The Relationship Between Perceived Stress Level, Disease Activity, and Sleep Quality in Patients with Behçet's Disease

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Abstract

Background: To formulate effective treatment and care management strategies for Behçet disease, it is essential to evaluate both the factors influencing disease activity and the conditions stemming from it.

Aim: This study investigates the relationship between perceived stress level, disease activity, and sleep quality in patients with Behçet's disease.

Methods: This study adopted a descriptive-correlation research design. The sample consisted of 144 patients living in a city in Türkiye. Data were collected using a Patient Information Form, Behçet's Syndrome Activity Score (BSAS), Perceived Stress Scale (PSS), and Pittsburgh Sleep Quality Index (PSQI). The student's t-test, one-way analysis of variance, Pearson's correlation coefficients, and multiple linear regression were used for data analysis.

Results: Of the participants, 54.2% were aged 20 to 40 years, 85.4% were married, and 39.6% had primary school degrees. Additionally, 26.4% had an attack once every 15 days. Most participants had chronic diseases (72.9%). There was a positive correlation between perceived stress and disease activity ($r = 0.382$, $P < 0.001$), a strong correlation between perceived stress and sleep quality ($r = 0.611$, $P < 0.001$), and a positive correlation between disease activity and sleep quality ($r = 0.564$, $P < 0.001$). There was a significant relationship between perceived stress (Adjusted $R^2 = 0.272$, $F = 2.298$, $P < 0.001$), disease activity (Adjusted $R^2 = 0.413$, $F = 2.804$, $P < 0.001$), and sleep quality (Adjusted $R^2 = 0.462$, $F = 5.285$, $P < 0.001$).

Conclusion: Patients with Behçet's disease who perceive high levels of stress are more likely to experience elevated disease activity levels and poor sleep quality. These patients should be evaluated for stress factors, disease activity, and sleep quality, and the necessary nursing interventions should be planned based on the results of this evaluation.

Keywords: Behçet's disease, disease activity, nursing, perceived stress, sleep quality

Introduction

Behçet's disease (BD) is a recurring inflammatory condition characterized by involvement in multiple organs, such as the skin, mucous membranes, eyes, joints, intestines, and the central nervous system.[1] Behçet's disease progresses through multiple attacks and remissions.[2] The period during which episodes occur is designated as the active phase of the disease.[3] The cause of BD, an auto-inflammatory systemic vasculitis, remains unidentified.[1] The exact causes, severity, and duration of acute inflammatory attacks are still poorly understood.[4] Psychological stress is also a potential trigger.[5] Shenavandehet al[6] reported that nervous tension and frustrating arguments were common psychological triggers for oral aphthous ulcers. Psychological, environmental, and physiological stressors threaten the body's homeostasis and elicit non-specific responses.[7] Stress is associated with various adverse health effects, often exerted through its influence on the immune system.[8] Islam et al[9] found that environmental factors and stress affected the incidence of BD induced by herpes simplex virus type-1. Ozguler (2019) interviewed 20 BD patients with various organ and system involvement and documented that fear, anxiety, depression, anger, and stress influenced BD.[10] Canbolat and Yurtsever (2011) stated that 56.4% of the patients believed that their illness was related to stress. They found that most BD patients experienced pain and physical and emotional role limitations due to stress.[11] Patients also reported that active periods of BD were associated with stress.[11] In times of heightened disease activity, individuals contend with physiological,

psychological, and social symptoms that have a detrimental impact on their quality of life.[12-15] The period of active disease is marked by diminished quality of life, compromised sexual functioning, fatigue, contemplation of suicide, reduced work productivity, feelings of anxiety, depression, and diminished sleep quality.[14-17]

Patients with chronic diseases often suffer from sleep problems. Research indicates a strong relationship between BD and sleep quality.[18-23] These findings underline the significance of nursing interventions in the management of the clinical symptoms of BD.[12] To formulate effective treatment and care management strategies for BD, it is essential to evaluate both the factors influencing disease activity and the conditions stemming from it. While various studies have investigated factors influencing disease activity in patients with BD, no study has been found examining the relationship between stress level, disease activity, and sleep quality. Therefore, this study is very important in demonstrating the relationship between stress level, disease activity, and sleep quality in BD. The research questions were as follows:

- What are the stress levels, disease activity, and sleep quality in patients with Behçet's disease?
- Which factors affect patients' stress level, disease activity, and sleep quality?
- Is there a relationship between stress level, disease activity, and sleep quality?

Materials and Methods

Study Design and Participants

This descriptive and correlational study investigated the relationship between perceived stress, disease activity, and sleep quality among BD patients admitted to the rheumatology polyclinic of a university hospital between January and March 2021.

A power analysis was conducted to determine the sample size based on the means and standard deviations reported by Araz et al[23] The sleep quality variable was used as the basis for power analysis in the Araz et al. study[23] The sample size was calculated to be at least 93 participants (95% confidence level, $\alpha = 0.05$ margin of error, 0.2814249 effect size, 5% tolerance ratio, and P = 0.05 power) [(1-β): 80%, t = 1.96)]. The study population consisted of 155 patients who applied to the Rheumatology outpatient clinic between January and March 2021 and were contacted via phone. Eleven patients were excluded because they declined to participate (n = 8), had not been diagnosed with Behçet's disease for at least six months (n = 3), or had a psychiatric disorder (n = 1). Therefore, the sample consisted of 144 patients with BD. The inclusion criteria were (1) being older than 17, (2) being diagnosed with BD at least six months ago, (3) having mental and cognitive competence, (4) being at least literate, and (5) being able to speak and understand Turkish. The exclusion criteria were (1) having communication problems (hearing and sight), and (2) having psychiatric problems.

Data Collection Tools

Patient Information Form

The Patient Information Form was developed by the researchers.[3,11,12] The form consisted of 20 items on sociodemographics (age, education, gender, marital status, employment status, number of children, economic status, living arrangement, place of residence, tobacco use,

etc.) and BD-related characteristics (duration of the disease, medication use, non-drug treatment status, relationship with stress, the effect of stress on attack periods, frequency of attacks, chronic disease status, and sleep problems during attacks).

Perceived Stress Scale

The Perceived Stress Scale (PSS) was developed by Cohen et al[24] and was adapted to Turkish by Eskin et al[25] The instrument is a self-reported measure of perceived stress, feelings, and thoughts in the past month. The PSS-10 was used in this study. The PSS-10 consists of 10 items rated on a five-point Likert-type scale ("1 = Never" to "5 = Very Often"). Four items (4, 5, 7, and 8) are reverse-scored. The total score ranges from 0 to 40, with higher scores indicating higher perceived stress levels.[25] The scale had a Cronbach's alpha and test-retest reliability of 0.82 and 0.88, respectively.[25] In the present study, the Crobach's alpha value of the scale was found to be 0.67.

Behçet's Syndrome Activity Score

The Behçet's Syndrome Activity Score (BSAS) was developed by Forbees et al[26] and was adapted to Turkish by Yılmaz et al[27] The instrument consists of ten items. It is a self-reported measure of disease activity in the past months. The total score ranges from 0 to 100. The first six items are about mucocutaneous involvement, while the remaining four are about ocular, gastrointestinal, and vascular involvement. Oral ulcers, genital ulcers, acne, acne-like lesions, and disease activity with all its symptoms are rated on a scale of 0 to 10. Oral ulcers, genital ulcers, acne, and acne-like lesions are rated on a scale of 0, 5, and 10 according to their number. Scoring is based on the presence or absence of abdominal pain (zero points if there is no abdominal pain, 10 points if there is), pain or redness in the eyes and/or blurred or decreased vision (zero points if there is no blurred or decreased vision, 10 points if there is), and swelling/discoloration or clot formation in the legs (zero points if there is none, 10 points if there is).[27] Higher scores indicate more active BD. The Turkish version has a Cronbach's alpha score of 0.84.[27] In the present study, the Crobach's alpha value of the scale was found to be 0.74.

Pittsburgh Sleep Quality Index

The Pittsburgh Sleep Quality Index (PSQI) was developed by Buysse et al[28] and was adapted to Turkish by Ağargün et al[29] The index consists of 24 items. Nineteen items are scored by the patient, while the remaining five items are scored by the spouse or roommate. The last five items are not included in the scoring because they are used only for clinical information. Item 19 is related to the presence or absence of a roommate or partner and should not be taken into account in determining the total and component scores. The items are rated on a scale of 0 to 3.[29] The sum of the seven component scores constitutes the PSQI total score. The total score ranges from 0 to 21, with higher scores indicating poorer sleep quality. A PSQI score of ≤ 5 indicates good quality sleep, while a score of > 5 indicates poor quality sleep. The Turkish version has a Cronbach's alpha score of 0.80.[29] In the present study, the Crobach's alpha value of the scale was found to be 0.88.

Data Collection

Data were collected online using Google Forms. It took each participant approximately 20 minutes to fill out the data collection forms. The data were collected using a Patient Information Form, Behçet's Syndrome Activity Score (BSAS), Perceived Stress Scale (PSS), and

Pittsburgh Sleep Quality Index (PSQI). Patients who applied to the Rheumatology outpatient clinic between January and March 2021 were contacted via phone. By giving the necessary information about the purpose of the research and data collection forms, their permission was obtained through the participation form in the survey created verbally and via Google forms.

Ethical Considerations

The study was approved by the Necmettin Erbakan University Ethics Committee for Non-Drug and Non-Medical Device Research (Approval Number: 2020/2950, Date: 18.12.2020). Permission for the study was obtained from the hospital where it was conducted. Permissions were obtained from the authors via email for the scales used in the research. All patients were briefed on the research purpose and data collection tools. Participant permissions were obtained through the participation form in the survey created via Google Forms. This research conforms to all the provisions of the Declaration of Helsinki.

Data Analysis

The Statistical Package for the Social Sciences version 24.0 software package (SPSS-IBM Corporation, NY, USA) was used for performing statistical analysis of the study. Missing data and outliers were identified before analysis. The Kolmogorov-Smirnov test was used for testing normality. Homogeneity of variance was determined using Levene's test. Percentages and frequencies were used for categorical variables, while arithmetic means and standard deviations were used for continuous variables. The Student's t-test and one-way analysis of variance (ANOVA) were used for normally distributed data. Pearson's correlation coefficients were employed to determine the relationship between scale scores. Multiple linear regression analysis was used to determine how well the independent variables predicted the dependent variables.

Results

Sociodemographic and Clinical Characteristics

Participants had a mean age of 38.85±8.81 years. Of the participants, 54.2% were aged 20 to 40 years. Men comprised 50.7% of the participants. A total of 85.4% of participants were married. Of the participants, 39.6% had primary school degrees. Employment was reported by 55.6% of participants. About half of the participants (49.3%) had neutral incomes (income = expense). Most participants lived in the city (76.4%) with their spouses and children (79.2%). About 30.6% of participants had one or two children. More than a quarter of the participants were smokers (30.6%) (Table 1).

of the participants, 30.6% were diagnosed with BD six months to five years ago. Most participants were on medication for treatment (91%). An additional 11.1% of participants received treatments besides medication. A large majority of participants (88.9%) stated that stress triggered BD attacks. Every 15 days, 26.4% of participants reported having an attack. Most participants had chronic diseases (72.9%) (Table 2).

Predictors of Patients' Stress Level, Disease Activity, and Sleep Quality

Results from the multiple linear regression analysis are shown in Table 3. Independent variables (gender, marital status, living arrangement, diagnosis time, the impact of stress during periods of attack, frequency of attacks, and the presence of chronic diseases) in the model had a statistically significant effect on perceived stress (Adjusted $R^2 = 0.272$, $F = 2.298$, $P < 0.001$). However, gender, living arrangement, diagnosis time, and the impact of stress during periods of attack did not affect perceived stress ($P > 0.05$). Marital status ($\beta = 0.432$, $P < 0.05$), frequency of attacks ($\beta = 0.587$, $P < 0.05$), and the presence of chronic diseases ($\beta = -0.369$, $P < 0.001$) correlated with perceived stress (Table 3). Perceived stress level was higher in singles than in married individuals and in those who had an attack once a week. The perceived stress level was lower in individuals without a chronic disease.

Independent variables (age, education, employment status, income, the impact of stress during periods of attack, frequency of attacks, and the presence of chronic diseases) in the model had a statistically significant effect on disease activity (Adjusted $R^2 = 0.413$, $F = 2.804$, $P < 0.001$). However, gender and tobacco use did not affect disease activity ($P > 0.05$). Age ($\beta = 0.218$, $P < 0.05$), education ($\beta = -0.016$, $P < 0.05$), employment status ($\beta = 0.070$, $P < 0.05$), income ($\beta = -0.148$, $P < 0.05$), the impact of stress during periods of attack ($\beta = -0.171$, $P < 0.001$), frequency of attacks ($\beta = -0.182$, $P < 0.05$), and the presence of chronic diseases ($\beta = -0.080$, $P < 0.001$) correlated with disease activity (Table 3). Disease activity was higher in participants aged 41 and over, those with primary school education, the unemployed, those with income less than expenses, participants who believed that stress triggered their attacks, those who had an attack once a week, and those with any chronic disease.

Independent variables (age, gender, employment status, diagnosis time, the impact of stress during periods of attack, frequency of attacks, and the presence of chronic diseases) in the model had a statistically significant effect on sleep quality (Adjusted $R^2 = 0.462$, $F = 5.285$, $P < 0.001$). However, gender, diagnosis time, the impact of stress during periods of attack, and frequency of attacks did not affect sleep quality ($P > 0.05$). Age ($\beta = 0.277$, $P < 0.05$), employment status ($\beta = 0.032$, $P < 0.05$), and having any chronic disease ($\beta = -0.210$, $P < 0.001$) correlated with sleep quality (Table 3). Sleep quality was lower in individuals aged 41 years and older, and among those who were employed. Sleep quality was higher in individuals without a chronic disease.

Scale Scores and Correlation Between Scale Scores

Participants had a mean PSS, BSAS, and PSQI score of 19.37±6.49, 31.94±20.83, and 7.75±4.14, respectively. There was a positive correlation between PSS and BSAS scores (r = 0.382, P < 0.001), a strong positive correlation between PSS and PSQI scores (r = 0.611, P < 0.001), and a positive correlation between BSAS and PSQI scores (r = 0.564, P < 0.001) (Table 4).

Discussion

Predictors of Patients' Stress Level, Disease Activity, and Sleep Quality

Individuals with BD who experience high stress often encounter challenges in adhering to treatment regimens and tend to experience more frequent disease attacks.[30] Research shows that stress emerges as a contributing factor during the initial stages of the disease, exacerbating symptoms and episodes, thereby leading to heightened disease activity.[5,11] In present study, the participants who believed that stress affected their attacks had higher PSS scores. Single participants also had higher PSS scores. Participants with chronic diseases had higher

Table 1. Distribution of Scale Scores by Sociodemographic Characteristics					
Sociodemographic Characteristics	n	%	PSS x ± SD	BSAS x ± SD	PSQI x ± SD
Age (years)					
20-40 years	78	54.2	19.39 ± 6.43	27.47 ± 17.20	7.12 ± 3.69
≥ 41 years	66	45.8	19.33 ± 6.62	37.22 ± 23.49	8.48 ± 4.53
Test value*/p			0.159/0.672	**3.869/0.005**	**-1.980/0.048**
Gender					
Female	71	49.3	17.67 ± 5.59	35.75 ± 21.94	8.95 ± 4.11
Male	73	50.7	21.11 ± 6.92	28.24 ± 19.11	6.57 ± 3.84
Test value*/p			**3.287/0.001**	**2.193/0.030**	**3.595/0.001**
Marital Status					
Married	123	85.4	18.85 ± 5.97	32.39 ± 21.55	7.67 ± 4.09
Single	21	14.6	22.38 ± 8.51	29.29 ± 16.15	8.19 ± 4.45
Test value*/p			**2.337/0.021**	0.339/0.529	0.526/0.624
Education (degree)					
Primary school	57	39.6	19.22 ± 6.32	37.75 ± 24.98	8.15 ± 4.27
Middle school	25	17.4	17.76 ± 6.30	24.54 ± 16.14	6.84 ± 4.11
High school	24	16.6	20.37 ± 6.78	27.60 ± 16.59	7.67 ± 3.71
Bachelor's/Master's	38	26.4	20.21 ± 6.89	31.35 ± 16.94	7.94 ± 4.22
Test value*/p			1.015/0.402	**2.496/0.046**	1.945/0.440
Employment Status					
Employed	80	55.6	18.73 ± 6.67	28.81 ± 17.99	7.12 ± 4.06
Unemployed	64	44.4	20.15 ± 6.36	35.87 ± 23.47	8.53 ± 4.13
Test value**/p			1.306/0.194	**4.176/0.043**	**3.197/0.032**
Income					
Income ≥ expense[1]	18	12.5	18.44 ± 5.37	31.83 ± 24.39	6.50 ± 3.99
Income = expense[2]	71	49.3	19.45 ± 6.82	27.61 ± 17.29	7.83 ± 4.15
Income ≤ expense[3]	55	38.2	19.56 ± 6.47	37.58 ± 22.75	8.05 ± 4.17
Test value**/p			0.211/0.810	**3.688/0.027**	0.983/0.377
Place of Residence					
Village	10	6.9	19.66 ± 6.57	34.65 ± 24.75	6.20 ± 4.02
District	24	16.7	18.92 ± 6.53	30.71 ± 19.29	7.67 ± 3.82
City	110	76.4	17.20 ± 5.57	31.97 ± 20.95	7.90 ± 4.21
Test value**/p			0.727/0.485	0.125/0.882	0.785/0.458
Living Arrangement					
Alone	6	4.1	23.00 ± 7.85	29.08 ± 22.84	8.83 ± 6.55
With spouse	8	5.6	18.12 ± 6.19	28.31 ± 15.58	8.01 ± 2.39
With spouse and children	114	79.2	18.71 ± 6.01	32.27 ± 21.60	7.68 ± 4.14
With parents	16	11.1	23.38 ± 8.03	32.50 ± 19.54	7.69 ± 4.11
Test value**/p			**3.308/0.022**	0.130/0.942	0.155/0.926

(*Continued*)

Table 1. Distribution of Scale Scores by Sociodemographic Characteristics (*Continued*)					
Sociodemographic Characteristics	n	%	PSS x ± SD	BSAS x ± SD	PSQI x ± SD
Number of Children					
None	19	13.2	21.68 ± 8.06	26.52 ± 14.14	7.52 ± 3.64
1 and 2	53	36.8	19.17 ± 5.43	31.28 ± 19.41	7.28 ± 3.62
3	49	34.0	19.37 ± 7.27	30.18 ± 19.12	8.53 ± 5.01
4 and more	23	16.0	17.13 ± 5.07	41.69 ± 28.89	7.35 ± 3.56
Test value**/p			1.816/0.147	2.304/0.080	0.895/0.445
Tobacco Use					
Yes	44	30.6	19.02 ± 7.06	26.75 ± 18.92	7.43 ± 3.88
No	100	69.4	19.52 ± 6.25	34.23 ± 21.31	7.89 ± 4.26
Test value**/p			0.422/0.674	**4.023/0.047**	0.373/0.542
*Independent Sample t-Test. **One Way Analysis of Variance (ANOVA) test.					

PSS scores. Our results are consistent with the literature.[31-33] People who grapple with other chronic illnesses often experience more pronounced and supplementary symptoms. These added challenges can lead to heightened levels of perceived stress, as they complicate both the adjustment to the illness and the management of its effects. Participants with very frequent attacks had higher PSS scores, suggesting that elevated stress levels can lead to a more dynamic progression of the disease. A significant and robust positive correlation was observed between BSAS and PSS scores, underscoring that increased stress levels correspond to heightened disease activity.

In this study, the results showed that disease activity was affected by sociodemographic and clinical characteristics (age, employment status, education, income, belief in the impact of stress on attacks, frequency of attacks, and the presence of chronic diseases). Behçet's disease is rare in individuals older than 50 years and in children. The activity of the disease decreases, the inter-attack period lengthens, and some symptoms disappear completely.[12,34] These results show that the incidence of BD is lower among younger and older adults. However, the results showed that participants over 40 years of age had higher disease activity. Given the rarity of the disease, it is possible that the disease activity score was higher in the older age group due to delayed diagnosis and subsequent treatment initiation. However, there are also studies, such as the one conducted by Yılmaz et al,[27] which suggest that age does not significantly influence the disease activity score.

In this study, the results indicated a negative correlation between education and disease activity, suggesting that participants with higher education levels had lower disease activity scores. Uğuz et al[35] also found that BD was more common among individuals with primary school degrees. Individuals with higher levels of education tend to exhibit better disease management skills and higher adherence to treatment protocols. Our results also indicate that individuals with BD and higher levels of education are more inclined to comprehend the gravity of the condition and its effective management.

In present study, the results showed that unemployed participants had higher disease activity scores. Moreover, participants with negative incomes (income < expense) had higher disease activity scores.

Unemployed patients with BD have lower feelings of self-sufficiency. They are less likely to use health services because of financial problems. Unmet needs cause them to experience stress, which results in heightened disease activity. Our results also showed that participants who believed in the impact of stress on their attacks had a significantly higher mean BSAS score than those who did not. Canbolat and Yurtsever (2011) documented that almost four in five patients with BD believed that stress triggered their attacks.[11] The same researchers also reported that patients who believed that the disease was linked to stress exhibited lower mean scores in the quality of life subscales of physical role limitation, emotional role limitation, and pain. In Behçet's disease, stress can not only diminish treatment adherence but also act as a trigger for disease attacks, leading to a substantial decline in quality of life during periods of heightened stress.[12,30] Participants who had an attack once a week had higher BSAS score. This may be because patients with frequent attacks are in the active period. Participants with chronic diseases had higher BSAS scores. This may be because other chronic diseases trigger BD attacks, increasing disease activity.

In this study, the results showed that age, employment status, and the presence of chronic diseases affected sleep quality. Employed participants had lower PSQI scores. Participants with chronic diseases had lower PSQI scores. Participants over 40 years of age had lower PSQI scores. Research also shows a negative correlation between age and sleep quality. With age comes pain, additional chronic diseases, fatigue, and mood disturbance, which adversely affect sleep quality.[18,2022,36]

Scale Scores in Patients with Behçet's Disease

In this study, it was determined that the patients' perceived stress level was moderate, their disease activity score was low, and their sleep quality was poor. The results are similar to those in the literature. Fani et al[37] found that the total average score of the patient's perceived stress was 20.66 ± 5.15. Midi et al[38] stated that the average score on the perceived stress was 21.3 ± 13.3, meaning that the stress perceived by the patients was moderate. Considering that the highest score in the disease activity score is 100, it can be seen that the score (31.94 ± 20.83) received by the patients participating in the

Table 2. Distribution of Scale Scores by Clinical Characteristics

Clinical Characteristics	n	%	PSS x±SS	BSAS x±SS	PSQI x±SS
Diagnosis time					
6 months- 5 years	44	30.6	18.48 ± 7.55	30.64 ± 22.39	7.06 ± 4.29
6- 10 years	40	27.8	19.87 ± 5.82	28.07 ± 17.95	6.95 ± 3.92
11-15 years	26	18.1	19.42 ± 6.95	32.21 ± 18.71	8.27 ± 3.99
16-20 years	21	14.5	20.14 ± 4.82	40.81 ± 23.28	9.85 ± 3.93
21 years and longer	13	9.0	19.46 ± 6.62	33.38 ± 22.28	8.07 ± 4.11
Test value**/p			**2.338/0.012**	1.369/0.248	**2.230/0.049**
Medication use					
Yes	131	91.0	19.51 ± 6.42	32.23 ± 20.37	7.78 ± 4.19
No	13	9.0	17.92 ± 7.29	29.03 ± 25.73	7.39 ± 3.64
Test value*/p			0.840/0.402	0.526/0.797	0.374/0.740
Receiving non-drug treatment					
Yes	16	11.1	19.19 ± 7.21	33.62 ± 18.78	8.81 ± 4.19
No	128	88.9	19.39 ± 6.43	31.73 ± 21.13	7.61 ± 4.13
Test value*/p			0.118/0.907	0.341/0.743	1.090/0.278
Believing that stress is the cause of attacks					
Yes	128	88.9	19.95 ± 6.31	33.54 ± 21.26	8.06 ± 4.17
No	16	11.1	14.75 ± 6.23	19.15 ± 10.53	5.25 ± 2.91
Test value*/p			**3.108/0.002**	**2.659/0.007**	**2.615/0.011**
Frequency of attacks					
None	14	9.7	15.07 ± 5.49	19.25 ± 17.24	4.42 ± 1.65
Once a week	19	13.2	25.63 ± 3.68	46.86 ± 20.52	11.15 ± 4.10
Once every 15 days	38	26.4	20.28 ± 4.41	36.15 ± 20.24	8.63 ± 4.12
Once every three months	16	11.1	17.25 ± 6.01	23.03 ± 17.28	6.00 ± 3.05
Once every six months	21	14.6	20.42 ± 8.26	30.38 ± 17.33	7.88 ± 4.25
Varies	36	25.0	18.63 ± 6.43	29.23 ± 19.01	7.06 ± 4.11
Test value**/p			**3.712/0.001**	**3.548/0.001**	**4.125/0.001**
Chronic diseases					
Yes	105	72.9	19.91 ± 6.39	38.15 ± 23.31	9.37 ± 4.48
No	39	27.1	18.91 ± 6.58	26.69 ± 16.91	6.37 ± 3.26
Test value*/p			**2.919/0.009**	**3.409/0.003**	**4.647/0.001**

*Independent Sample t-Test. **One Way ANOVA test.

study from the scale is below the average. Yılmaz et al[27] found that the average disease activity score was 39 ± 20.8. Choi et al[39] stated that the average disease activity score of the patients was 27.4 ± 21.0. When examining studies on the sleep quality of Behçet's patients, it is found that their sleep quality is low. Koca et al[20] documented that the mean PSQI score was 6.4 ± 4.4. Araz et al[23] found that the median value of PSQI was 6.5, and Lee et al[21] stated that the sleep quality of the patients was poor.

Correlation Between Scale Scores

Patients with BD suffer from poor quality of life, depression, and decreased sleep quality due to both physiological and psychological symptoms during periods of high disease activity.[11,18,2022] Most people with chronic diseases complain of sleep problems. In Behçet's disease, poor sleep quality is associated with clinical findings such as anxiety, depression, low quality of life, genital ulcers, and arthritis.[18,19]

Table 3. Multiple Regression Analysis (n = 144)

	B	β (Beta)	t	P Adj.R² R
Perceived Stress Independent Variables				0.272 0.522
F = 2.298				
P < 0.001 Marital Status	3.064	0.432	2.695	0.011
Frequency of attacks	2.405	0.587	3.012	0.034
Having chronic disease	-2.157	-0.369	-1.658	<0.001
Disease Activity Independent Variables				0.413 0.560
F = 2.804 Age	9.064	0.218	2.134	0.035
P < 0.001 Employment status	2.921	0.070	1.630	0.043
Education (degree)	2.186	-0.016	1.748	0.007
Income	4.629	-0.148	1.835	0.049
Believing that stress is the cause of attacks	-12.292	-0.171	-1.925	<0.001
Frequency of attacks	-2.364	-0.182	-2.260	0.026
Having chronic disease	-3.332	-0.080	-3.885	<0.001
Sleep Quality Independent Variables				0.462 0.680
F = 5.285 Age	2.282	0.277	2.802	0.006
P < 0.001 Employment status	-2.269	0.032	-1.334	0.039
Having chronic disease	-1.735	-0.210	-2.621	0.010

P < 0.05, **P < 0.001, B: Regression coefficient, F: Analysis of variance, ß (Standardized Beta): Partial regression coefficient, t: Internal significance test of regression coefficients, R: Level of association, R2: Coefficient of determination.

Research shows that sleep quality is associated with disease activity among patients with BD.[20,21,23,36] In this study, the results also indicated a strong positive correlation between BSAS and PSQI scores. Patients with BD suffer from poor sleep quality because they experience pain during attack periods. Behçet's disease is characterized by periods of active painful symptoms. Insufficient sleep triggers symptoms, resulting in poor sleep quality.

In present study, the results indicated a strong positive correlation between PSS and PSQI scores. The results also showed that participants who believed that stress triggered their attacks had a significantly higher mean PSQI score than those who did not. Sleep quality is associated with physical and mental health. Therefore, sleep problems are directly related to physical and psychological stress.[40] Stress adversely impacts sleep quality, particularly during active disease periods, as it contributes to an escalation in disease activity. Stress also leads to physiological, psychological, and behavioral problems.[41] Physiological symptoms of stress include insomnia and excessive or irregular sleep. Sleep is an indispensable need. A disruption in health leads to sleep problems. Disruption in sleep patterns also affects health adversely. Patients undergoing stress tend to encounter a greater number of symptoms and a more intensified progression of the disease, leading to poorer sleep quality.

Limitations

The results of this study are limited to patients with BD admitted to a public hospital, and the results reflect the perceptions and evaluations of the disease at the time of the study. Therefore, long-term prospective studies are needed for these patients.

Conclusion

Patients with BD who perceive high stress are more likely to experience elevated disease activity levels and poor sleep quality. Moreover, BD patients with increased disease activity levels have poorer sleep quality. Sociodemographic and clinical characteristics affect the perceived stress levels, disease activity, and sleep quality of patients with BD. Individual and disease-related characteristics that may affect disease activity in Behçet's disease patients should be evaluated for stress factors, disease activity, and sleep quality, and the necessary nursing interventions should be planned in line with the results of this evaluation. Nurses should evaluate stress factors in Behçet's disease patients and should provide counseling to patients and their families about methods of coping with stress. It is

Table 4. Correlation

Scales		BSAS	PSQI
PSS	r	0.382	0.611
	p	<0.001	<0.001
BSAS	r	1	0.564
	p		<0.001

BSAS: Behçet's Syndrome Activity Score, PSQI: Pittsburgh Sleep Quality Index, PSS:Perceived Stress Scale, R: Pearson correlation coefficient.

recommended to evaluate the factors affecting sleep quality and disease activity in Behçet's disease patients and ensure that attempts are made to improve their sleep quality.

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