-rated 19+5-item scale used to assess sleep quality and disturbances over the past month. Of 24 questions in PSQI, while 19 questions are replied to by the respondent, five are answered by a spouse or roommate. PSQI consists of seven combinations of 19 questions on the scale as follows: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunctioning. Each component is evaluated from 0 to 3 points, and the total score of seven components gives a total score ranging from 0 to 21; a total score greater than five also indicates poor sleep quality (18).

### **Analyses of Data**

Statistical analyses of the study findings were evaluated with the Statistical Package for the Social Sciences software version 21.0 (SPSS Inc., Chicago, IL, USA). Descriptive measures for all variables were calculated, and while the categorical variables were described as frequency and percentage, the numerical variables were presented as mean±standard deviation (SD), as indicated in Tables. The normal distribution of numerical variables was checked by the single sample Kolmogorov-Smirnov test. The variables with continuous numerical types generally showed normal distributions ( $p > 0.05$ ), and the cut-off variables with a score or time category showed no normal distribution ( $p < 0.05$ ). The comparative analyses for numerical variables were performed on the axis of patient-control groups. The student t-test was used for two independent groups,

and one-way analysis of variance (ANOVA) was used for the group comparisons of normal dividing variables. The Mann-Whitney U was preferred in the comparisons of two groups, and the non-parametric Kruskal-Wallis test was utilized to compare more than two groups. Bilateral comparison tests were also carried out for the results with general significance, and significant results were obtained between the groups. The Monte Carlo corrected chi-square analysis was used to determine the correlations between the categorical variables. When the parametric values were defined for the correlations between numerical variables through the Pearson correlation, the non-parametric Spearman's Rho correlation analyzes were performed for the variables not provided. Each p-value related to the correlation values was obtained, and the consistency of the model, residuals, and multi-link analysis was also performed. Significant results were visualized with graphs matching the method of analysis, and a p-value of  $< 0.05$  was considered statistically significant.

### **Results**

It was determined that female FMS patients and female controls had similar scores in terms of age, time of marriage, number of children, income per month, familial structure, educational status, and cigarette smoking ( $p > 0.05$ ). A statistically significant difference was detected between the groups in terms of the averages of BMI, VAS, TPC, BDI, BAI, PSQI scores, and employment status ( $p < 0.001$ ), and the findings are given in Table 1.

The spouses of female FMS patients exhibited similar features to those of the cohort controls in terms of age, BMI, working status, and level of education ( $p > 0.05$ ); however, there was a statistically significant difference between both groups in terms of the averages of VAS, TPC, BDI, BAI, and PSQI scores ( $p < 0.001$ ), and the findings are presented in Table 2.

The averages of SF-36 sub-scores and summary scores of female FMS patients were statistically significantly lower, compared to the averages of those in the control group ( $p < 0.001$ ); in other words, female FMS patients displayed a worse level of QoL than that in the control group (Table 1).

In terms of the averages of SF-36 subscores and summary scores, there was a statistically significant difference between the spouses of both female FMS patients and the controls ( $p < 0.001$ ) (Table 2). The average of the scores of all subgroups of total PSQI scores and PSQI scale was higher in the group of FMS patients compared to the control group. There was also a statistically significant difference between the average scores other than sleep disorder ( $p = 0.069$ ) and daytime dysfunction ( $p = 0.094$ ), which were among the subgroups of the PSQI scale (Table 1).

**Table 1.** Clinical and sociodemographic characteristics of female FMS patients and controls

	FMS (n=100)	Control (n=100)	p
Age (years)	42.16±7.31	43.07±8.35	0.303
BMI (kg/m <sup>2</sup> )	28.47±4.07	26.06±4.23	<0.001
Time of marriage (years)	21.07±9.11	20.3±8.6	0.191
VAS-pain	8.8±1.18	1.45±1.15	<0.001
VAS-fatigue	8.36±1.57	1.82±1.21	<0.001
TPC	14.3±2.25	1.66±1.64	<0.001
BDI	17.77±9.75	4.15±2.17	<0.001
BAI	25.71±12.53	5.06±3.27	<0.001
PSQI	7.48±3.83	4.27±1.76	<0.001
SF-36 Physical Components	35.85±15.05	71.15±6.92	<0.001
SF-36 Mental Components	41.79±12.75	67.14±10.65	<0.001
Total PSQI score	7.48±3.83	4.27±1.76	<0.001
Employment status			
Employed	25 (25%)	70 (70%)	<0.001
Unemployed	75 (75%)	30 (30%)	
Family structure			
Nucleus family	72 (72%)	83 (83%)	0.130
Extended family	28 (28%)	17 (17%)	
Educational level			
Illiterate	0 (0%)	1 (1%)	0.700
Primary school	42 (42%)	44 (44%)	
Secondary School	20 (20%)	23 (23%)	
High school	22 (22%)	21 (21%)	
College/University	16 (16%)	11 (11%)	
Smoking status			
Smokers	10 (10%)	17 (17%)	0.545
Non-smokers	86 (86%)	77 (77%)	
Ex-smokers	4 (4%)	6 (6%)	

BAI: Beck Anxiety Inventory, BDI: Beck Depression Inventory, BMI: Body mass index, PSQI: Pittsburgh Sleep Quality Index, SF-36: 36-Item Short-Form Health Survey, TPC: Tender point count, VAS: Visual Analogue Scale,

**Table 2.** Clinical and sociodemographic characteristics of spouses of female FMS and control cohort groups

	Spouses of Female FMS Patients (n=100)	Spouses of Female FMS Controls (n=100)	p
Age (years)	45.94±8.64	46.24±8.73	0.781
BMI (kg/m <sup>2</sup> )	29.04±8.69	26.73±3.70	0.046
VAS-pain	3.95±2.35	0.98±1.47	<0.001
VAS-fatigue	4.65±2.57	1.24±1.58	<0.001
TPC	5.35±4.86	1.12±1.45	<0.001
BDI	10.87±9.24	4.39±5.32	<0.001
BAI	12.19±9.42	3.88±4.65	<0.001
PSQI	5.1±3.05	3.58±2.51	<0.001
SF-36 Physical Components	59.79±13.97	72.1±8.37	<0.001
SF-36 Mental Components	56.42±14.53	67.69±12.63	<0.001
Total PSQI score	5.1±3.05	3.58±2.51	<0.001
Employment status			
Employed	75 (75%)	84 (84%)	0.467
Unemployed	25 (25%)	16 (16%)	
Educational level			
Illiterate	0 (0%)	0 (0%)	0.415
Primary school	41 (41%)	40 (40%)	
Middle School	12 (12%)	16 (16%)	
High school	28 (28%)	28 (28%)	
College/University	19 (19%)	16 (16%)	

BAI: Beck Anxiety Inventory, BDI: Beck Depression Inventory, BMI: Body mass index, PSQI: Pittsburgh Sleep Quality Index, SF-36: 36-Item Short-Form Health Survey, TPC: Tender point count, VAS: Visual Analogue Scale

The average scores of the total PSQI scores and all subgroups of the PSQI scale were higher in the patients' group than those in the controls. There was also a statistically significant difference between the averages of the scores related to subjective sleep quality, sleep duration, and sleep medication of the subgroups of the total PSQI score and PSQI scale ( $p < 0.05$ ) (Table 2).

In the patients' group, while a positive correlation was found between VAS-fatigue and PSQI ( $r=0.226$ ,  $p=0.024$ ), BDI ( $r=0.321$ ,  $p=0.001$ ) and BAI ( $r=0.161$ ,  $p=0.109$ ) scores, a negative correlation was observed between SF-36 scores ( $r=0.433$ ,  $p < 0.001$ ). As well as the positive correlation between VAS-pain and BAI scale scores ( $r=0.182$ ,  $p=0.170$ ), there was a negative correlation between SF-36 scores ( $r=0.417$ ,  $p < 0.001$ ). A negative correlation was also determined between TPC and SF-36 scores ( $r=0.345$ ,  $p < 0.001$ ).

As opposed to the positive correlation between VAS-fatigue and PSQI ( $r=0.297$ ,  $p=0.003$ ), BDI ( $r=0.346$ ,  $p < 0.001$ ) and BAI ( $r=0.373$ ,  $p < 0.001$ ) scores in the spouses of female FMS patients, a negative correlation was detected between SF-36 scores ( $r=0.513$ ,  $p < 0.001$ ). Even so, there was a positive correlation between VAS-pain and BAI ( $r=0.356$ ,  $p < 0.001$ ) scale scores, and a negative correlation was seen between SF-36 scores ( $r=0.275$ ,  $p=0.006$ ). There was also a negative correlation between TPC and SF-36 scores ( $r=0.347$ ,  $p < 0.001$ ).

## Discussion

In the present study, we evaluated the pain, fatigue, QoL, sleep disturbance, and psychological status of female FMS patients and their spouses and compared the findings with those of healthy controls and their spouses. We found in the study that the spouses of female FMS patients had higher levels of FMS, BMI, TPC, pain, fatigue, depression, anxiety, and worse sleep quality and QoL than those of female healthy controls' spouses.

FMS has negative effects on QoL. Various studies have shown that FMS can negatively affect familial and social relationships (19,20). Additionally, there are also studies reporting that the QoL of FMS patients' relatives is also adversely affected (21,22). In a study, it has been reported that in addition to affecting the QoL of patients, FMS negatively affects the QoL of patients' relatives and spouses by leading to physical and psychological disorders (7). In our study, the SF-36 scale was used to evaluate the QoL of female FMS patients and their spouses. In a study performed by Tutoglu et al., the SF-36 physical and emotional subgroup scores of female patients with FMS and their spouses were significantly lower than those of the control group (22). In the study where Celepkolu et al. evaluated

QoL and compared 30 female FMS patients and their spouses with 36 controls and their spouses, a significant difference was found in the sub-assessments of SF-36 scores in both patients and their spouses, except for social functions (23). In our study, the SF-36 scores were worse in all of the sub-assessments of SF-36, including social functions, among both female FMS patients and their spouses, compared to those in the female controls and their spouses. In addition, both in female FMS patients and in their spouses, we determined a negative correlation between TPC, VAS-pain and VAS-fatigue parameters, and SF-36 physical and mental component scores. These findings demonstrate that the QoL levels of both female FMS patients and their spouses are negatively affected, and that QoL is associated with TPC, pain, and fatigue.

Among the most common co-diagnoses experienced by FMS patients is depression (24). In previous studies, the co-existence of FMS and depression is referred to with common pathophysiological features and triggering factors (23). In studies investigating depression levels in the spouses and relatives of patients with FMS, different findings have been reported. In the study in which Dogan et al. compared 35 spouses and 32 relatives of FMS patients with the spouses and relatives of healthy controls, no difference was found between the BDI and BAI scores of the spouses and relatives of FMS patients, and those of the controls (25). Being different from the findings reported in the study by Dogan et al., in another study in which 30 female patients with FMS and their spouses were included and investigated by Tutoglu et al., it was detected that depression levels were high in both female FMS patients and their spouses, and that depression levels in female FMS patients were negatively correlated with sexual dysfunction in their spouses (22). In a study performed by Bugatti et al., the psychological status of the spouses of female FMS patients was reported as poorer, compared with the controls (26). However, in another study where the communication issues between FMS patients and their spouses were investigated, Karen et al. stated that depressive symptoms of FMS patients and their spouses were related to the severity of the symptoms and dysfunction of the patients (27). According to the study conducted by Celepkolu et al., depression and anxiety scores were significantly higher in the patient group (23). In our study, the level of depression in female FMS patients was significantly higher than in that of the control group (49% vs 3%). In addition, the level of depression was also significantly higher in the spouses of female FMS patients than that of the controls (21% vs 3%). In our study, there was a positive correlation between the BDI scores, and VAS-pain and VAS-fatigue scores in female FMS patients and their spouses. The type and duration of the pain may increase the susceptibility to depression in FMS patients. It is considered that FMS patients may experience reactive depression since the patients cannot provide relief from the pain (23). The inability of many FMS patients to participate in family activities leads to feelings of stress, discomfort, and frustration

in the whole family (27). In addition, patients with FMS require more assistance in coping with the chores and daily routine, increasing the workload and responsibilities of other family members. Therefore, a significant part of the patients has stated that there are significant deteriorations in their marriages, such as separation or divorce. In this context, it can be asserted that the negative relationship between FMS patients and their spouses, and the inability of family members to adapt to changing situations affect the levels of pain and depression (28). Thus, these findings show us that depression is common among the spouses of female FMS patients and is closely related to the level of pain and fatigue. In a study, most women reported that their spouses felt guilty for having to take more responsibility for usual household chores and taking care of children (10). In addition, the family members, friends, and employers of FMS patients have difficulty in believing the distress of the patients, since FMS patients display no physical signs and visible deformation and show no clear findings with laboratory and imaging methods. Such a situation leads to feelings of loss of self-confidence and worthlessness caused by hopelessness and helplessness in FMS patients, and these feelings are considered to be the subcomponents of depression (29).

A disorder in a female spouse may give rise to such emotional reactions as anger and fury, insecurity, impotence, guilt, anxiety, discouragement, physical and emotional stress, and burnout syndrome in the spouse of the female patient. In a study, the interviews with six female FMS patients have identified that FMS can place strain and negative effects on family relationships, and that FMS patients may feel and experience guilt due to the perceived failure to pay enough attention to the needs of their families (10). In our study, while the rates of mild, moderate, and severe anxiety were found as 92% in female FMS patients, the rates were 19% in the control group. Even so, while the rates of mild moderate, and severe anxiety were 61% in female FMS patients' spouses, the rates were 9% in the spouses of the controls. There was a positive correlation between the VAS-pain and VAS-fatigue scores, and the BAI scores of both female FMS patients and their spouses. These findings indicate that as well as depression, anxiety is also commonly encountered in both female FMS patients and their spouses, and that the spouses should be evaluated in terms of anxiety while assessing female patients with FMS.

Our findings are in line with those reported in the studies on the fact that the pain seen in FMS, restless sleep, and fatigue cause a decrease in QoL by affecting the physical functions, psychological status, and social lives of the patients. For this reason, we consider that such factors as pain, fatigue, and decrease in physical function should be questioned in female FMS patients and their spouses due to the negative effects on QoL, which causes emotional stress and loss of

communication between the spouses.

Sleep disturbance is a common challenge in FMS patients and develops in approximately 75% of the patients. FMS patients state to have difficulty falling asleep, waking up frequently at night, early, and tired in the morning, and also have difficulty sleeping again in the morning. Additionally, along with a light sleep pattern, FMS patients frequently turn and fidget around in bed during sleep (19,30). Given the PSQI findings of our study participants, while 73% of female FMS patients had poor sleep quality, 39% of the women in the control group were had poor sleep quality, and the findings were consistent with the literature. In a study carried out by Celepkolu et al., the spouses of female FMS patients and female controls were evaluated in terms of sleep quality, and no significant difference was detected between both groups (23). In our study, 60% of female FMS patients' spouses and 24% of healthy female controls' spouses were determined to have poor sleep quality. In addition, there was also a positive correlation between the VAS-fatigue scores and total PSQI scores of both female FMS patients and their spouses. Our study shows that not only female FMS patients but their spouses have sleep disorders, as well.

The present study has also several limitations. First of all, the patients and controls admitted to a single center were included in the study. To obtain more general and robust findings, we consider that multicentric studies including larger populations are needed. Secondly, the depression and anxiety levels of the participants in the patient and control groups were evaluated through several scales; however, no structured psychiatric interviews could be conducted.

In conclusion, in our study, female FMS patients and their spouses were found to have deteriorated QoL and increased frequency of depression, anxiety and sleep disorders, compared to the controls. In addition, depression, anxiety and sleep disturbance in female FMS patients and their spouses were associated with increased levels of pain and fatigue. Therefore, as the severity of symptoms in female patients with FMS increases, the reflection of the symptoms also negatively affects their spouses. Negative influence on the spouses of female FMS patients can put the treatment process into a vicious circle. We consider that the examination of FMS patients' spouses and the continuation of the treatment within the family integrity may increase the success of FMS treatment.

### Conflict of interest

The authors declare no conflict of interest.

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