

ORIGINAL ARTICLE

Physical activity level, sleep, fatigue and quality of life in Behçet's Disease and Familial Mediterranean Fever Disease during the Covid 19 Pandemic

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Purpose: The primary aim of our study was to compare the changes in physical activity, sleep, fatigue, pain, and quality of life levels before and during confinement in patients with Behçet's Disease (BD) and Familial Mediterranean Fever (FMF) disease (FMFD). The secondary aim of the present study was to determine the exercise behavior of patients with BD and FMF during the Covid 19 Pandemic.

Methods: A total of 21 patients with BD (mean age was 42 years, 57.1% were female) and 21 patients with FMF (Mean age was 39 years, 71.4% were female) were included in this cross-sectional study. Internal Physical Activity Questionnaire- Short Form, Short Form 36 and Exercise Stages of Change Questionnaire were administered to all participants. Sleep satisfaction, fatigue and pain was assessed with the Numeric Rating Scale.

Results: There were no significant differences in sociodemographic data and all outcome scores except sleep duration between the groups at baseline ($p>0.05$). Physical activity, pain, fatigue, sleep, and quality of life were compared with pre-confinement in both BD and FMF patients. It was found that the level of pain and fatigue increased in BD patients, and physical activity and quality of life decreased in both BD and FMF patients ($p<0.05$). We found a significant relationship between physical activity and mental health subscale of quality of life in BD patients ($p<0.05$). In addition, only 9.5% of BD patients and only 14.3% of FMFD patients in our study stated that they had been exercising for more than 6 months.

Conclusion: The patients in both groups were physically inactive and the majority of them did not exercise. This situation increased during the confinement period. In order to have a positive effect on these symptoms, personalized exercise therapy can be planned and physical activity levels can be increased in BD and FMF patients.

Keywords: Behçet's Disease, Familial Mediterranean Fever, Pandemic, Physical activity, Rheumatology.

Covid 19 Pandemi'sinde Behçet hastalığı ve Ailesel Akdeniz Ateşi hastalığında fiziksel aktivite düzeyi, uyku, yorgunluk ve yaşam kalitesi

Amaç: Çalışmamızın birincil amacı, Behçet ve Ailesel Akdeniz Ateşi (AAA) olan hastalarda, fiziksel aktivite, uyku, yorgunluk, ağrı ve yaşam kalitesi düzeylerindeki değişimlerin karantina öncesi ve sırasındaki karşılaştırılmasıdır. İkincil amacı, Behçet ve AAA'lı hastaların Covid-19 Pandemi sırasındaki egzersiz davranışlarını belirlemektir.

Yöntem: Bu kesitsel çalışmaya toplam 21 Behçet Hastası (Ortalama yaş 42 yıl, %57'si kadın) ve 21 AAA hastası (Ortalama yaş 39 yıl, %71,4'ü kadın) dahil edildi. Hastalara Uluslararası Fiziksel Aktivite Anketi- Kısa Form, Kısa Form 36 ve Egzersiz Aşamaları Değişim Anketi uygulandı. Uyku memnuniyeti, yorgunluk ve ağrı Sayısal Derecelendirme Ölçeği ile değerlendirildi.

Bulgular: Başlangıçta sosyodemografik verilerde ve gruplar arasında uyku süresi dışındaki tüm sonuçlarda istatistiksel olarak anlamlı fark olmadığı bulundu ($p>0,05$). Fiziksel aktivite, ağrı, yorgunluk, uyku ve yaşam kalitesi hem Behçet hem de AAA hastalarında karantina öncesi ile karşılaştırıldı. Behçet hastalarında ağrı ve yorgunluk düzeyinin arttığı hem Behçet hem de AAA hastalarında ise fiziksel aktivite ve yaşam kalitesinin azaldığı bulundu ($p<0,05$). Behçet hastalarında fiziksel aktivite ile yaşam kalitesinin ruh sağlığı alt boyutu arasında anlamlı bir ilişki bulundu. Ayrıca çalışmamızda Behçet hastalarının sadece %9,5'i ve AAA hastalarının sadece %14,3'ü 6 aydan uzun süredir egzersiz yaptığını belirtmiştir.

Sonuç: Her iki gruptaki hastalar fiziksel olarak inaktifti ve çoğunluğu egzersiz yapmıyordu. Bu durum karantina döneminde arttı. Behçet ve AAA hastalarında bu semptomlara olumlu etki yapabilmek için kişiselleştirilmiş egzersiz tedavisi planlanabilir ve fiziksel aktivite düzeyleri artırılabilir.

Anahtar kelimeler: Behçet Hastalığı, Ailevi Akdeniz Ateşi, Pandemi, Fiziksel aktivite, Romatoloji.

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Behçet's disease (BD) is a systemic inflammatory disorder affecting a variety of organ systems and tissues. Joint pain appears as the first symptom in 16.7% of patients with BD and significantly affects their pain levels and quality of life.¹ In BD, involvement in the form of asymmetric, mono, or oligoarthritis, especially involving the large joints of the lower extremities, varies between 40–70%.² Sleep quality among patients with BD is very poor, and restless legs syndrome, fatigue, depression, anxiety, and activity associated with BD could affect quality of life.³

Familial Mediterranean Fever (FMF) is an autosomal recessive disease that is quite common in the Mediterranean population. While FMF affects all ages, it is primarily characterized by fever and pain attacks.⁴ It has been shown that the quality of life of FMF patients is negatively affected by disease duration, number of attacks experienced in the past year, number of hospitalizations, fibromyalgia, depression, and anxiety.⁵

FMF and BD share some common features such as ethnicity, etiopathogenetic mechanisms, symptoms, and treatment⁶, as well as common clinical features such as oral ulcers, fever, abdominal pain, and, especially, arthritis, which affect patients with FMF and BD.⁷

The Coronavirus Disease (COVID-19) pandemic emerged in Wuhan, Hubei Province, China, in December 2019, and has since become a global problem. This pandemic, thought to be caused by the SARS-CoV-2 virus and referred to as COVID-19, went down in history as the first pandemic caused by a coronavirus.⁸ The first cases of COVID-19 in Turkey were seen on March 11, 2020.⁹ Due to the growing number of cases at various locations around the world, on January 30, 2020, The World Health Organization (WHO) Emergency Committee declared a global health emergency.¹⁰

Confinement of COVID-19 in many countries has been effective in preventing the spread of the pandemic due to stay-at-home rules. As the measures against COVID-19 increase, people have necessarily started to adopt more sedentary lifestyles. However, the long-term staying at home and the physical inactivity associated about risks that can endanger peoples' health. The implementation of confinement policies to contain COVID-19 could negatively impact global health, well-

being, and quality of life, ultimately resulting in a range of chronic health conditions.¹¹ Additionally, these changes may affect the management of patients with a chronic diseases and may exacerbate existing disease-related pain, sleep, fatigue, and physical-inactivity problems. Thus, increasing physical activity, reducing sedentary behavior, and doing exercise are recommended during lockdown for all population groups.¹²

There is some evidence that both physical inactivity and sedentary behavior may be associated with poor health-related outcomes in patients with autoimmune rheumatic diseases.¹³ In this regard, some studies have shown that sedentary time is associated with higher disease severity, fatigue, pain, number of comorbidities, reduced aerobic capacity, physical function, and self-efficacy in patients with rheumatic disease, especially Rheumatoid Arthritis (RA) and Systemic Lupus Erythematosus (SLE).^{14,15} However, no study was found to describe relationship of physical inactivity and disease-related symptoms in patients with BD and FMF.

The effects of confinement on health-related symptoms in patients with BD and FMF are not yet properly understood. Therefore, exercise and physical activity, as outlined in the European Alliance of Associations for Rheumatology (EULAR) guidelines, should take place in parallel with drug treatments in a way that creates behavior modification in patients' lives.¹⁶

The primary aim of our study was to compare the changes in physical activity, sleep, fatigue, pain, and quality of life levels between before and during confinement in patients with BD and FMF. The secondary aim of the present study was to determine the exercise behaviors of patients with BD and FMF during confinement.

METHODS

Study Design

This study was conducted among those patients who applied to Istanbul University-Cerrahpaşa, Cerrahpaşa Medical Faculty, Department of Rheumatology, Istanbul. The study protocol was approved by the local ethics committee (Date of approval-number of approval: 30/04/2020- 10840098-604.01.01-

E.14697). The study was carried out in accordance with the Helsinki Declaration Principles. All patients were informed about the study and the necessary permission was obtained by signing an informed consent form. This study was registered with ClinicalTrials.gov (Clinical Trial Number: NCT04403438).

Patients

A total of 42 patients enrolled in the rheumatology clinic were included in this study. A total of 21 patients with BD and 21 patients with FMF were included in this cross-sectional study. Inclusion criteria included aged 30–60 years, diagnosed with FMF for at least one year, diagnosed with BD for at least one year, able to write and read Turkish, and have a level of cooperation needed to respond to the evaluation scales. Exclusion criteria were as follows: diagnosed with a second chronic disease, have a history of a psychological problem or mental deficit, and were pregnant.

Main outcome variable

All patients were asked about their height, weight, age, gender, body mass index, number of affected joint, and duration of chronic disease and their responses were collated as sociodemographic data. All evaluations that were applied to the participants were carried out online via Google-Form; a total of 42 patients participated in the study by completing and returning the study's data collection forms.

Physical Activity

Patients' physical activity levels were measured using the Internal Physical Activity Questionnaire-Short Form (IPAQ-SF) before and during confinement. The IPAQ has since become the most widely used physical activity questionnaire. There two available versions of the IPAQ: the 31-item long form (IPAQ-LF) and the nine-item short form (IPAQ-SF). The short form records activity according to four intensity levels: 1) vigorous-intensity activity, such as aerobics; 2) moderate-intensity activity, such as leisure cycling; 3) walking; and 4) sitting.¹⁷ The questions ask respondents about the time they have spent being physically active in the past 7 days.

Sleep

Sleep satisfaction was evaluated using Numeric Rating Scale (NRS)¹⁸, and sleep times were recorded both before and during confinement.

Fatigue

Before and during confinement, perceived fatigue was assessed using the NRS.¹⁹ Here, patients are given a score of 0–10 for the fatigue they felt in their daily lives before the COVID-19 pandemic, as well as the fatigue they experienced during the pandemic process.

Pain

The NRS was used to assess the pain patients felt in their daily lives while resting and the pain they felt while moving, both before and during confinement. The NRS is considered a valid and reliable pain-assessment tool. The scale has both horizontal and vertical forms; pain intensity is graded from "0: No pain" to "10: The most intense level of pain".²⁰

Quality of Life

The quality of life and functional status of the patients were evaluated using the SF-36 Quality of Life Scale (SF-36). Patients were asked to choose the option that suits them best both before and during confinement. This scale was developed by Ware et al. in 1992. A validity and reliability study of the Turkish version of the scale was performed by Koçyiğit et al. in 1999.²¹ The scale includes eight subdomains: physical functioning, physical role, emotional role, vitality, mental health, social functioning, pain, and general health. The higher score from each subdomain, the higher health-related quality of life of that subdomain.²²

Exercise Stages of Change Questionnaire

The Exercise Stages of Change Questionnaire was developed by Marcus and Lewis (2003), validated and reliable in Turkish by Gümüş Y, Kitiş Y, and aims to indicate the intention of patients to participate in regular physical activity by choosing one of five options: 1) precontemplation ("I do not engage in regular physical activity and do not intend to do so in the next 6 months"); 2) contemplation ("I do not engage in regular physical activity but intend to do so in the next 6 months"); 3) preparation ("I do not engage in regular physical activity but intend to do so in the next 30 days"); 4) action ("I engage in regular physical activity but have been doing so for less than 6 months"); and 5) maintenance ("I engage in regular physical activity and have been doing so for more than 6 months").^{23,24}

Statistical analysis

Data were evaluated using SPSS 21.0 for Windows (IBM Corp., Armonk, NY, USA) and by

analyzing descriptive statistics (frequency, mean, and standard deviation). Before the statistical analysis, the Kolmogorov–Smirnov test was used to test for normal distribution of data. The independent sample t-test was used to determine differences of subjects' outcome scores because the data were normally distributed. Intercorrelations between parameters were computed with Pearson's correlation analysis $p < 0.05$ was considered statistically significant for all tests.

RESULTS

A total of 21 patients with BD and 21 patients with FMF were included in this cross-sectional study. Table 1 shows the demographic characteristics of all participants included in this study. Patients' mean age was 41.66 ± 10.06 years for those in the BD group and 38.90 ± 13.67 years for those in the FMF group. No statistically significant differences in sociodemographic data could be found among all outcome scores, except sleep duration, between the groups at baseline ($p > 0.05$). A comparison of pain, fatigue, physical activity, and sleep scores of patients with BD and those of patients with FMF both before and during confinement are shown in Table 2.

Pain

Patients' NRS-Resting and NRS-Activity scores were found to significantly increase in patients with BD during confinement when compared with their pre-confinement scores, while no such statistically significant change was observed in patients with FMF ($p < 0.01$). In the intergroup comparison, only change of the NRS-Resting results was a significantly increased in patients with BD during the confinement compared to the pre-confinement, unlike FMF patients ($p < 0.05$). At the same time, NRS-Resting scores in the confinement were significantly higher in the patients with BD compared to patients with FMF ($p < 0.05$).

Fatigue

NRS-Fatigue scores were found to significantly increase among those patients with BD during confinement when compared with their pre-confinement scores. At the same time, no significant change was observed in patients with FMF before and during confinement ($p < 0.05$). In the intergroup comparison, no significant change was found between the

patient groups ($p > 0.05$).

Physical Activity

A significant decrease in IPAQ-total scores was found for those patients with BD and FMF during the confinement when compared with their pre-confinement scores ($p < 0.001$). During the lockdown, daily sitting times also increased among patients in both groups ($p < 0.001$). Furthermore, the mean IPAQ-total scores of patients with BD were found to be significantly lower than they were for patients with FMF during confinement ($p < 0.05$).

Sleep

No statistically significant change was found between the BD and FMF patient groups regarding between NRS-Sleep Satisfaction and sleep time results during the confinement when compared with the pre-confinement scores ($p > 0.05$). Furthermore, sleep time was found to be significantly lower in patients with FMF when compared with patients with BD in the pre-confinement stage ($p < 0.05$).

Quality of Life

The comparisons of quality of life scores between those patients with BD and those patients with FMF before and during confinement are shown in Table 3. A significant increase was found for all SF-36 subscale scores, except for the bodily pain subscale scores of patients with BD during confinement as compared with their pre-confinement scores ($p < 0.05$). Similarly, a statistically significant increase was seen for all SF-36 subscale-scores except for the physical functioning and role physical sub-scores of patients with FMF during the confinement when compared with their pre-confinement scores ($p < 0.05$). In the intergroup comparison, no statistically significant change for all SF-36 sub-scores was found between the patient groups ($p > 0.05$).

Correlations of pain, fatigue, sleep, and quality of life results in patients with BD during confinement

The correlations pain, fatigue, sleep and quality of life results of patients with BD during confinement are shown in Table 4. NRS-Pain Resting was found to be significantly correlated with NRS-Pain Activity ($r = 0.823$), NRS-Fatigue ($r = 0.816$), SF-36-Vitality ($r = -0.520$), SF-36-Mental Health ($r = -0.477$), SF-36-Bodily Pain ($r = -0.619$), and SF-36-General Health ($r = -0.619$) ($p < 0.05$). Similarly, NRS-Fatigue was significantly correlated with NRS-Pain Activity

($r=0.823$), NRS-Fatigue ($r=0.816$), SF-36-Vitality ($r=-0.599$), SF-36-Mental Health ($r=-0.595$), SF-36-Bodily Pain ($r=-0.717$), and SF-36-General Health ($r=-0.695$) ($p<0.05$). In addition, significant relationships were found between SF-36-General Health and all other SF-36 sub-scores, except for SF-36-Social Functioning (r =ranged from 0.473-0.736) ($p<0.05$). Comparatively it was found that NRS-Pain Activity was significantly correlated with NRS-Fatigue ($r=0.851$) and all other SF-36-subscores scores except SF-36-Social Functioning (r =ranged with 0.473-0.736) ($p<0.05$). Significant relationships were also found between number of affected joints and SF-36-Vitality ($r=-0.472$), SF-36-Social Functioning ($r=-0.600$), and SF-36-Bodily Pain ($r=0.541$) ($p<0.05$). IPAQ-Total scores were only correlated with SF-36-Mental Health ($r=0.481$) ($p<0.05$). Furthermore, while sleep duration was found to be significantly correlated with SF-36-Role Physical ($r=0.509$), NRS-Sleep Satisfaction was not correlated with any other parameter ($p<0.05$).

Correlations of pain, fatigue, sleep, and quality of life results in patients with FMF during confinement

The correlations of the results of pain, fatigue, sleep, and quality of life in patients with FMF during confinement are shown in Table 5. NRS-Pain Resting was found to be significantly correlated with NRS-Pain Activity ($r=0.882$), NRS-Fatigue ($r=0.665$), SF-36-Role Physical ($r=-0.542$), SF-36-Vitality ($r=-0.459$), SF-36-Bodily Pain ($r=0.681$), and SF-36-General Health ($r=-0.655$) ($p<0.05$). Comparatively, it was found that NRS-Pain Activity was significantly correlated with NRS-Fatigue ($r=0.623$), SF-36-Role Physical ($r=-0.458$), SF-

36-Bodily Pain ($r=-0.690$), SF-36-General Health ($r=-0.565$), and number of affected joints ($r=0.489$) ($p<0.05$). Furthermore, significant relationships were found between number of affected joints, SF-36-Bodily Pain ($r=-0.474$), and SF-36-General Health ($r=0.456$) ($p<0.05$). SF-36-General Health results were also significantly correlated with all other SF-36 subscales scores except SF-36-Role Emotional and SF-36-Social Functioning (r =ranged with 0.593-0.787) ($p<0.05$). In addition, a significant relationship was found between NRS-Fatigue and SF-36-Vitality ($r=-0.479$) ($p<0.05$). NRS-Sleep Satisfaction, Sleep Duration, and IPAQ-Total values were not correlated with any other parameter ($p>0.05$).

Exercise Behavior During Confinement

The comparisons of the results of the exercise scales in patients with BD and FMF during confinement 9.5% of patients with BD and 5.5% of patients with FMF reported exercising for more than 6 months, no difference could be found between the groups concerning their Exercise Stage of Change Questionnaire scores ($p>0.05$).

DISCUSSION

The present study investigated changes in physical activity, sleep, fatigue, pain, and quality of life levels in patients with BD and FMF before confinement and during confinement. Consequently, we found that the patients with both BD and FMF disease have been affected negatively by the confinement process. Physical activity, pain, fatigue and quality of life were adversely affected in patients

Table 1. Demographic and clinical features of patients with Behçet's Disease and Familial Mediterranean Fever.

	Behçet's Disease X±SD	Familial Mediterranean Fever X±SD	p
Gender (Female/Male) (n (%))	12/9 (57/43)	15/6 (71/29)	0.334
Age (year)	41.66±10.06	38.90±13.67	0.460
Height (cm)	162.66±8.15	165.19±9.21	0.353
Body Weight (kg)	74.61±12.33	69.61±20.03	0.336
Body Mass Index (kg/m ²)	28.31±5.06	25.57±7.19	0.162
Number of involvement joint (median (range))	3 (0-12)	2 (0-8)	0.220
Disease duration (year)	15.52±10.79	18.09±16.24	0.549

Table 2. Comparison of pain, fatigue, physical activity, and sleep scores of patients with Behçet's Disease and Familial Mediterranean Fever, before and during confinement.

		Before Confinement X±SD	During Confinement X±SD	p ^a
NRS-Pain Resting	BD	3.66±2.51	5.57±3.09	0.001
	FMF	2.85±2.88	3.66±2.88	0.091
	p ^b	0.338	0.046	
NRS-Pain Activity	BD	3.42±2.73	4.71±2.93	0.007
	FMF	3.52±3.17	4.33±3.07	0.081
	p ^b	0.917	0.683	
NRS-Fatigue	BD	4.38±2.74	6.23±3.19	0.002
	FMF	4.19±3.10	5.52±3.32	0.097
	p ^b	0.834	0.482	
NRS-Sleep Satisfaction	BD	5.57±3.23	4.76±3.40	0.421
	FMF	6.23±3.30	4.38±4.05	0.117
	p ^b	0.512	0.743	
IPAQ-SF Total	BD	7951.04±580.41	61.71±138.00	0.001
	FMF	824.28±417.47	200.00±205.52	<0.001
	p ^b	0.832	0.014	
Sitting Time (min.)	BD	249.00±62.39	468±167.00	<0.001
	FMF	225.71±53.34	488.57±172.11	<0.001
	p ^b	0.206	0.700	
Sleep Time (hour)	BD	7.52±0.98	7.85±2.35	0.508
	FMF	6.66±1.27	7.23±2.34	0.288
	p ^b	0.019	0.398	

p^a: Intragroup p-value. p^b: Between groups p-value. BD: Behçet's Disease. FMF: Familial Mediterranean Fever. NRS: Numeric Rating Scale. IPAQ-SF: International Physical Activity Questionnaire Short Form.

Table 3. Comparison of quality of life (Short Form 36, SF-36) scores of patients with Behçet's Disease and Familial Mediterranean Fever, before and during confinement.

		Before Confinement X±SD	During Confinement X±SD	p ^a
SF-36 Physical Functioning	BD	65.50±20.76	60.50±21.39	0.019
	FMF	74.04±18.20	70.47±20.42	0.101
	p ^b	0.168	0.135	
SF-36 Role Physical	BD	54.76±35.89	42.85±34.58	0.014
	FMF	61.90±35.01	52.38±37.00	0.176
	p ^b	0.518	0.314	
SF-36 Role Emotional	BD	65.07±37.23	34.90±32.44	0.004
	FMF	82.53±32.69	44.44±37.01	<0.001
	p ^b	0.114	0.380	
SF-36 Vitality	BD	60.23±19.20	49.76±21.53	0.001
	FMF	59.76±19.90	44.76±15.92	0.001
	p ^b	0.938	0.397	
SF-36 Mental Health	BD	65.71±16.99	55.39±18.53	0.002
	FMF	71.23±13.12	59.04±13.55	0.001
	p ^b	0.245	0.471	
SF-36 Social Functioning	BD	63.09±21.82	43.69±23.81	0.009
	FMF	64.76±21.76	46.30±26.08	0.004
	p ^b	0.806	0.736	
SF-36 Bodily Pain	BD	67.73±17.30	59.52±25.92	0.060
	FMF	66.90±27.41	60.59±27.17	0.015
	p ^b	0.907	0.897	
SF-36 General Health	BD	55.94±11.97	49.40±13.64	0.001
	FMF	57.93±13.81	50.98±14.24	0.002
	p ^b	0.622	0.714	

p^a: Intragroup p-value. p^b: Between groups p-value. BD: Behçet's Disease. FMF: Familial Mediterranean Fever.

Table 4. The correlations of the results of pain, fatigue, sleep, and quality of life in patients with Behçet’s Disease during confinement.

		NRS-Pain Resting	NRS-Pain Activity	NRS-Fatigue	NRS-Sleep Satisfaction	Sleep Duration	IPAQ-Total
NRS-Pain Activity	r	0.823					
	p	<0.001					
NRS-Fatigue	r	0.816	0.851				
	p	<0.001	<0.001				
NRS-Sleep Satisfaction	r	-0.362	-0.197	-0.252			
	p	0.107	0.391	0.270			
Sleep Duration	r	-0.085	-0.042	-0.235	-0.098		
	p	0.716	0.855	0.305	0.672		
IPAQ-Total	r	-0.038	0.060	-0.126	-0.227	0.367	
	p	0.869	0.796	0.586	0.323	0.102	
SF-36-Role Physical	r	-0.357	-0.489	-0.539	0.165	0.509	0.071
	p	0.112	0.024	0.012	0.474	0.018	0.760
SF-36-Role Emotional	r	-0.407	-0.537	-0.325	0.335	-0.106	-0.066
	p	0.067	0.012	0.150	0.138	0.648	0.775
SF-36-Vitality	r	-0.520	-0.496	-0.599	0.286	0.212	0.272
	p	0.016	0.022	0.004	0.209	0.357	0.232
SF-36-Mental Health	r	-0.477	-0.531	-0.595	0.109	0.345	0.481
	p	0.029	0.013	0.004	0.638	0.125	0.027
SF-36-Social Functioning	r	-0.101	-0.036	-0.231	0.398	-0.019	0.261
	p	0.662	0.877	0.314	0.074	0.934	0.253
SF-36-Bodily Pain	r	-0.619	-0.688	-0.717	0.329	0.382	0.213
	p	0.003	0.001	<0.001	0.146	0.087	0.355
SF-36-General Health	r	-0.619	-0.592	-0.695	0.185	0.250	0.274
	p	0.003	0.005	<0.001	0.422	0.274	0.229
Number of Affected Joint	r	0.247	0.193	0.324	-0.313	-0.224	-0.368
	p	0.281	0.403	0.152	0.167	0.330	0.101

r: Pearson’s correlation coefficient. NRS: Numeric Rating Scale. SF-36: Short Form 36. IPAQ: International Physical Activity Questionnaire.

Table 4. (Continued).

		SF36-Role Physical	SF36-Role Emotional	SF36-Vitality	SF36-Mental Health	SF36-Social Functioning	SF36-Bodily Pain	SF36-General Health
SF-36-Role Emotional	r	0.271						
	p	0.235						
SF-36-Vitality	r	0.585	0.526					
	p	0.005	0.014					
SF-36-Mental Health	r	0.367	0.419	0.740				
	p	0.101	0.024	<0.001				
SF-36-Social Functioning	r	0.087	0.418	0.214	0.196			
	p	0.709	0.059	0.352	0.395			
SF-36-Bodily Pain	r	0.745	0.546	0.680	0.638	0.370		
	p	<0.001	0.010	0.001	0.002	0.099		
SF-36-General Health	r	0.476	0.473	0.733	0.736	0.207	0.636	
	p	0.029	0.030*	<0.001	<0.001	0.367	0.002	
Number of Affected Joint	r	-0.281	-0.363	-0.472	-0.318	-0.600	0.541	-0.410
	p	0.217	0.105	0.031	0.160	0.004	0.011	0.065

r: Pearson’s correlation coefficient. NRS: Numeric Rating Scale. SF-36: Short Form 36. IPAQ: International Physical Activity Questionnaire.

Table 5. The correlations of the results of pain, fatigue, sleep, and quality of life in patients with Familial Mediterranean Fever during confinement.

		NRS-Pain Resting	NRS-Pain Activity	NRS-Fatigue	NRS-Sleep Satisfaction	Sleep Duration	IPAQ-Total
NRS-Pain Activity	r	0.882					
	p	<0.001					
NRS-Fatigue	r	0.665	0.623				
	p	0.001	0.003				
NRS-Sleep Satisfaction	r	0.028	0.025	-0.168			
	p	0.902	0.913	0.468			
Sleep Duration	r	-0.217	-0.227	-0.248	-0.021		
	p	0.345	0.322	0.279	0.930		
IPAQ-Total	r	-0.074	-0.111	-0.020	0.264	-0.079	
	p	0.749	0.632	0.930	0.248	0.734	
SF-36-Role Physical	r	-0.542	-0.458	-0.417	-0.023	0.036	-0.204
	p	0.011	0.037	0.060	0.921	0.876	0.376
SF-36-Role Emotional	r	-0.166	-0.107	-0.280	0.126	-0.013	-0.412
	p	0.471	0.643	0.219	0.587	0.956	0.064
SF-36-Vitality	r	-0.459	-0.407	-0.479	0.288	0.169	0.116
	p	0.037	0.067	0.028	0.206	0.464	0.616
SF-36-Mental Health	r	-0.397	-0.227	-0.294	0.385	0.272	0.055
	p	0.075	0.322	0.195	0.085	0.233	0.814
SF-36-Social Functioning	r	-0.157	0.007	0.076	0.084	0.062	-0.275
	p	0.498	0.977	0.743	0.718	0.789	0.227
SF-36-Bodily Pain	r	0.681	-0.690	-0.315	0.051	0.015	-0.280
	p	0.001	0.001	0.165	0.826	0.947	0.219
SF-36-General Health	r	-0.655	-0.565	-0.315	0.029	0.255	-0.310
	p	0.001	0.008	0.164	0.900	0.265	0.171
Number of Affected Joint	r	0.390	0.489	0.052	-0.331	0.176	-0.228
	p	0.080	0.024	0.821	0.143	0.444	0.319

r: Pearson's correlation coefficient. NRS: Numeric Rating Scale. SF-36: Short Form 36. IPAQ: International Physical Activity Questionnaire.

Table 5. (Continued).

		SF36-Role Physical	SF36-Role Emotional	SF36-Vitality	SF36-Mental Health	SF36-Social Functioning	SF36-Bodily Pain	SF36-General Health
SF-36-Role Emotional	r	0.497						
	p	0.022						
SF-36-Vitality	r	0.309	0.132					
	p	0.174	0.569					
SF-36-Mental Health	r	0.373	0.341	0.777				
	p	0.095	0.130	<0.001				
SF-36-Social Functioning	r	0.343	0.403	0.544	0.641			
	p	0.128	0.070	0.011	0.002			
SF-36-Bodily Pain	r	0.620	0.258	0.595	0.479	0.467		
	p	0.003	0.259	0.004	0.028	0.033		
SF-36-General Health	r	0.638	0.281	0.593	0.635	0.422	0.787	
	p	0.002	0.217	0.005	0.002	0.056	<0.001	
Number of Affected Joint	r	-0.322	-0.169	-0.316	-0.344	-0.234	-0.474	0.456
	p	0.155	0.464	0.163	0.127	0.308	0.030	0.038

r: Pearson's correlation coefficient. NRS: Numeric Rating Scale. SF-36: Short Form 36. IPAQ: International Physical Activity Questionnaire.

with BD, while physical activity and quality of life were adversely affected in patients with FMF; however, the effect on physical activity and quality of life was higher in patients with BD. In addition, we found a correlation between pain, fatigue, and quality of life in patients with BD. While higher pain and fatigue levels during confinement were associated with lower quality of life in patients with BD and FMF, a significant relationship was found between sleep duration and quality of life only in patients with BD.

The lockdown situation established in many countries to combat the COVID-19 pandemic entails an unprecedented disruption of people's lives and work, determines specific risks related to mental and physical health in the general population, especially among those who stopped working during the pandemic.²⁵ The implementation of confinement policies to contain COVID-19 could act as a catalyst for concealed mental and physical health conditions, further enhancing the effects of psychosocial risk factors, including stress, social isolation, and negative emotions, which may act as barriers against behavioral changes toward an active lifestyle and negatively impact on global health, well-being, and quality of life, ultimately resulting in result in a range of chronic health conditions.¹¹

Both the WHO and national health organizations have called for social isolation and staying at home to reduce the spread of the COVID-19 disease. Confinement is predicted to inevitably affect the routine daily activities of millions of people.²⁶

There is strong evidence for the benefits of physical activity on disease activity, improvements in activities, and participation²⁷; however, people with rheumatic and musculoskeletal diseases are generally less active compared with healthy controls.^{28,29} Both groups in this study had low pre-confinement physical activity levels and long sitting times, but both groups also had statistically poorer physical activity levels and sitting times during the confinement period.

In their study investigating sleep problems in patients with FMF, Makay et al.³⁰ stated that patients with FMF had significantly higher scores for sleep onset delay, sleep anxiety, night awakenings, and sleep-disordered breathing compared with the healthy group in their study.

A total of 7–8 hours of sleep is sufficient for an adult. However, less than 4 hours and more than 9 hours is not considered normal.³¹ In our study, it is seen that the sleep duration before and after confinement was quite low in both groups.

Fatigue is an important issue in rheumatic diseases, and most of studies demonstrated increased fatigue levels in rheumatic disease patients. Fatigue is a burdening and disabling symptom affecting physical and cognitive functioning in patients with rheumatic diseases.³² In previous studies, it has been reported that fatigue levels are high among patients with FMF and BD.^{32,33}

Similarly, in our study we found moderate fatigue before confinement in both BD and FMF patient groups, but we also found an increase in fatigue levels in both groups during confinement; for patients with BD, this increase was found to be statistically significant. We found that fatigue was associated with fatigue, vitality, general health, bodily pain, and mental health in BD patients, and role physical and vitality in FMF patients.

Sandıkçı et al.³⁴ reported that secondary factors such as pain are associated with negative emotions affecting daily life in chronic recurrent diseases. Pain has been reported as a common symptom that negatively affects the quality of life in both FMF and BD patients.^{32,35} In a study conducted in BD patients in 2017, they reported pain as 39.85 ± 31.59 according to 100 mm Visual Analogue Scale.³³ Similarly, in our study, the resting-pain and activity-pain scores before confinement were close to 4 according to the 10-point NRS. In confinement, we found a statistically significant increase in pain both during activity and at rest. A statistically significant relationship was also found between pain and fatigue, role emotional, role physical, vitality, mental health, general health, and bodily pain. Similar to the results of our study, Bodur et al.³⁵ reported that painful joints and fatigue in patients with BD were significantly associated with impaired quality of life.

Comparatively, concerning FMF patients, no significant change in pain level during the confinement process was found, but we found a significant relationship between fatigue, role physical, vitality, bodily pain, and general health, and pain. While joint pain is less common in FMF patients, it is a more common symptom among patients with BD. Joint pain

may have affected patients with BD more due to confinement increasing their physical inactivity.

Pain was found to be strongly associated with fatigue parameters in previous studies evaluating fatigue in rheumatic diseases.^{32,36} There is a vicious cycle here, as the rheumatic pain increases sleep problems, and sleep disturbances increase pain levels in affected patients.³⁷ In concordance with this data, we also found pain in moderate to strong correlation with fatigue.

Duruoz et al.³² indicated that pain, fatigue, sleep disturbance, and quality of life were correlated in patients with FMF. Although we could not find a significant relationship between pain and physical activity scores of both groups in our study, we believe that decreased physical activity due to confinement negatively affects the chronic cycle of pain, fatigue, sleep disorder, and quality of life.

In a previous study, Bodur et al.³⁵ reported that life satisfaction and quality were impaired in BD patients. The study also showed arthritis, fatigue and genital ulcer scores of Behçet's Disease Current Activity Form were the most important factors impairing the quality of life in BD. Melikoglu et al.³⁸ concluded that fatigue is one of the most common symptoms related to lower quality of life scores in BD patients. Ertam et al.³⁹ showed that in chronic diseases due to pain, depression, and sleep disorders were also present and all of these contributed to a reduced quality of life. In our study, we also saw that confinement negatively affects quality of life like increased disease activity.

Limitations

The limitations of our study are the absence of a healthy group, the fact that we did not divide the patients into different age groups, and we did not perform a power analysis.

Conclusion

Patients in both groups were physically inactive and the majority of them did not exercise. This situation increased during the confinement period. Providing personalized exercise therapy and increasing physical activity in patients with BD and FMF will improve these symptoms.

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