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Evaluation of the Relationship between Headache and Pain, Sleep, Depression, Quality of Life in Female Patients with Fibromyalgia Syndrome

Fibromiyalji Sendromu Olan Kadın Hastalarda Baş Ağrısı ile Ağrı, Uyku, Depresyon ve Yaşam Kalitesi Arasındaki İlişkinin Değerlendirilmesi

İbrahim Uludoğan

Department of Physical Medicine and Rehabilitation, Eskişehir City Hospital, Eskişehir, Türkiye

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Correspondence:
Dr. İbrahim Uludoğan. Department of Physical Medicine and Rehabilitation, Eskişehir City Hospital, Eskişehir, Türkiye
Phone:
+90 506 761 89 44
e-mail:
ibrahimuludogan15@hotmail.com

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ABSTRACT

Objectives: This study aimed to examine how headache affects pain intensity, sleep quality, depressive symptoms, and quality of life in women with fibromyalgia syndrome, and whether it independently influences both subjective outcomes and objective pain sensitivity assessed by algometry.

Methods: Between June and November 2023, 164 female patients with fibromyalgia syndrome participated in a single-center cross-sectional study and were divided into two groups: headache present (n=82) and headache absent (n=82). Pain was assessed with the visual analog scale, depression with the Beck Depression Inventory, sleep quality with the Pittsburgh Sleep Quality Index, and quality of life with the SF-36 subscales. Pressure pain threshold in the upper trapezius was measured using a spring-loaded algometer. Group comparisons were performed, and the independent effect of headache was analyzed as a binary variable using linear regression analysis.

Results: Group comparisons revealed significant relationships between headache and lower SF-36 physical role, emotional role, mental health, and pain scores (all $p<0.05$). In regression analysis, the presence of headache showed an independent and negative effect on SF-36 physical role ($B=-13.7$; $p=0.025$), emotional role ($B=-15.1$; $p=0.007$), mental health ($B=-4.7$; $p=0.029$), and pain ($B=-9.0$; $p=0.005$) scores. Negative correlations were found between algometry measurements on the trapezius and headache intensity (Algometry 1: $r=-0.37$, $p<0.001$; Algometry 2: $r=-0.26$, $p=0.021$).

Conclusion: In fibromyalgia syndrome, headache independently and negatively affects both subjective quality of life domains and objective pain sensitivity. Routine assessment and management of headache may be crucial to reducing the overall disease burden.

Keywords: Depression; fibromyalgia; headache; pain; quality of life; sleep.

ÖZET

Amaç: Bu çalışmanın amacı, fibromiyalji sendromu olan kadınlarda baş ağrısının ağrı şiddeti, uyku kalitesi, depresif semptomlar ve yaşam kalitesi üzerindeki etkilerini; ayrıca algometri ile değerlendirilen objektif ağrı duyarlılığı ve subjektif sonuçlar üzerindeki bağımsız etkisini incelemektir.

Yöntem: Haziran–Kasım 2023 tarihleri arasında fibromiyalji sendromu tanılı 164 kadın hasta tek merkezli, kesitsel bir çalışmaya dahil edildi ve iki gruba ayrıldı: baş ağrısı olanlar (n=82) ve baş ağrısı olmayanlar (n=82). Ağrı şiddeti görsel analog skala (VAS), depresyon düzeyi Beck Depresyon Envanteri, uyku kalitesi Pittsburgh Uyku Kalitesi İndeksi ve yaşam kalitesi SF-36 alt ölçekleri ile değerlendirildi. Üst trapez kasında basınç ağrı eşiği yaylı algometre ile ölçüldü. Gruplar karşılaştırıldı ve baş ağrısının bağımsız etkisi ikili değişken olarak doğrusal regresyon analizi ile incelendi.

Bulgular: Grup karşılaştırmaları, baş ağrısı ile SF-36 fiziksel rol, duygusal rol, ruhsal sağlık ve ağrı alt ölçeklerinde anlamlı olumsuz ilişkiler olduğunu gösterdi (tümü p<0.05). Regresyon analizinde baş ağrısının varlığı, SF-36 fiziksel rol (B=−13.7; p=0.025), duygusal rol (B=−15.1; p=0.007), ruhsal sağlık (B=−4.7; p=0.029) ve ağrı (B=−9.0; p=0.005) skorları üzerinde bağımsız ve olumsuz bir etkiye sahipti. Trapez kası üzerindeki algometri ölçümleri ile baş ağrısı şiddeti arasında negatif korelasyonlar saptandı (Algometri 1: r=−0.37, p<0.001; Algometri 2: r=−0.26, p=0.021).

Sonuç: Fibromiyalji sendromunda baş ağrısı, hem subjektif yaşam kalitesi alanlarını hem de objektif ağrı duyarlılığını bağımsız ve olumsuz yönde etkilemektedir. Baş ağrısının rutin değerlendirilmesi ve uygun şekilde yönetilmesi, hastalığın genel yükünü azaltmada önemli olabilir.

Anahtar sözcükler: Ağrı; baş ağrısı; depresyon; fibromiyalji; uyku; yaşam kalitesi.

Fibromyalgia syndrome (FMS) is defined as a chronic and multifaceted syndrome presenting with generalized musculoskeletal pain, prolonged fatigue, alterations in sleep quality, cognitive impairment, and diverse psychological features.[1] The clinical presentation of this syndrome, which is more common in women, is quite heterogeneous, and the severity and distribution of symptoms can vary significantly between individuals. Headache, one of the profound symptoms of FMS, is a significant clinical problem frequently encountered in this patient group and has a marked negative impact on quality of life.[2]

In prior studies, the prevalence of headaches in patients diagnosed with FMS has been reported to vary widely; however, their subtypes, distribution, and clinical effects have not been evaluated in detail in most studies. In an epidemiological study conducted by Marcus and colleagues in 2005, headaches were identified in 76% of individuals diagnosed with FMS; of these, 63% were classified as migraine, 24% as tension-type or combined headache, and 8% as analgesic overuse headache.[2] In a larger-scale study, the prevalence of migraine in FMS patients was reported to be 55.8%.[3] Similarly, in a study conducted by Gürbüz and colleagues from Türkiye, headaches were detected in 84.7% of FMS patients, and 77.8% of these individuals were diagnosed with primary headache.[4]

Primary headaches, particularly migraine and tension-type, show generalized pressure pain hypersensitivity.[5,6] The pressure pain threshold (PPT) is often measured in pericranial and shoulder–neck muscles, including the temporalis, suboccipital, and upper trapezius, to assess widespread hyperalgesia.[7,8] Among these, the upper trapezius consistently demonstrates the lowest PPT values.[9] Although trapezius PPT has been evaluated in fibromyalgia, no study has directly compared these measurements between patients with and without headache.

Given that fibromyalgia involves generalized mechanical hyperalgesia, coexisting headache may further enhance central sensitization and reduce quality of life. Quality of life is a key determinant in managing chronic diseases that persist lifelong and impair daily functioning. Although fibromyalgia does not cause structural damage, its pain leads to fatigue, sleep disturbance, mood alterations, and cognitive difficulties, all of which markedly reduce quality of life. Burckhardt et al.[10] highlighted that pain impairs both physical and psychosocial functioning, directly reflected in quality of life scores. Among FMS symptoms, pain level is the strongest predictor of reduced quality of life, followed by sleep disturbance and depression severity.[11]

The prevalence of depression in FMS has been reported to be between 30–70%.[12] Chronic, widespread pain and functional limitations lay the groundwork for the development of mood disorders over time. Additionally, depression creates a vicious cycle by increasing pain perception: pain causes depression, and depression intensifies pain.[12]

Another prominent feature of fibromyalgia is sleep disorder. Difficulty falling asleep, frequent sleep disruption, morning fatigue, and non-restorative sleep are the most commonly reported problems. Polysomnography studies have found that slow-wave sleep is reduced, and alpha–delta sleep abnormalities are observed in patients with fibromyalgia.[13]

Previous studies have investigated pressure pain thresholds in both fibromyalgia and primary headache disorders; however, comparative data classifying fibromyalgia patients according to the presence or absence of headache remain limited. We hypothesized that the clinical burden of headache in FMS may be greater than commonly assumed. Therefore, this study was designed to investigate how the presence of headache influences pain intensity, sleep quality, depressive symptoms, and quality of life in women with fibromyalgia. In addition, the study aimed to examine whether headache exerts an independent effect on both subjective outcomes and objective pain sensitivity, as measured by pressure pain thresholds in the upper trapezius muscle.

Methods

This single-center, observational, cross-sectional study was conducted at the Physical Medicine and Rehabilitation Clinic between June 2023 and November 2023. A total of 164 female patients aged 18 years and older who had been diagnosed with FMS according to the 2016 classification criteria of the American College of Rheumatology (ACR) and had been followed up for at least six months were included in the study. Patients with uncontrolled systemic disease, cerebrovascular disease, malignancy, psychiatric disorders, known sleep disorders, cervical radiculopathy, or cervical myelopathy were excluded from the study.

According to the 2016 revised American College of Rheumatology (ACR) criteria, the diagnosis of fibromyalgia is based on a comprehensive assessment that includes fatigue, unrefreshing sleep, and cognitive symptoms in addition to widespread pain. For diagnosis, the Widespread Pain Index (WPI) must be ≥7 and the Symptom Severity Scale (SSS) must be ≥5, or the WPI must be 4–6 and the SSS must be ≥9. Symptoms should have been present at a similar level for at least three months. Generalized pain must be present in at least four of five body regions (right upper, left upper, right lower, left lower, and axial regions). The diagnosis can be made irrespective of other clinical diagnoses, as the presence of another disorder does not exclude fibromyalgia.[14]

Participants were divided into two groups based on the presence of headache. The presence of headache was determined based on its chronicity and diagnostic consistency with the International Classification of Headache Disorders-3 (ICHD-3) criteria and classified as chronic if occurring on 15 or more days per month for at least 3 months. Accordingly, group 1 included FMS patients with headaches; group 2 included FMS patients without headaches.

Participants' sociodemographic data and clinical complaints were recorded by the researcher through face-to-face interviews. Additionally, pain intensity was assessed using the Visual Analog Scale (VAS); sleep quality using the Pittsburgh Sleep Quality Index (PSQI); quality of life using the SF-36; and depression level using the Beck Depression Inventory (BDI). Pressure pain threshold measurements were performed using the Baseline® spring-loaded pressure algometer. The two groups were analyzed comparatively in terms of demographic characteristics, clinical measurements (VAS, PSQI, SF-36, BDI), and pressure pain threshold.

The Pittsburgh Sleep Quality Index (PSQI) assesses overall sleep quality based on seven components, with scores ≥5 indicating poor sleep.[15] SF-36 also has eight subscales: physical functioning, social functioning, role physical, role emotional, vitality, mental health, bodily pain, and general health perception. Each subscale is scored on a scale of 0–100; higher scores indicate better quality of life.[16] The Beck Depression Inventory (BDI), composed of 21 items, measures depression severity, with higher scores indicating more severe depressive symptoms.[17]

Pain sensitivity was measured using the Baseline® algometer. Pressure was applied at a right angle to the non-dominant trapezius muscle, and the values at which pain was first felt and felt most intensely were recorded. For anatomical standardization, the line between the spinous process of the C7 vertebra and the lateral end of the acromion was determined, and the midpoint of this line was marked on the skin. All measurements were taken with participants seated, head and torso neutral, and shoulders relaxed. At least two consecutive measurements were taken at each measurement point. In case the values obtained between measurements differed by more than 10–15%, a third measurement was performed. The arithmetic mean value was used for each point in the final analyses. This approach was chosen to reduce variation between measurements and increase reliability. High values indicate a high pain threshold, while low values indicate increased sensitivity.[1]

Written and verbal consent was obtained from all participants prior to the study, and the study received ethical approval from the Scientific Research Ethics Committee (Decision No: ESH/GOEK2023/40), and was conducted in accordance with the principles of the Declaration of Helsinki.

Statistical Analysis

Sample size calculation: Before the study, at least 82 cases were required for each group using the G*Power 3.1 program, assuming effect size (d)=0.4406, type I error probability (α)=0.05, and type II error probability (β)=0.20 (power=0.80) for two independent groups. This number was provided in our study.

IBM SPSS Statistics 25.0 software was used to analyze the data obtained in the study. The normality of the data distribution was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests, and it was determined that not all variables showed a normal distribution ($p<0.05$). For this

reason, non-parametric statistical methods were used. Descriptive statistics including the mean, standard deviation, minimum, and maximum values were calculated.

In pairwise group comparisons, the Mann–Whitney U test was used to compare ordinal data such as algometry, sleep quality, depression, and quality of life subdimensions between groups with and without headache.

In the analysis of variable relationships, Spearman's rho correlation analysis was applied to evaluate the associations between headache intensity (VAS), algometry scores, Beck Depression Inventory (BDI), Pittsburgh Sleep Quality Index (PSQI), and the subscales of the SF-36 quality of life questionnaire.

In addition, a binary logistic regression analysis was performed, with the presence of headache as the dependent variable and the SF-36 subscales, Beck Depression Inventory, Pittsburgh Sleep Quality Index, and pain assessment parameters as independent variables.

For all analyses, the level of statistical significance was set at $p<0.05$.

Results

The demographic and clinical characteristics of the patients included in the study are presented in Table 1. The groups were found to be similar demographically, with no significant difference detected in terms of average age, height, and weight.

The groups with and without headaches were similar in terms of duration of pain and overall body pain level (all $p>0.05$). Educational level, marital status, employment status, and smoking habits did not show significant differences between groups (all $p>0.05$). Therefore, the potential effects of headache on quality of life and psychosocial indicators can be assessed independently of underlying demographic imbalances.

According to the findings in Table 2, no significant differences were found between fibromyalgia patients with and without headaches in terms of BDI, PSQI, general body VAS, pressure pain threshold, and pressure pain tolerance.

Similarly, no statistically significant differences were found in the SF-36 scale's physical function, energy level, social function, and general health subscales. However, it has been seen that the group without headaches scored higher, particularly in the physical role ($p=0.033$), emotional role ($p=0.031$), mental health ($p=0.027$), and pain ($p=0.006$) subscales. This finding suggests that when headaches accompany fibromyalgia, they negatively affect both emotional and mental health, and patients experience greater limitations in performing physical roles and controlling pain.

Similar results were obtained in the linear regression analysis performed for these subdimensions, where statistically significant differences were detected. The presence of headache was associated with significantly lower scores for physical role ($B=-13.7$, $p=0.025$), emotional role ($B=-15.1$, $p=0.007$), mental health ($B=-4.7$, $p=0.029$), and pain ($B=-9.0$, $p=0.005$) scores (Table 3).

In the study, when examining the relationships between headache intensity and clinical parameters, a positive and strong relationship was found between general body pain (VAS) and headache intensity ($r=0.43$, $p<0.001$). This finding shows that as headache intensity increases, patients' overall body pain also increases significantly. Negative correlations were found between algometry measurements and headache intensity. As headache intensity increased, the pain pressure threshold decreased significantly (Algometry 1: $r=-0.37$, $p<0.001$; Algometry 2: $r=-0.26$, $p=0.021$). This

Table 1. Demographic characteristics of groups with and without headaches

	Headache absent (n=82)	Headache present (n=82)	p
Age (years)	48.9±9.1	47.4±10.0	0.517
Height (cm)	160.7±6.3	161.6±6.0	0.410
Weight (kg)	74.5±13.4	74.4±13.0	0.928
Educational Status (Associate Degree–Bachelor's Degree)	36 (44)	43 (52.5)	0.348
Social Status (Married) (n/%)	69 (84.1)	70 (85.3)	1.000
Employment Status (Employee) (n/%)	20 (24.4)	18 (22.0)	0.853
Smoking (n/%)	43 (52.4)	37 (45.1)	0.435

p: two-tailed significance level ($p<0.05$ considered significant).

Table 2. Comparison of Sleep Quality, Quality of Life Subdimensions, and Depression Ranking Scores in Terms of Headache Status

	Groups	N	Average Rank	Total Rank	U	p
BDI	Headache absent	82	78.4	6426.00	3023.00	0.264
	Headache present	82	86.6	7104.00		
PSQI	Headache absent	82	80.5	6603.50	3200.50	0.594
	Headache present	82	84.5	6926.50		
SF-36 PF	Headache absent	82	82.2	6743.50	3340.50	0.943
	Headache present	82	82.8	6786.50		
SF-36 RP	Headache absent	82	90.1	7388.00	2739.00	0.033
	Headache present	82	74.9	6142.00		
SF-36 RE	Headache absent	82	90.3	7407.00	2720.00	0.031
	Headache present	82	74.7	6123.00		
SF-36 VT	Headache absent	82	87.3	7160.50	2966.50	0.191
	Headache present	82	77.7	6369.50		
SF-36 MH	Headache absent	82	90.7	7433.50	2693.50	0.027
	Headache present	82	74.3	6096.50		
SF-36 SF	Headache absent	82	84.2	6910.00	3217.00	0.630
	Headache present	82	80.7	6620.00		
SF-36 BP	Headache absent	82	92.6	7596.00	2531.00	0.006
	Headache present	82	72.4	5934.00		
SF-36 GH	Headache absent	82	86.4	7087.00	3040.00	0.288
	Headache present	82	78.6	6443.00		
General body pain (VAS)	Headache absent	82	77.7	6370.0	2967.0	0.186
	Headache present	82	87.3	7160.0		
Pressure Pain Treshold (kg/cm²)	Headache absent	82	87.2	7146.0	3743.0	0.202
	Headache present	82	77.9	6384.0		
Pressure Pain tolerance (kg/cm²)	Headache absent	82	86.3	7075.5	3672.5	0.304
	Headache present	82	78.7	6454.5		

BDI Beck Depression Inventory; PSQI: Pittsburgh Sleep Quality Index; SF-36: 36-item Short Form; PF: Physical Functioning; RP: Role-Physical; RE: Role-Emotional; VT: Energy/Vitality; MH: Mental Health; SF: Social Functioning; BP: Pain; GH: General Health; n: group sample size; U: Mann–Whitney U statistic; p: two-tailed significance level ($p<0.05$ considered significant).

result suggests that headaches in fibromyalgia patients are associated with lower pressure pain tolerance and increased pain sensitivity (Fig. 1).

Additionally, a positive and significant relationship was observed between headache intensity and depression level ($r=0.17$, $p=0.033$). In addition, negative correlations were found between some subdimensions of the quality of life scale and headache severity. Specifically, the physical role ($r=-0.20$, $p=0.009$), emotional role ($r=-0.18$, $p=0.021$), mental health ($r=-0.23$, $p=0.003$), and pain subdimensions ($r=-0.24$, $p=0.002$). These findings reveal that as headache severity increases, patients' quality of life is negatively affected in multiple dimensions (Fig. 1).

No significant relationship was found between sleep quality and headache severity ($p>0.05$) (Fig. 1).

The correlation analyses between general body pain and depression, sleep quality, and SF-36 quality of life subscales are presented separately for the entire group, those with headaches, and those without headaches in Table 4.

According to the results obtained, general body pain was found to be positively and significantly associated with depression in the entire group, and it also showed negative and significant correlations with physical function, physical role, energy, mental health, social function, pain, and general health dimensions. In the group with headaches, these relationships were stronger and more prevalent, and the emotional role was also significantly affected. In those without headaches, the effect was more limited, and negative relationships were maintained particularly with regard to physical role, vitality, pain, and general health dimensions.

Table 3. Linear regression analysis results showing the effect of headache presence on depression, sleep quality, and quality of life subdimensions

Variable	B	Standart Error	p	95% GA Lower	95% GA Upper
BDI	1.7	1.3	0.191	-0.8	4.2
PSQI	0.01	0.8	0.987	-1.5	1.5
SF-36 PF	1.7	2.3	0.469	-2.8	6.1
SF-36 RP	-13.7	6.1	0.025	-25.7	-1.7
SF-36 RE	-15.1	5.5	0.007	-26.1	-4.2
SF-36 VT	-2.3	2.5	0.358	-7.1	2.6
SF-36 MH	-4.7	2.2	0.029	-8.9	-0.5
SF-36 SF	-4.1	3.1	0.191	-10.3	2.1
SF-36 BP	-9.0	3.2	0.005	-15.3	-2.8
SF-36 GH	-2.7	2.6	0.303	-7.8	2.4

B: Linear regression coefficient (unstandardized) p: Significance level (two-tailed), 95% CI Lower / 95% CI Upper: 95% confidence interval for B (lower and upper limits), std. error: standard error, BDI: Beck Depression Inventory; PSQI: Pittsburgh Sleep Quality Index; SF-36: 36-item Short Form; PF: Physical Functioning; RP: Role-Physical; RE: Role-Emotional; VT: Vitality; MH: Mental Health; SF: Social Functioning; BP: Pain; GH: General Health.

Discussion

Headaches, particularly tension-type headaches and migraines, are common in fibromyalgia patients and significantly impact their quality of life. The literature reports a positive relationship between the severity of whole-body pain and headache in patients with FMS. In a study by Marcus et al.,[2] the headache group had significantly higher rates of overall pain and lower living conditions. Similarly, de Tommaso et al.[18] found significant positive correlations

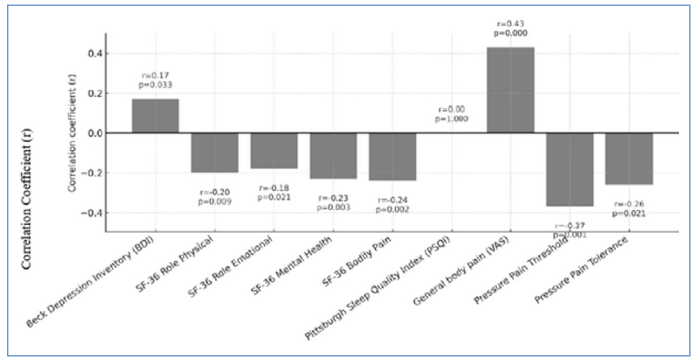


Figure 1. Spearman's rho correlations (r) between headache intensity (VAS) and clinical parameters (general body pain, algometry measurements, BDI, PSQI, SF-36 subscales) in patients.

between headaches and soft tissue tenderness and clinical pain burden in fibromyalgia patients with headache. Although there was no statistically significant difference between the two groups in terms of general pain scores in our study, it was observed that pain levels were higher in the headache group. In addition, a positive and significant correlation was found between headache severity and general body pain ($r=0.43$, $p<0.001$); it was observed that the pressure pain threshold decreased significantly as the severity of headache increased ($r=-0.37$, $p<0.001$). These results suggest that headache is an important factor that increases the pain burden in fibromyalgia.

The negative correlation between the pressure pain threshold assessed by algometric measurements and headache severity suggests that headache may be associated with increased pain sensitivity in patients with fibromyalgia. This finding is also consistent with the litera-

Table 4. Correlations of general body pain according to groups and according to the entire patient group

Variable	Entire Group r	Entire Group p	Headache present r	Headache present p	Headache absent r	Headache absent p
BDI	0.276	0.000	0.350	0.001	0.185	0.095
PSQI	0.129	0.101	0.147	0.187	0.123	0.272
SF-36 PF	-0.260	0.001	-0.337	0.002	-0.166	0.137
SF-36 RP	-0.294	0.000	-0.266	0.016	-0.277	0.012
SF-36 RE	-0.112	0.152	-0.252	0.022	0.045	0.685
SF-36 VT	-0.273	0.000	-0.308	0.005	-0.256	0.020
SF-36 MH	-0.283	0.000	-0.425	0.000	-0.114	0.307
SF-36 SF	-0.253	0.001	-0.300	0.006	-0.177	0.112
SF-36 BP	-0.420	0.000	-0.461	0.000	-0.307	0.006
SF-36 GH	-0.340	0.000	-0.393	0.000	-0.271	0.014

BDI: Beck Depression Inventory; PSQI: Pittsburgh Sleep Quality Index; SF-36: 36-item Short Form; PF: Physical Functioning; RP: Role-Physical; RE: Role-Emotional; VT: Energy/Vitality; MH: Mental Health; SF: Social Functioning; BP: Pain; GH: General Health; p: two-tailed significance level ($p<0.05$ considered significant); r: Spearman correlation coefficient.

ture indicating that central sensitization may represent a shared mechanism underlying both fibromyalgia and primary headache syndromes.[19] Our findings indicate that headache influences not only the subjective experience of pain but also the objectively measured pain-threshold parameters. Consistent with this interpretation, a 2016 study investigating the coexistence of FMS and migraine reported that patients with both conditions had the lowest electrical and pressure pain thresholds, suggesting enhanced central sensitization. Interestingly, approximately 86–87% of fibromyalgia symptom exacerbations occurred within 12 hours of a migraine episode, and migraine prophylaxis not only reduced headache frequency but also alleviated FMS symptoms.[10,20] These findings further support that the presence of headache in FMS represents more than a comorbid manifestation—it may act as a reinforcing factor that intensifies overall pain sensitivity and symptom burden.

In the literature, the impact of headache comorbidity on quality of life in FMS has shown two distinct patterns. Some studies have reported significant reductions only in certain SF-36 subdimensions, such as physical role and mental health,[4,21,22] while others have demonstrated a generalized decline affecting all eight domains of the SF-36.[22,23] These results emphasize that headache in fibromyalgia can affect quality of life to different extents and show that our study contributes to the literature on this subject.

The negative impact of headaches on quality of life is not unique to fibromyalgia; it has been similarly demonstrated in migraine and other chronic headache syndromes. Blumenfeld and colleagues found that migraine severity and frequency were associated with a significant decline in quality of life across both physical and mental health domains.[24] Buse and colleagues found that high levels of headache disability are associated with a marked decline in health-related quality of life.[25] All these data show that headache is not limited to pain levels alone but is an important symptom that negatively affects the multidimensional components of quality of life and that these effects must be taken into account in clinical management.

The complex relationship between headache and depression also supports the findings of our study. A study of 297 patients that included tension-type and migraine headache subgroups reported significantly higher depression scores, particularly in patients with chronic migraine and chronic tension-type headache; however, this relationship was not evident in episodic forms.[26] In our study, although the presence of headache alone did not increase depression scores, a positive and significant correlation was found between headache severity and depression level. This suggests that the tendency for headaches to become chronic or worsen may trigger depressive symptoms, thus increasing pain perception and creating a vicious cycle.

In addition, prospective, long-term epidemiological studies have revealed a bidirectional relationship between mood disorders and primary headache. For example, individuals with depression or anxiety have an increased risk of developing migraines or tension-type headaches; similarly, individuals with these headaches have an increased risk of developing depression or anxiety over time. This increased risk is approximately 40–60% for migraine and around 40% for tension-type headache.[27] Moreover, cross-sectional data indicate that depressive and anxiety disorders are approximately 2–10 times more prevalent in patients with headache than in those without headache.[28]

In our study, positive correlations were observed between both headache intensity and sleep quality and between total body pain intensity and sleep quality, although these did not reach statistical significance. This trend is in line with previous reports suggesting that increased pain intensity may impair sleep quality,[29] indicating that the relationship between pain and sleep might be clinically relevant even in the absence of statistical significance.

Limitations

This study examined the effects of headache in FMS on overall body pain, sleep quality, depression, and quality of life in a multifaceted manner with adequate sample size and comprehensive evaluation. Additionally, beyond these assessments, the relationship between peripheral sensitization and headache was evaluated using algometry, a relatively objective method. First of all, although the number of our patients was determined by power analysis and was statistically sufficient, some limitations should be taken into consideration. The fact that headache subtypes (migraine, tension-type, etc.) were not evaluated separately may have led to clinical heterogeneity and prevented the statistical emergence of some associations. The cross-sectional design of the study restricts the possibility of commenting on causality in the associations between headache and depression, sleep disturbance, and general body pain.

Future prospective and multicenter studies that evaluate headache subtypes separately will help clarify these relationships more clearly. The inclusion of neurophysiological assessments or brain imaging techniques may contribute to a better understanding of the mechanisms linking headache and fibromyalgia. In addition, prospective interventional studies investigating the effects of individualized headache management on fibromyalgia symptoms may help optimize treatment strategies and improve overall clinical outcomes for patients.

Conclusion

Despite these limitations, our findings that headache independently and negatively affects the quality of life in the physical role, emotional role, mental health, and pain subdimensions of the SF-36 quality of life assessment scale constitute the most important and original finding of our study. Another noteworthy and original finding is the significant negative correlation between headache severity and the pressure pain threshold measured by algometry, suggesting an objective association between peripheral sensitization and headache in patients with fibromyalgia. In light of this research, routine evaluation of headache and personalized interventions during clinical evaluation may be critical in alleviating the overall burden of FMS.

Disclosures

Ethics Committee Approval: The study was approved by Eskişehir City Hospital Ethics Committee (No: ESH/GOEK2023/40, Date: 23.09.2022).

Informed Consent: Written and verbal consent was obtained from all participants prior to the study.

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