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Orjinal Araştırma / Original Article

Anxiety, Depression, Social Anxiety, Anxiety Sensitivity, and Perceived Stress in Psoriasis Patients

Psoriasis Hastalarında Anksiyete, Depresyon, Sosyal Anksiyete, Anksiyete Duyarlılığı ve Algılanan Stres

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Abstract

Objective: Psoriasis is a chronic inflammatory skin disease, and psychiatric comorbidities are common in these patients. Skin lesions can cause shame, anxiety, social avoidance, irritability and depressive symptoms in psoriasis patients. This study aimed to investigate anxiety, depression, social anxiety, anxiety sensitivity and perceived stress in patients with psoriasis and their relationship with disease severity and duration.

Material and Method: Forty patients and 40 healthy controls were included in our study. Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Liebowitz Social Anxiety Scale (LSAS), Perceived Stress Scale (PSS-14), and Anxiety Sensitivity Index (ASI-3) were administered to all participants. In patient group, PASI was applied for disease severity.

Results: Anxiety, depression, social anxiety, perceived stress and anxiety sensitivity were significantly higher in psoriasis patients than in healthy controls. There was no correlation between PASI scores and BAI, BDI, LSAS, PSS-14 and ASI-3 scores. Also, no correlation was found between disease duration and BAI, BDI, LSAS, PSS-14 and ASI-3 scores.

Conclusion: Our results show that anxiety, depression, social anxiety, anxiety sensitivity and perceived stress were high in psoriasis patients regardless of disease duration and severity. This is the first study to examine anxiety sensitivity in psoriasis patients to the best of our knowledge. Clinicians should consider the possible psychiatric comorbidity at all stages of the disease in patients with psoriasis. Collaboration between the disciplines of dermatology and psychiatry is necessary to ensure full recovery and maintain patient well-being.

Keywords: Perceived stress, anxiety, anxiety sensitivity, depression, psoriasis, social anxiety

Öz

Amaç: Psoriazis kronik inflamatuar bir deri hastalığıdır ve bu hastalarda psikiyatrik komorbiditeler sıktır. Deri lezyonları psoriasis hastalarında utanç, kaygı, sosyal kaçınma, sinirlilik ve depresif belirtilere neden olabilir. Bu çalışmada psoriazis hastalarında anksiyete, depresyon, sosyal anksiyete, anksiyete duyarlılığı ve algılanan stresin hastalık şiddeti ve süresi ile ilişkisinin araştırılması amaçlanmıştır.

Gereç ve Yöntem: Çalışmamıza 40 hasta ve 40 sağlıklı kontrol dahil edildi. Tüm katılımcılara Beck Anksiyete Envanteri (BAE), Beck Depresyon Envanteri (BDE), Liebowitz Sosyal Anksiyete Ölçeği (LSAÖ), Algılanan Stres Ölçeği (ASÖ-14) ve Anksiyete Duyarlılık İndeksi (ADI-3) uygulandı. Hasta grubuna hastalık şiddeti için PASI uygulandı.

Bulgular: Psoriazis hastalarında anksiyete, depresyon, sosyal anksiyete, algılanan stres ve anksiyete duyarlılığı sağlıklı kontrollere göre anlamlı derecede yüksekti. PASI puanları ile BAÖ, BDÖ, LSAÖ, ASÖ-14 ve ADI-3 puanları arasında korelasyon yoktu. Ayrıca hastalık süresi ile BAÖ, BDÖ, LSAÖ, ASÖ-14 ve ADI-3 puanları arasında ilişki bulunmadı.

Sonuç: Sonuçlarımız, hastalık süresi ve şiddetinden bağımsız olarak, psoriazis hastalarında anksiyete, depresyon, sosyal anksiyete, anksiyete duyarlılığı ve algılanan stresin yüksek olduğunu göstermektedir. Bildiğimiz kadarıyla, bu çalışma, psoriasis hastalarında anksiyete duyarlılığını inceleyen ilk çalışmadır. Klinisyenler, psoriazis hastalarında hastalığın tüm evrelerinde olası psikiyatrik komorbiditeyi göz önünde bulundurmalıdır. Dermatoloji ve psikiyatri disiplinleri arasındaki işbirliği, tam iyileşmeyi sağlamak ve hastanın iyiliğini sürdürmek için gereklidir.

Anahtar Kelimeler: Algılanan stres, anksiyete, anksiyete duyarlılığı, depresyon, psoriasis, sosyal anksiyete

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INTRODUCTION

Psoriasis is a chronic inflammatory skin disease characterized by erythematous, scaly plaques that present with remissions and relapses.[1] Genetic, environmental and immunologic factors are thought to play a role in pathogenesis.[1,2] However, psychosocial factors and stress also play a crucial role in developing and exacerbating the disease.[1-3] Stress has also been defined as an important factor in the onset, development and recurrence of psoriasis.[3,4] The skin is the most important cosmetic organ; moreover, lesions on the skin can cause stigma and significantly affect the patient's daily functioning and psychological well-being.[5] Apart from the difficulty of coping with a chronic disease, patients may encounter problems with interpersonal relationships, such as the negative impact of psoriatic lesions on their external appearance, worry about being accepted by others, other people's fear of the lesions, disgust, the thought that they may be contagious and negative comments about the disease.[6-8] These problems in daily life lead to the development of guilt, shame, hopelessness, internalized stigma and low self-esteem in psoriasis patients and increase the chronic stress caused by the disease. Psychiatric comorbidity, particularly depression and anxiety disorders are common in psoriasis patients.[1,3,4] In addition, social anxiety and social avoidance are commonly observed, especially in patients with lesions located on daily exposure areas; face,arms etc.[6,7] Psychiatric symptoms that develop in psoriasis patients are significant because they influence the course and severity of the disease as well as the quality of life of patients.[9,10] Perceived stress refers to individuals' feelings or thoughts about how stressed they are at a particular time or period.[11] Stress has been defined as an independent risk factor for both psychiatric disorders and psoriasis.[12] It plays a role in both the onset and exacerbation of psoriasis.[13] Depression and anxiety symptoms are quite common in psoriasis and can occur independently, along with the disease, or secondary to the disease.[14-16] In one study; anxiety and depression were found in 39.7% and 27.1% psoriasis patients, respectively.[17] Social anxiety disorder is characterized by an extreme fear of being negatively evaluated and disapproved of in social settings or situations requiring performance; patients with this disorder experience intense anxiety and exhibit avoidance behaviors in social settings that they perceive as dangerous.[18] Several studies have shown that 33-46% of dermatology outpatients experience significant social anxiety symptoms.[19-21] Since psoriasis is a disease that affects external appearance, it is closely associated with social anxiety.[1,22] In another study, social anxiety and avoidance behaviors were associated with lower quality of life in psoriasis patients.[23]

Anxiety sensitivity is a transdiagnostic factor that influences mental health and refers to the tendency to be overly anxious about anxiety's bodily sensations and symptoms. People with high anxiety sensitivity fear that the somatic symptoms associated with anxiety will have negative consequences, immediately go into a state of alarm and tend to catastrophically misinterpret bodily sensations associated with benign arousal.[24,25] High anxiety sensitivity may be associated with more severe anxiety symptoms, particularly social anxiety in dermatological diseases. A previous study reported higher anxiety sensitivity in patients with a psychodermatological disease than in patients without the disease.[26]

The first aim of this study is to compare the severity of anxiety, depression, anxiety sensitivity, perceived stress, and social anxiety in psoriasis patients with healthy controls. The second aim is to investigate the association between anxiety, depression, anxiety sensitivity, perceived stress and social anxiety levels and the severity and duration of the disease in psoriasis patients.

MATHERIAL AND METHOD

Study Design and Participants

40 patients diagnosed with chronic plaque psoriasis who presented to the Dermatology outpatient clinic of Abant İzzet Baysal University Medical Faculty between January 2016 and May 2016, and 40 healthy volunteers who matched the patient group in age and sex were included in this study. Informed consent was obtained from all participants. Study permission was obtained by the Ethics Committee of Abant İzzet Baysal University Faculty of Medicine (2016/8). Individuals with hypertension, diabetes mellitus, coronary artery disease, heart failure, hepatic and renal dysfunction, malignant diseases, cerebrovascular diseases, endocrine diseases, autoimmune diseases and systemic inflammation, dementia, mental retardation, autism, substance use or addiction other than smoking, head trauma, neurological diseases causing organic brain disorders such as epilepsy and individuals who received psychiatric treatment within the last month were excluded. In addition, subjects with psoriasis types other than plaque psoriasis, a diagnosis of psoriatic arthritis, other dermatologic diseases, individuals who had received systemic treatment for psoriasis in the past three months and subjects who currently received phototherapy were not included in the patient group.

Dermatological examinations were performed on all patients, and disease severity was assessed with the Psoriasis Area Severity Index (PASI). Subsequently, all participants received a socio-demographic form from a psychiatrist that measured anxiety severity with the Beck Anxiety Inventory (BAI), depression severity with the Beck Depression Inventory (BDI), anxiety sensitivity with the Anxiety Sensitivity Index (ASI-3), perceived stress level with the Perceived Stress Scale (PSS 14), and social anxiety severity with the Liebowitz Social Phobia Scale (LSPS).

Assessment Instruments

Socio-demographic Form: This form contains information about participants' age, sex, education level, smoking, and alcohol consumption.

Beck Anxiety Inventory (BAI): It consists of 21 questions that assess the severity of anxiety and is scored between 0-3. The total scale score ranges from 0-63, with high scores indicating high anxiety severity.[27] The Turkish validity and reliability study was conducted by Ulusoy et al.[28]

Beck Depression Inventory (BDI): The scale that assesses the severity of depression consists of 21 questions, with each question scored between 0 and 3. The total scale scores range from 0 to 63, with higher scores indicating more severe depression symptoms.[29] The Turkish validity and reliability study of the scale was conducted by Hisli et al.[30]

Liebowitz Social Anxiety Scale (LSAS): It is a 24-item scale consisting of two subscales measuring anxiety and avoidance in different social situations, where each item can be scored between 1 and 4. Higher scores indicate more severe social anxiety and social avoidance.[31] The Turkish validity and reliability study of the Liebowitz Social Anxiety Scale was conducted by Soykan et al. in 2003.[32]

Anxiety Sensitivity Index-3 (ADI-3): The ADI-3 measures anxiety sensitivity or fear of anxiety-related emotions. The scale consists of 18 items. It tests three dimensions: social, cognitive, and physical. The total score that can be obtained from the scale ranges from 0 to 72.[33] Mantar et al. demonstrated the validity and reliability of the Turkish version of the ADI-3. The internal consistency coefficient of the scale was found to be 0.93.[34]

Perceived Stress Scale-14 (PSS-14): Perceived stress scale was developed to assess a person's perceived stress. The total score of the scale ranges from 0 to 56.[35] The Turkish validity and reliability study was conducted by Eskin et al. The internal consistency coefficient of the scale was found to be 0.84.[36]

Statistical analysis

Normality of the distribution of continuous variables was tested using the Shaphiro Wilk test. Mann-Whitney U test was used to compare two independent groups for abnormal data. Chi-square test was applied to examine the relationship between 2 categorical variables, and Spearman rank correlation analysis was performed to evaluate the correlations between numerical variables. Statistical analysis was performed using SPSS for Windows version 24.0, and a p-value of <0.05 was considered statistically significant.

RESULTS

40 psoriasis patients (patient group) and 40 age- and sex-matched controls (control group) enrolled in this study. The patient (psoriasis) group consisted of 22 males and 18 females, and the control group consisted of 19 males and 22 females. The mean age of the patient group was 35.85±10.79 years and that of the control group was 33±6.67 years. There was no statistically significant difference between the two groups in terms of age, sex, education level, smoking and alcohol consumption (p>0.05). However, there was a statistically significant difference between the two groups in terms of marital status (p<0.01) (**Table 1**).

Table 1. Comparison of patient and control groups in terms of categorical variables

Variables (n(%))	Psoriasis (n=40)	Control (n=40)	P
Age	35.85±10.79	33±6.67	0.159**
Sex			0.502
Female	18 (45)	21 (52.5)	
Male	22 (55)	19 (47.5)	
Marital status			0.001*
Married	31 (77.5)	16 (40)	
Single	9 (22.5)	24 (60)	
Education level			0.077
Primary education	20 (50)	11 (27.5)	
High school	11 (27.5)	12 (30)	
University	9 (22.5)	17 (42.5)	
Smoking			0.228
Yes	15 (37.5)	10 (25)	
No	25 (62.5)	30 (75)	
Alcohol consumption			0.077
Yes	3 (7.5)	0 (0)	
No	37 (92.5)	40 (100)	

*Significant at 0.05 level; Chi-square test. ** Mann-Whitney U test.

Table 2. Medication use and psychiatric disease and psychiatric treatment history in psoriasis patients

		n (%)
Methotrexate	Yes	9 (22.5)
	No	31 (77.5)
Cyclosporine	Yes	1 (2.5)
	No	39 (97.5)
Acitretin	Yes	4 (10)
	No	36 (90)
Topical treatment	Yes	38 (95)
	No	2 (5)
Psychiatric disease history	Yes	10 (25)
	No	30 (75)
Psychiatric treatment history	Yes	9 (22.5)
	No	31 (77.5)
Family history of psychiatric disease	Yes	3 (7.5)
	No	37 (92.5)

Topical treatment was used in 38 (95%) of psoriasis patients, methotrexate in 9 (22.5%), cyclosporine in 1 (2.5%) and acitretin in 4 (10%). Of the psoriasis patients, 10 (25%) had a psychiatric disease history, 9 (22.5%) had a psychiatric treatment history. The mean PASI score of the patients was 8.84±6.44, the mean total disease duration was 12±9.25, and the mean age at disease onset was 23.85±12.74 years (**Table 3**).

Table 3. Mean age at disease onset, disease duration, and PASI scores in psoriasis patients

Variables	Descriptive statistics (n=40)	
	Mean±SD	Median (Min-Max)
Age at disease onset	23.85±12.74	21 (4-52)
Disease duration	12±9.25	11.5 (0.5-37)
Psoriasis Area Severity Index	8.84±6.44	7.25 (2-27.6)

The comparison of scale scores of psoriasis and control group is shown in **Table 4**. Accordingly, Beck Depression Inventory and Beck Anxiety Inventory scores were statistically significantly higher in psoriasis patients than in healthy controls (p=0.001, respectively). Similarly, Anxiety Sensitivity Index and Perceived Stress Scale scores were statistically significantly higher in psoriasis patients than in the control group (p=0.001, p=0.003). In addition, social anxiety, social avoidance and total scores on Liebowitz Social Anxiety Scale were statistically significantly higher in the psoriasis group than in the healthy controls (p=0.006, p=0.020, p=0.005, respectively).

Table 4. Comparison of patient and control groups in terms of anxiety, depression, anxiety sensitivity, social anxiety, and perceived stress

	Psoriasis (n=40)	Control (n=40)	P
Beck Depression Inventory	11.43±8.57	1.68±1.97	0.001*
Beck Anxiety Inventory	7.6±8.32	2.2±2.21	0.001*
Perceived Stress Scale	21.35±10.71	14.4±7.61	0.003*
Liebowitz Social Anxiety Scale Anxiety	41.63±13.64	33.6±8.39	0.006*
Liebowitz Social Anxiety Scale Avoidance	40.38±14.13	33.18±7.38	0.020*
Liebowitz Social Anxiety Scale Total	82±26.55	66.78±15.44	0.005*
Anxiety Sensitivity Index	33.08±12.33	17.15±8.1	0.001*

*Significant at 0.05 level; Mann-Whitney U test.

When variables were compared by sex in psoriasis patients, PASI scores were statistically significantly higher in males (p=0.009). However, there was no difference between males and females in age at disease onset, mean disease duration, and scale scores (p>0.05, respectively) (**Table 5**).

No statistically significant correlation was noted between PASI scores, disease duration, age at disease onset and Beck anxiety, Beck depression, perceived stress, anxiety sensitivity and Liebowitz social anxiety sores in psoriasis patients (p>0.05) (**Table 6**). However, a strong positive correlation was found between scores on the Perceived Stress Scale and Beck Anxiety and Beck Depression Inventories (r=0.735, p=0.001; r=0.773, p=0.001, respectively). In psoriasis patients, a moderate, statistically significant positive correlation was found between scores on the Perceived Stress Scale and avoidance and total scores on the Liebowitz Social Anxiety Scale (r=0.435, p=0.005; r=0.373, p=0.018, respectively); in contrast, there was no statistically significant correlation between the Perceived Stress Scale scores and Liebowitz Social Anxiety Scale anxiety scores (p>0.05). There was also no statistically significant correlation between the anxiety sensitivity scores and Beck anxiety, Beck depression, perceived stress, anxiety sensitivity and Liebowitz social anxiety scores (p>0.05) (**Table 7**).

Table 5. Comparison of PASI scores, scale scores, and other variables by sex in psoriasis patients

	Female (n=18)	Male (n=22)	P
Disease duration	12.97±9.05	11.2±9.55	0.381
Psoriasis area severity index	6.49±6.23	10.75±6.08	0.009*
Age at disease onset for psoriasis	20.11±11.65	26.91±13.03	0.112
Beck Depression Inventory	12.61±9.6	10.45±7.72	0.619
Beck Anxiety Inventory	9.44±9.19	6.09±7.41	0.286
Perceived Stress Scale	21.83±11.52	20.95±10.26	0.882
Liebowitz Social Anxiety Scale Anxiety	46.17±15.35	37.91±11.08	0.070
Liebowitz Social Anxiety Scale Avoidance	42.89±17.18	38.32±11.03	0.657
Liebowitz Social Anxiety Scale Total	89.06±31.46	76.23±20.76	0.251
Anxiety Sensitivity Index	35.94±10.62	30.73±13.34	0.219

*Significant at 0.05 level; Mann-Whitney U-test

Table 6. Correlation of age at disease onset, disease duration, and PASI scores with Beck Depression Inventory, Beck Anxiety Inventory, Liebowitz Social Anxiety Scale, perceived stress and anxiety sensitivity scores in psoriasis patients

		Age at disease onset for psoriasis	Disease duration	Psoriasis Area Severity Index
Beck Depression Inventory	r	-0.097	0.006	0.073
	P	0.550	0.972	0.655
Beck Anxiety Inventory	r	-0.145	-0.001	0.072
	p	0.372	0.995	0.660
Perceived Stress Scale	r	-0.120	-0.018	0.081
	p	0.462	0.911	0.621
Liebowitz Social Anxiety Scale Anxiety	r	-0.205	0.031	-0.276
	p	0.204	0.851	0.085
Liebowitz Social Anxiety Scale Avoidance	r	0.024	-0.166	-0.264
	p	0.883	0.305	0.100
Liebowitz Social Anxiety Scale Total	r	-0.088	-0.088	-0.250
	p	0.591	0.589	0.120
Anxiety Sensitivity Index	r	-0.072	0.096	-0.079
	p	0.660	0.557	0.626

*Significant at 0.05 level; r: Spearman correlation coefficient.

Table 7. Correlation of anxiety sensitivity and perceived stress scores with Beck Depression Inventory, Beck Anxiety Inventory, Liebowitz Social Anxiety Scale anxiety, avoidance and total scores in psoriasis patients

		Beck Anxiety Inventory	Beck Depression Inventory	Liebowitz Social Anxiety Scale Anxiety	Liebowitz Social Anxiety Scale Avoidance	Liebowitz Social Anxiety Scale Total
Anxiety Sensitivity Index	r	0.053	0.127	-0.185	-0.076	-0.190
	p	0.744	0.435	0.252	0.642	0.240
Perceived Stress Scale	r	0.735**	0.773**	0.281	0.435**	0.373*
	p	0.001	0.001	0.079	0.005	0.018

*Significant at 0.05 level; **Significant at 0.01 level; r: Spearman correlation coefficient.

DISCUSSION

The main findings of our study were, first, that levels of anxiety, depression, anxiety sensitivity, perceived stress, and social anxiety were significantly higher in psoriasis patients than in healthy controls. Second, there was no significant relationship between disease duration and PASI scores measuring disease severity and levels of anxiety, depression, anxiety sensitivity, perceived stress, and social anxiety. Third, although the relationship between anxiety and depression levels and disease severity in psoriasis patients has been frequently studied, there are few studies examining the relationship between social anxiety and perceived stress and disease severity. To the best of our knowledge, our study is the first to elucidate the relationship between anxiety sensitivity and disease severity in psoriasis patients.

Psychological symptoms play an important role in the development and exacerbation of psoriasis.[11] The fact that psoriasis is a disease with a chronic course, its impact on external appearance, and the associated social stigma may increase the stress associated with the disease and cause psychiatric symptoms.[22] The incidence of psychiatric disorders in psoriasis patients is four times higher than in other dermatological diseases.[37] At the same time, an accompanying psychiatric disorder of psoriasis may exacerbate the disease, delay recovery by impairing response to treatment and cause relapse.[38] Akay et al. investigated the depression levels of psoriasis patients and found that the severity of depression was significantly higher in psoriasis patients than in the control group.[39] In a study comparing 100 psoriasis patients with 100 healthy controls, depression and anxiety levels were higher in psoriasis patients than in controls.[40] In our study, anxiety and depression levels were significantly higher in psoriasis patients than in healthy controls.

Different results were reported in studies investigating the association between disease severity and duration and anxiety and depression in psoriasis patients. Köşger et al. found a positive correlation between PASI scores and anxiety scores in psoriasis patients, but no correlation of PASI scores with depression scores.[41] The study by Özgüven et al. showed a positive correlation of psoriasis severity with depression scores, but no correlation with anxiety scores. In the same study, a negative correlation was found between depression scores and disease duration, and it was reported that this fact could be due to learning to cope with the psychosocial impact of the disease or selecting patients with low PASI scores.[42] In their study, Kılıç et al. found no correlation between PASI scores and disease duration and anxiety and depression levels in psoriasis patients.[43] In the study of Taner et al., it was reported that there was no correlation between disease duration and depression and anxiety scores in psoriasis patients.[44]

Similarly, no correlation was found between PASI scores and disease duration and anxiety and depression scores in psoriasis patients in our study.

In general, patient-assessed subjective disease severity has been more strongly associated with anxiety and depression than PASI score.[45] Therefore, the patient's subjective perception of disease severity, quality of life, and functionality may be more useful in predicting the patient's psychiatric well-being than objective scale instruments related to disease severity.[46,47] Although our study excluded individuals with known psychiatric illnesses, high depression and anxiety severity in psoriasis patients may be related to chronic daily stress caused by chronic disease progression, relapse progression, the need for long-term treatment, failure to fully recover, the impact of the disease on external appearance, social stigma, increased anxiety sensitivity, perceived stress, and the impact of having to live with the disease.[15-17]

There are few studies examining social anxiety in psoriasis patients. For example, one study reported that social anxiety was high in psoriasis patients with visible lesions on the body and that there was an association between social anxiety and disease severity.[48] In a recent study in our country, social anxiety scores were significantly higher in psoriasis patients than in healthy controls, and social anxiety and avoidance behavior scores were reported to be associated with poor quality of life but not with PASI scores.[49] In our study, similar to studies in the literature, we found that psoriasis patients had significantly higher social anxiety levels than healthy controls and that there was no relationship between social anxiety and disease severity and duration, measured by PASI.

Psoriasis is associated with social stigma due to the visible skin lesions and the perception that the disease is contagious in society.[50] As a result, psoriasis patients experience psychosocial difficulties due to low self-esteem and feelings of shame about their external appearance.[51] Furthermore, they continue to suffer from stress even after the lesions have healed.[52-54] A previous study reported that social anxiety was related to disease severity, feelings of inadequacy, and perceived levels of social support in psoriasis patients.[23] It was also highlighted that the level of social anxiety was associated with the severity of the disease in patients whose disease onset was in adolescence.

In contrast, the level of social anxiety was not associated with the severity of the disease in patients with disease onset in adulthood.[55] It has also been reported that lesion location is more related to social anxiety than to disease severity and that social anxiety levels are higher in patients with visible lesions, as expected.[49] Therefore, our study is crucial as it is the second controlled study to assess the level of social anxiety in psoriasis patients in our country.

Another aim of our study was to assess the perceived level of stress in psoriasis patients. As far as we know, this is the second study to assess perceived stress in psoriasis patients. It is well known that stress is a predisposing, triggering, and maintaining factor for psoriasis. Many studies have reported that psychological stress plays a role in developing and exacerbating the disease and influences disease progression.[56-57] In conjunction with stress, increased hypothalamic-pituitary-adrenal axis activity likely triggers the inflammatory process.[58-59] In a recent study, perceived stress levels were higher in psoriasis patients than in healthy controls, and perceived stress was reported to be associated with life events in the past six months.[60] In our study, too, perceived stress levels were higher in psoriasis patients than in healthy controls, and no correlation was found between disease severity and duration and perceived stress. Thus, our results are consistent with the hypothesis that perceived stress is higher in psoriasis patients.[61] In addition, it is hypothesized that psoriasis affects patients' perception of stress.[60] Psychological stress is important because it has a negative impact on the treatment of the disease.[62]

The last parameter we evaluated in our study was anxiety sensitivity in psoriasis patients. Anxiety sensitivity is defined as an anxiety amplifier characterized by fear of experiencing anxiety due to the social, cognitive, and physical consequences of anxiety that the individual perceives as harmful.[26] Anxiety sensitivity stands out as a predisposing factor that contributes to the development, exacerbation, and maintenance of psychiatric disorders and chronic diseases, particularly anxiety disorders.[63,64] Moreover, high anxiety sensitivity may increase the severity of psychodermatological diseases and worsen their course.[65] In a study examining anxiety sensitivity in dermatology patients, patients were divided into two groups: those with and those without psychodermatological disorder; anxiety sensitivity scores were higher in patients with psychodermatological disease than in those without.[66] Anxiety sensitivity may also be increased in dermatology patients due to visible lesions. Another study that examined patients with psychodermatologic symptoms showed that anxiety sensitivity is associated with social anxiety symptoms.[67] In our study, anxiety sensitivity levels were higher in psoriasis patients than in healthy controls, and anxiety sensitivity was not associated with disease severity and duration. Stress produces physiological responses by affecting the skin, immune, and neuroendocrine systems. Anxiety sensitivity may trigger or exacerbate anxiety and dermatologic symptoms by increasing the stress response in psoriasis patients.[66] Prospective studies are needed to better understand the interaction of anxiety sensitivity with psoriasis and to evaluate the contributing mechanisms and effects on quality of life and disease prognosis.

Our study has several limitations. First, it was a cross-sectional study. Second, the sample was relatively small. Third, the psychiatric assessment in this study was conducted using self-report scales. Patients with an existing psychiatric illness who had not received a psychiatric diagnosis from a psychiatrist were excluded. Fourth, patient selection was not randomized; healthy subjects were composed of hospital staff. Therefore, we believe that prospective studies should support our study with larger samples and psychiatric diagnostic interviews.

To our knowledge, our study is the first to assess anxiety sensitivity in psoriasis patients and it is one of the few studies to assess social anxiety and perceived stress. In our study, the high levels of anxiety sensitivity, social anxiety and perceived stress were not associated with the duration and severity of the disease. Studies with larger samples are needed to elucidate the relationship of these parameters with disease duration and severity.

CONCLUSION

The high levels of anxiety, depression, social anxiety, perceived stress and anxiety sensitivity in our study demonstrate that psychiatric assessment is vital in psoriasis patients at every stage of the disease, regardless of disease severity and disease duration. Thus, in patients with psoriasis, defined as a psychodermatological disease, psychiatric assessment and identification of patients in need of psychiatric treatment lead to more successful treatment responses and contribute to the prevention of psychiatric comorbidity by supporting early diagnosis and treatment of psychiatric diseases.

ETHICAL DECLARATIONS

Ethics Committee Approval: Study permission was obtained by the Ethics Committee of Abant İzzet Baysal University Faculty of Medicine (2016/8).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Parisi R, Symmons DP, Griffiths CE, Ashcroft DM. Global epidemiology of psoriasis:a systematic review of incidence and prevalence. J Invest Dermatol 2013;133(2):377-85.
2. Farber EM. History of the treatment of psoriasis. J Am Acad Dermatol 1992;27(4):640-5.
3. Kundakci N, Türsen U, Babiker MO, Gürgey E. The evaluation of the socio-demographic and clinical features of Turkish psoriasis patients. Int J Dermatol 2002;41:220-4.
4. Consoli SM, Rolhion S, Martin C, et al. Low levels of emotional awareness predicts a better response to dermatological treatment in patients with psoriasis. Dermatology 2006;212:128-36.
5. Szepietowski J, Pacan P. Dermatoses requiring psychiatric and psychological help. [Polish] Adv Clin Exp Med 2001;10(Suppl. 1):25-8.
6. Hrehorow E, Salomon E, Matusiak L, Reich A, Szepietowski JC. Patients with psoriasis feel stigmatized. Acta Dermatol Venereol 2012;92:67–77.
7. Kimball AB, Jacobson C, Weiss S, Vreeland MG, Wu Y. The psychosocial burden of psoriasis. Am J Clin Dermatol 2005;6:383–92.
8. Jankowiak B, Kowalewska B, Krajewska-Kulak E, Khvorik DF. Stigmatization and Quality of Life in Patients with Psoriasis. Dermatol Ther (Heidelb). 2020;10(2):285-96.
9. Remröd C, Sjöström K, Svensson Å. Subjective stress reactivity in psoriasis-a cross sectional study of associated psychological traits. BMC Dermatol 2015;15:6.
10. Chernyshov PV. Entwicklung und Anwendung der Lebensqualitätserfassung in der Dermatologie. Karger Kompass Dermatologie. 2020;8 (1);6–10.
11. Gaston L, Lassonde M, Bernier-Buzzanga J, Hodgins S, Crombez JC. Psoriasis and stress:a prospective study. J Am Acad Dermatol 1987;17(1):82-6.
12. Sathyanarayana Rao TS, Basavaraj KH, Das K. Psychosomatic paradigms in psoriasis:Psoriasis, stress and mental health. Indian J Psychiatry. 2013;55(4):313–5.
13. Gupta MA, Gupta AK, Haberman HF. Psoriasis and psychiatry:an update. Gen Hosp Psychiatry. 1987;9:157-66.
14. Schmitt JM, Ford DE. Role of depression in quality of life for patients with psoriasis. Dermatology. 2007;215(1):17-27.
15. Mercan S. Deri hastalıklarının psikojenik sonuçları ve komorbiditeler. Türkderm. 2010;44(1):25-35.
16. Sesliokuyucu C, Şahpolat M, Arı M. Psöriazisli Hastaların Depresyon, Anksiyete, Çocukluk Çağı Ruhsal Travması ve Yaşam Kalitesi ile Sosyodemografik Özelliklerinin Araştırılması. Journal of Mood Disorders 2017;7(1):28-40.
17. Romiti R., Amone M, Menter A, Miot HA. Prevalence of psoriasis in Brazil—A geographical survey. Int J Dermatol 2017;56(8):167–8.
18. American Psychiatric Association. Diagnostic and statistical manual of mental disorders 5th ed. Arlington, VA:2013.
19. Bez Y, Yesilova Y, Kaya MC, Sir A. High social phobia frequency and related disability in patients with acne vulgaris. Eur J Dermatol 2011;21:756–60.
20. Yarpuz AY, Saadet ED, Şanli HE, Özgüven HD. Social anxiety level in acne vulgaris patients and its relationship to clinical variables. Türk Psikiyatri Derg 2008;19:1–8.
21. Montgomery K, Norman P, Messenger AG, Thompson AR. The importance of mindfulness in psychosocial distress and quality of life in dermatology patients. Br J Dermatol 2016;175:930–936.
22. Güz H, Ay M, Dilbaz N. Bir Grup Dermatolojik Hastalarda Aleksitimi, Depresyon ve Anksiyete. Düşünen Adam 2000;13(3):161-5.
23. Schneider G, Heuft G, Hockmann J. Determinants of social anxiety and social avoidance in psoriasis outpatients. J Eur Acad Dermatol Venereol 2013;27:383–6.
24. Avallone KM, McLeish AC, Luberto CM, Bernstein JA. Anxiety sensitivity, asthma control, and quality of life in adults with asthma J Asthma 2012;49(1):57-62.
25. Bravo IM, Silverman W. Anxiety sensitivity, anxiety, and depression in older patients and their relation to hypochondriacal concerns and medical illnesses Aging Ment Health 2001;5(4)349-57.
26. Dixon LJ, Lee AA, Viana AG, McCowan NK, Brodell RT, Tull MT. Anxiety Sensitivity in Dermatological Patients. Psychosomatics 2016;57(5):498-504.
27. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety:Psychometric properties. J Consult Clin Psychol 1988;56:893-7.
28. Ulusoy M, Şahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory:Psychometric properties. J Cognitive Psychother 1998;12:163-72.
29. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry 1961;4:561-71.
30. Hisli N. Beck Depresyon Ölçeği'nin bir Türk örnekleminde geçerlilik ve güvenilirliği. Psikoloji Derg 1988;6:118-22.
31. Heimberg G., Hornerk J, Justerh R, et al. Psychometric properties of the Liebowitz Social Anxiety Scale. Psychol Med 1999;29:199-212.
32. Soykan C, Ozguven HD, Gencoz T. Liebowitz Social Anxiety Scale: the Turkish version. Psychol Rep 2003;93:1059-69.
33. Taylor S, Zvolensky MJ, Cox BJ, et al. Robust dimensions of anxiety sensitivity: development and initial validation of the Anxiety Sensitivity Index-3. Psychol Assess 2007;19:176-88.
34. Mantar A, Yemez B, Alkın T. Anksiyete Duyarlılığı İndexi-3'ün Türkçe formunun geçerlik ve güvenilirlik çalışması. Türk Psikiyatri Derg 2010;21:225-34.
35. Nielsen MG, Ørnbøl E, Vestergaard M, et al. The construct validity of the Perceived Stress Scale. J Psychosom Res 2016;84:22–30.
36. Eskin M, Harlak H, Demirkıran F, Dereboy Ç. Algılanan Stres Ölçeğinin Türkçeye Uyarlanması:Güvenirlik ve Geçerlik Analizi. Yeni Symposium 2013;51:132–40.
37. Parafianowicz K, Sicińska J, Moran A, et al. Psychiatric comorbidities of psoriasis:pilot study. Psychiatr Pol 2010;44(1):119-26.
38. Jin W, Zhang, S, Duan Y. Depression Symptoms Predict Worse Clinical Response to Etanercept Treatment in Psoriasis Patients. Dermatology 2019;235(1):55–64.
39. Akay A, Pekcanlar A, Bozdag KE, Altintas L, Karaman A. Assessment of depression in subjects with psoriasis vulgaris and lichen planus. J Eur Acad Dermatol Venereol 2002;16(4):347-52.
40. Golpour M, Hosseini SH, Khademloo M, et al. Depression and Anxiety Disorders among Patients with Psoriasis: A Hospital-Based Case-Control Study. Dermatol Res Pract 2012;2012:381905.
41. Köşger F, Bilgili ME, Genek M, Yıldız B, Saraçoğlu N, Eşsizoğlu A. Psoriasis Hastalarında Depresyon, Anksiyete ve Yaşam Kalitesinin Hastalığın Şiddeti ile İlişkisi. Journal of Mood Disorders 2014;4(4):157-62.
42. Özguven DH, Kundakçı N, Kumbasar H, Boyvat A. The depression, anxiety, life satisfaction and affective expression levels in psoriasis patients. JEADV 2000;14:267-71.
43. Kilic A, Gulec MY, Gul U, Gulec H. Temperament and character profile of patients with psoriasis. J Eur Acad Dermatol Venereol 2008;22(5):537-42.
44. Taner E, Coşar B, Burhanoğlu S, Çalıkoğlu E, Önder M, Arikan Z. Depression and anxiety in patients with Behçet's disease compared with that in patients with psoriasis. Int J Dermatol 2007;46:1118-24.
45. Gupta MA, Schork NJ, Gupta AK, Kirkby S, Ellis CN. Suicidal ideation in psoriasis. Int J Dermatol 1993;32(3):188-90.
46. Tee SI, Lim ZV, Theng CT, Chan KL, Giam YC. A prospective cross-sectional study of anxiety and depression in patients with psoriasis in Singapore. J Eur Acad Dermatol Venereol 2016;30(7):1159-64.
47. Heydendael VM, de Borgie CA, Spuls PI, Bossuyt PM, Bos JD, de Rie MA. The burden of psoriasis is not determined by disease severity only. J Investig Dermatol Symp Proc 2004;9:131–5.
48. Özgüven DH, Kundakçı N, Boyvat A. Psöriyazis Hastalarında İkincil Sosyal Anksiyete. Türk Psikiyatri Derg 2000;11:121-126.
49. Yıldırım FE, Şeremet S, Afşar FŞ, Yıldız İ, İyidoğan E. Evaluation of Social Anxiety Levels and Related Factors in Psoriasis Patients:A Controlled, Cross-Sectional Study. Noro Psikiyatr Ars 2020;57(2):148–53.
50. Hayes J, Koo J. Psoriasis:depression, anxiety, smoking, and drinking habits. Dermatol Ther 2010;23(2):174-80.
51. Bhosle MJ, Kulkarni A, Feldman SR, Balkrishnan R. Quality of life in patients with psoriasis. Health Qual Life Outcomes 2006;4:35.

52. Finzi A, Colombo D, Caputo A, et al. Psychological distress and coping strategies in patients with psoriasis:the PSYCHAE Study. J Eur Acad Dermatol Venereol 2007;21:1161–9.
53. Rapp SR, Cottrell CA, Leary MR. Social coping strategies associated with quality of life decrements among psoriasis patients. Br J Dermatol 2001;145:610–6.
54. Jankovic S, Raznatovic M, Marinkovic J, Maksimovic N, Jankovic J, Djikanovic B. Relevance of psychosomatic factors in psoriasis:a case control study. Acta Derm Venereol 2009;89:364–8.
55. Łakuta P, Przybyła-Basista H. Toward a better understanding of social anxiety and depression in psoriasis patients:The role of determinants, mediators, and moderators. J Psychosom Res 2017;94:32–8.
56. Evers AW, Verhoeven EW, Kraaimaat FW, et al. How stress gets under the skin:cortisol and stress reactivity in psoriasis. Br J Dermatol 2010;163:986–91.
57. Manolache L, Petrescu-Seceleanu D, Benea V. Life events involvement in psoriasis onset/recurrence. Int J Dermatol 2010;49:636–41.
58. Orion E, Wolf R. Psychological factors in skin diseases:stress and skin:facts and controversies. Clin Dermatol 2013;31(6):707-11.
59. Arnetz BB, Fjellner B, Eneroth P, Kallner A. Stress and psoriasis:psychoendocrine and metabolic reactions in psoriatic patients during standardized stressor exposure. Psychosom Med 1985;47(6):528-41.
60. Pancar Yüksel E, Durmuş D, Sarısoy G. Perceived stress, life events, fatigue and temperament in patients with psoriasis. J Int Med Res 2019;47(9):4284–91.
61. Kumbasar H, Yılmaz A. Psoriyazis patogenezinde psikonöroimmünolojik mekanizmalar ve hastalığın yaşam kalitesi üzerine etkileri. Türkiye Klinikleri Dermatoloji Psoriasis Özel Sayısı 2005;1:50-5.
62. Fortune DG, Richards HL, Kirby B, et al. Psychological distress impairs clearance of psoriasis in patients treated with photochemotherapy. Arch Dermatol 2003;139:752–6.
63. Avallone KM, McLeish AC, Luberto CM, Bernstein JA. Anxiety sensitivity, asthma control, and quality of life in adults with asthma. J Asthma 2012;49(1):57-62.
64. Bravo IM, Silverman W. Anxiety sensitivity, anxiety, and depression in older patients and their relation to hypochondriacal concerns and medical illnesses. Aging Ment Health 2001;5(4):349-57.
65. Orion E, Wolf R. Psychological factors in skin diseases:stress and skin:facts and controversies. Clin Dermatol 2013;31(6):707-11.
66. Dixon LJ, Lee AA, Viana AG, McCowan NK, Brodell RT, Tull MT. Anxiety Sensitivity in Dermatological Patients. Psychosomatics 2016;57(5):498-504.
67. Ellison L, Witcraft SM, Dixon LJ. Anxiety sensitivity and social anxiety in adults with psychodermatological symptoms. Arch Dermatol Res. 2021;313(7):531-7.