Original Article

Anxiety, Depression, and Sexual Dysfunction in Patients with Psoriasis

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Abstract

Background: There are few studies investigating the association between psoriasis and depression, anxiety, sexual dysfunction in the literature. **Aims:** We aimed to investigate depression, anxiety, and sexual dysfunction in patients with psoriasis and the association between the psychiatric comorbidity and the severity and involvement sites of psoriasis. **Materials and Methods:** A total of 200 participants, including 100 psoriasis patients and 100 healthy volunteers as a control group, were included in the study. All participants were questioned about sociodemographic characteristics, smoking, alcohol use, and comorbidities. All participants completed the Dermatology Life Quality Index, Beck Depression Scale, Beck Anxiety Scale, Arizona Sexual Experiences Scale, Female Sexual Function Scale/International Erectile Function Index. **Results:** In the psoriasis group, an increased risk for depression and anxiety was observed, regardless of the clinical features and severity of psoriasis, and a positive correlation was detected between the severity of the disease and impaired quality of life. An increased risk for sexual dysfunction regardless of clinical features and severity in male patients with psoriasis was detected compared with the control group. It was found that the risk for erectile dysfunction in patients with psoriasis increased regardless of the risk factors such as smoking, alcohol, diabetes, hypertension, and cardiovascular disease. **Conclusion:** Our study shows that psoriasis increases the risk for impaired quality of life, depression, anxiety, and sexual dysfunction in individuals. This increase is not always associated with the clinical characteristics of psoriasis such as severity, duration, and sites of involvement. Therefore, dermatologists should consider not only the skin findings of psoriasis but also the psychosocial status of the patient and refer the patient to psychiatry if necessary.

Keywords: Anxiety, depression, psoriasis, quality of life, sexual dysfunction

Introduction

Psoriasis is a chronic, systemic inflammatory disease involving skin, nails, and joints. Psoriasis is a relatively common disease that waxes and wanes with flareups in individuals. The etiopathogenesis of psoriasis is uncertain. However, in addition to genetic predisposition, various endogenous and exogenous factors play roles in psoriasis. Trauma, infections, medications, and emotional stress have also been identified as potential triggering factors for psoriasis. A wide variety of conditions such as metabolic syndrome, obesity, diabetes mellitus (DM), cardiovascular disease (CVS), malignancy, and psychiatric disorders have been associated with psoriasis.[1] The long-term, waxing and waning course of psoriasis causes a negative impact on the quality of life in patients. Impaired quality of life is generally associated with an increased risk of depression and anxiety. Emotional stress, low self-esteem, feelings of guilt and self-worthlessness, social isolation, and suicidal ideation are also common in patients with psoriasis.[2]

Dermatological disorders may directly or indirectly cause sexual dysfunctions.[3] Sexual dysfunctions develop more common in dermatoses such as psoriasis involving genitalia. Psoriasis may cause a wide variety of sexual disorders such as loss of libido and anorgasmia. In a study, sexual dysfunction was detected in 40% of patients with psoriasis.[4] Psychiatric conditions (depression, anxiety,

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emotional stress, etc.) can not only trigger psoriasis, but also occur as a result of exacerbations of psoriasis. The quality of life is not always associated with the severity of psoriasis. Psychiatric conditions may develop not only during a relapse but also during a remission in patients with psoriasis. In this regard, the association between psoriasis and psychiatric comorbidity is unclear. In addition, there are few studies investigating the association between psoriasis and psychiatric conditions in the literature. In this study, we aimed to investigate depression, anxiety, and sexual dysfunction in patients with psoriasis and also their association with the severity and involvement sites of psoriasis.

Materials and Methods

A total of 100 psoriasis patients who have not received systemic treatment in the last 3 months and presented to the dermatology outpatient clinic of our hospital between July 2019 and March 2020 were enrolled in comparison to a control group consisting of 100 healthy volunteers. All participants ranged from 18 to 65 years were literate and had no known additional dermatological or psychiatric disease. Approval for the study was obtained from the local Ethics Committee (decision number 2019/81; 03/07/2019). All participants' information was kept confidential and was used only for research purposes.

Height, weight, smoking and alcohol use, and presence of chronic disease (DM, hypertension, hyperlipidemia, chronic lung disease, CVS) of all participants were recorded. The duration of disease, family history, body surface area (BSA), psoriasis area severity index (PASI), the variant of psoriasis (localized, generalized, palmoplantar plaque, palmoplantar pustular, generalized pustular, guttate, inverse, erythrodermic, psoriatic arthritis), and affected body areas (scalp, face, neck, chest, abdomen, nape, back, arm, elbow, forearm, hand, genital area, hip, thigh, knee, leg, foot, nail) were recorded for patients with psoriasis.

All participants completed the sociodemographic data form, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Arizona Sexual Experiences Scale (ASEX), and Female Sexual Function Index (FSFI)/ International Index of Erectile Function (IIEF). Psoriasis patients additionally completed the Dermatology Life Quality Index (DLQI) questionnaire.

The scale scores of the patient and control groups were compared. It was investigated whether there was an association between the scale scores and the severity and involvement sites of psoriasis in the patient group. It was checked whether there was a correlation between IIEF scores and the variables that could affect the scale scores, such as smoking, alcohol use, DM, hypertension, and CVS. The relationship between depression, anxiety, and sexual dysfunction in the patients was assessed.

Statistical analysis

Statistical analyses were performed using SPSS software version 22.0. The variables were investigated using visual (histograms and probability plots) and analytical methods (Kolmogorov–Smirnov/Shapiro–Wilk test) to determine whether or not they are normally distributed. When the variables were normally distributed, Student's *t*-test was used to compare continuous variables between the case and control groups. When the variables were non-parametric, the Mann–Whitney *U*-test was used to compare continuous variables between the groups. In the correlation analysis, Pearson's correlation test was used for the variables that were normally distributed. Spearman's correlation test was used for the variables that did not follow normal distribution. Linear regression analysis was used to assess the effects of risk factors on variables. The χ^2 test was used to compare categorical variables in different groups. A *P*-value of less than 0.05 was considered to show a statistically significant result.

Results

A total of 100 patients [40 females (40%) and 60 males (60%)] and 100 healthy controls [40 females (40%) and 60 males (60%)] were included in our study. No statistically significant difference was found between the patient and control groups in terms of sociodemographic characteristics [Table 1]. In the patient group, 13 patients had hypertension (13%), 6 had DM (6%), and one had CVS (1%). In the control group, five patients had hypertension (5%), one had CVS (1%), and one had DM (1%). The clinical characteristics of psoriasis patients are shown in Table 2.

The DLQI, BDI, BAI, and ASEX scores were higher in the patient group than in the control groups [Table 3]. The comparisons of scale scores between the groups according to gender are shown in Table 4 (female) and Table 5 (male).

No statistically significant difference was found between males and females in the psoriasis group in terms of DLQI scores ($P = 0.093$). However, the BDI, BAI, and ASEX scores were higher in females than in males ($P = 0.003$, $P = 0.001$, $P < 0.001$, respectively).

A low degree of statistically significant positive correlation was found between PASI score and duration of psoriasis, whereas a moderate degree of positive correlation between PASI and DLQI scores was found ($P = 0.006$ and $P = 0.001$, respectively). No statistically significant correlation was found between PASI and BDI, BAI, ASEX scores ($P = 0.482$, $P = 0.818$, $P = 0.726$, respectively).

A low degree of statistically significant positive correlation was found between ASEX and BDI scores, whereas a moderate degree of positive correlation between ASEX and BAI scores was found ($P = 0.003$ and $P = 0.001$, respectively). A high degree of statistically significant

Table 1: Sociodemographic characteristics according to groups

Sociodemographic characteristics	Patient	Control	*P*-value
Gender, *n* (%)			
Female	40 (40)	40 (40)	1
Male	60 (60)	60 (60)	1
Total	100 (100)	100 (100)	1
Mean age ± SD			
Female	43.9 ± 12.9	42.5 ± 12.8	0.622
Male	38.8 ± 13.0	38.5 ± 13.4	0.891
Total	40.9 ± 13.1	40.1 ± 13.2	0.681
Marital status, *n* (%)			
Married	72 (72)	65 (65)	0.079
Single	21 (21)	31 (31)	0.079
Widowed	7 (7)	4 (4)	0.079
Education level, *n* (%)			
Primary education	44 (44)	34 (34)	0.067
Secondary education (high school)	33 (33)	30 (30)	0.067
Higher education	23 (23)	36 (36)	0.067
Employment status, *n* (%)			
Working	49 (49)	60 (60)	0.119
Non-working	51 (51)	40 (40)	0.119

SD: standard deviation

Table 2: Characteristics of patients

	Female	Male	Total
Duration of psoriasis (year)			
Median (min–max)	5.5 (0.5–35.0)	10.0 (0.5–35.0)	10.0 (0.5–35.0)
Mean ± SS	9.0 ± 9.2	10.3 ± 7.8	9.8 ± 8.3
Family history, *n* (%)			
+	13 (32.5)	17 (28.3)	30 (30)
–	27 (67.5)	43 (71.7)	70 (70)
BSA, *n* (%)			
<10%	30 (75)	41 (68.3)	71 (71)
>10%	10 (25)	19 (31.7)	29 (29)
PASI			
Median (min–max)	4.4 (0.6–18.6)	6.3 (1.6–27.3)	5.1 (0.6–27.3)
Mean ± SD	5.3 ± 3.8	7.4 ± 5.0	6.6 ± 4.7
Types of psoriasis, *n* (%)			
Plaque	32 (80)	60 (100)	92 (92)
Guttate	1 (2.5)	0 (0)	1 (1)
Palmoplantar	5 (12.5)	0 (0)	5 (5)
Inverse	1 (2.5)	0 (0)	1 (1)
Erythrodermic	1 (2.5)	0 (0)	1 (1)
Psoriatic arthritis, *n* (%)			
+	5 (12.5)	7 (11.7)	12 (12)
–	35 (87.5)	53 (88.3)	88 (88)
Visible lesion, *n* (%)			
Total	34 (85)	49 (81.7)	83 (83)
Scalp	20 (50)	42 (70)	62 (62)
Face	5 (12.5)	14 (23.3)	19 (19)
Hands	25 (62.5)	29 (48.3)	54 (54)
Nails	7 (17.5)	20 (33.3)	27 (27)
None	6 (15)	11 (18.3)	17 (17)
Genital involvement			
+	13 (32.5)	29 (48.3)	42 (42)
–	27 (67.5)	31 (51.7)	58 (58)

BSA: body surface area, PASI: psoriasis area severity index

Table 3: Scores of scales according to groups

Scales	Patient	Control	*P*-value*
DLQI			
Median (min–max)	8.0 (0.0–22.0)	0.0 (0.0–8.0)	<0.001
Mean ± SD	8.1 ± 5.1	0.9 ± 1.6	
BDI			
Median (min–max)	11.0 (0.0–39.0)	6.0 (0.0–36.0)	<0.001
Mean ± SD	12.3 ± 7.9	7.2 ± 7.2	
BAI			
Median (min–max)	8.5 (0.0–45.0)	3.5 (0.0–39.0)	<0.001
Mean ± SD	11.2 ± 9.0	6.2 ± 6.9	
ASEX			
Median (min–max)	14.0 (5.0–30.0)	12.0 (5.0–30.0)	0.005
Mean ± SD	15.0 ± 5.5	13.2 ± 6.1	

*Mann–Whitney *U*-test. SD: standard deviation

Table 4: Scales' scores of females according to groups

Scales	Patient	Control	*P*-value
DLQI			
Median (min–max)	8.5 (1.0–19.0)	0.0 (0.0–8.0)	<0.001
Mean ± SD	8.9 ± 4.3	1.2 ± 1.7	
BDI			
Median (min–max)	14.5 (1.0–39.0)	7.5 (0.0–36.0)	0.001
Mean ± SD	15.4 ± 8.9	9.5 ± 7.8	
BAI			
Median (min–max)	14.5 (1.0–45.0)	8.0 (0.0–39.0)	0.003
Mean ± SD	15.0 ± 11.0	8.9 ± 7.7	
ASEX			
Median (min–max)	19.0 (7.0–30.0)	15.0 (5.0–30.0)	0.114
Mean ± SD	18.3 ± 5.9	16.3 ± 7.1	
FSFI-sexual desire			
Median (min–max)	2.4 (1.2–6.0)	3.0 (1.2–6.0)	0.214*
Mean ± SD	2.7 ± 1.3	3.1 ± 1.4	
FSFI-sexual arousal			
Median (min–max)	3.0 (0.0–6.0)	3.7 (0.0–6.0)	0.252
Mean ± SD	2.7 ± 1.7	3.2 ± 1.8	
FSFI-lubrication			
Median (min–max)	3.6 (0.0–6.0)	3.9 (0.0–6.0)	0.085
Mean ± SD	3.0 ± 1.7	3.5 ± 1.8	
FSFI-orgasm			
Median (min–max)	3.2 (0.0–6.0)	3.6 (0.0–5.6)	0.081
Mean ± SD	2.5 ± 1.5	2.9 ± 1.7	
FSFI-satisfaction			
Median (min–max)	3.6 (0.0–6.0)	4.0 (0.0–6.0)	0.147
Mean ± SD	3.1 ± 1.9	3.5 ± 2.1	
FSFI-discomfort			
Median (min–max)	4.4 (0.0–6.0)	4.8 (0.0–6.0)	0.075
Mean ± SD	3.5 ± 2.1	4.2 ± 2.1	
FSFI-total			
Median (min–max)	18.9 (1.2–36.0)	23.8 (1.2–34.4)	0.102
Mean ± SD	17.7 ± 9.8	20.5 ± 10.3	

**t*-test was performed, Mann–Whitney *U*-test was performed for the others

Table 5: Scales' scores of males according to groups

Scales	Patient	Control	*P*-value*
DLQI			
Median (min–max)	6.0 (0.0–22.0)	0.0 (0.0–8.0)	<0.001
Mean ± SS	7.6 ± 5.6	0.8 ± 1.5	
BDI			
Median (min–max)	9.0 (0.0–29.0)	4.0 (0.0–34.0)	<0.001
Mean ± SD	10.3 ± 6.5	5.8 ± 6.5	
BAI			
Median (min–max)	7.0 (0.0–29.0)	2.0 (0.0–23.0)	<0.001
Ortalama ± SD	8.7 ± 6.4	4.4 ± 5.7	
ASEX			
Median (min–max)	13.0 (5.0–25.0)	11.0 (5.0–25.0)	0.012
Mean ± SD	12.9 ± 4.0	11.1 ± 4.2	
IIEF-erectile dysfunction			
Median (min–max)	24.0 (4.0–30.0)	28.0 (1.0–30.0)	<0.001
Mean ± SD	22.7 ± 6.1	25.1 ± 6.8	
IIEF-orgasmic function			
Median (min–max)	9.0 (0.0–10.0)	9.0 (0.0–10.0)	0.070
Mean ± SD	8.1 ± 2.2	8.4 ± 2.8	
IIEF-sexual desire			
Median (min–max)	7.0 (2.0–10.0)	8.5 (2.0–10.0)	0.003
Mean ± SD	7.2 ± 1.8	8.0 ± 1.8	
IIEF-sexual satisfaction			
Median (min–max)	10.0 (0.0–14.0)	12.0 (0.0–15.0)	0.001
Mean ± SD	9.0 ± 3.9	10.7 ± 3.9	
IIEF-general satisfaction			
Median (min–max)	8.0 (2.0–10.0)	9.0 (2.0–10.0)	<0.001
Mean ± SD	7.5 ± 1.8	8.4 ± 1.9	
IIEF-total			
Median (min–max)	58.0 (9.0–73.0)	65.0 (5.0–75.0)	<0.001
Mean ± SD	54.7 ± 13.0	60.8 ± 15.9	

*Mann–Whitney *U*-test was performed

Table 6: Comparison of the scales' scores according to the involvement in psoriasis (*P*-value)

Groups	DLQI	BDI	BAI	ASEX	FSFI	IIEF
Patients with and without joint involvement	0.454	0.401	0.882	0.395	0.235	0.400
Patients with and without skin lesions on visible body sites	0.070	0.646	0.985	0.825	0.704	0.977
Patients with and without genital lesions	0.788	0.925	0.845	0.540	0.073	0.615

negative correlation was found between ASEX and FSFI scores ($P < 0.001$). A low degree of statistically significant negative correlation was found between IIEF and BDI and BAI scores (respectively, $P = 0.024$ and $P = 0.023$). A high degree of statistically significant negative correlation was found between ASEX and IIEF scores ($P < 0.001$).

No statistically significant difference was found between patients with and without joint involvement, with and without skin lesions on visible body areas, with and without genital lesions in terms of DLQI, BDI, BAI, ASEX, FSFI, and IIEF scores [Table 6].

Considering the effects of smoking, alcohol, DM, hypertension, and CVS diseases, which are potential risk factors for erectile dysfunction, on IIEF scores, no statistically significant difference was found ($P = 0.533$, $P = 0.368$, $P = 0.526$, $P = 0.154$, $P = 0.487$, respectively).

Discussion

Psoriasis is one of the prevalent skin diseases in which its effect on quality of life is well-studied. The impact of psoriasis on quality of life is similar to diseases such as DM, heart failure, cancer, and major depression.[5] Psoriasis has a significant negative impact on patients' quality of life due to its clinical course, comorbidities, and difficulties in the treatment. Psoriasis causes many psychosocial problems such as stigmatization of the individual in society, loss of workforce, negative body image, low self-esteem, social isolation, and suicidal

ideation. These conditions also develop in patients with mild psoriasis. Therefore, it is essential to evaluate not only the severity of psoriasis using PASI scale but also the psycho-social status of the patient in order to find out the negative impact of the disease on the patient.[6,7]

The mean DLQI score of the patients was 8.1 in our study, consistent with the literature. Although the DLQI score was slightly higher in females than in males, no statistically significant difference between male and female psoriasis patients was detected in our study (P = 0.093). Several studies comparing the DLQI scores of female and male patients with psoriasis reported that the quality of life was more negatively affected in females than in males. Psoriasis, which can cause cosmetic issues, may have much more negative impact on females' quality of life as women care more about their physical appearance than men.[8,9]

A statistically significant positive correlation was found between PASI and DLQI scores in our study (P = 0.001). Similarly, many studies in the literature have shown a significant association between PASI and DLQI scores.[8,10-12]

In our study, no significant association was found between the duration of psoriasis and DLQI scores (P = 0.369). However, a significant positive correlation was found between the duration of psoriasis and PASI scores (P = 0.006). There are studies with similar results in the literature.[10,13] As the disease lasts while the severity of psoriasis increases, the quality of life is not affected at the same rate. It seems that patients show adaptation to living with psoriasis over time.

Psoriatic lesions on visible body areas cause a negative impact on patients' psychosocial status. A statistically significant positive correlation was found between the presence of lesions on visible body areas and impaired quality of life in both Nyunt e*t al.*'s[11] and İnanır *et al.*'s[13] studies. In our study, 83% of the patients had skin lesions on visible body areas, and the most commonly involved visible body area was the scalp with 62%. The DLQI scores were higher in patients having lesions on visible body parts than those without lesions on visible body parts. However, no statistically significant difference was found between those with and without lesions on visible body areas in terms of the DLQI scores (P = 0.070).

In our study, 42% of the patients had skin lesions on genitalia. No statistically significant difference was found between patients with and without genital lesions in terms of the DLQI scores (P = 0.788). Similarly, no statistically significant difference was reported between psoriasis patients with and without genital lesions in terms of DLQI scores in a few studies on this issue in the literature.[6,14] Although no association was detected between the presence of skin lesions on visible body parts, genitalia, and quality of life in our study, the affected body areas in psoriasis may impact the patient's quality of life as expected. However, this result in our study reminds us that clinicians should consider the whole patient.

Depression and anxiety are the most prevalent diseases in the studies investigating the psychiatric conditions in patients with psoriasis.[15,16] In our study, statistically significant differences were found between the patient and control groups in terms of BDI and BAI scores ($P < 0.001$ and $P < 0.001$, respectively). Our study is consistent with the results of studies from Turkey comparing the BDI scores of psoriasis patients and control groups.[17,18] The increased risk for depression and anxiety in patients with psoriasis may be associated with the unpredictable clinical course of the disease and no available cure for the disease. Female psoriasis patients showed higher BDI and BAI scores than the male patients in our study (P = 0.003 and P = 0.001, respectively). The reason why women had higher depression and anxiety scores than men may be socio-economic differences in gender and genetic factors that are not yet well known.

No significant correlation was found between PASI score, duration of psoriasis and depression, and anxiety scores. There are studies with different results on this issue in the literature. While some studies reported a statistically significant positive correlation between PASI and BDI scores, some did not.[17,19] Psychological effects of the severity and duration of psoriasis on individuals are expected. It seems that patients develop coping mechanisms for psoriasis and adapt to living with the disease over time.

No statistically significant difference was found between patients with and without joint involvement, with and without skin lesions on visible body areas, with and without genital lesions in terms of BDI and BAI scores [Table 6]. Schmitt and Ford[20] reported that the DLQI scores were higher in the patients with psoriatic arthritis, skin lesions on the face, and genitalia than the patients without. In the same study, a significant positive correlation was found between those with and without lesions on genitalia in terms of depression scores, but no significant relationship was reported between those with and without arthritis and skin lesions on the face in terms of depression scores. However, no relationship was found between the anatomical localization of skin lesions and the psychological variables in psoriasis patients in another study.[21] These results show us that the burden of psoriasis cannot be explained by the anatomical localization of lesions, severity, and duration of the disease alone. Further studies on this issue are needed.

A statistically significant difference was found between the patient and control groups in terms of ASEX scores (P = 0.005). An increased risk for sexual dysfunction was found in patients with psoriasis compared with the control group in many studies.[22,23] An increased sexual dysfunction was found in psoriasis patients when compared with the

control group in a study from Turkey.[22] Psoriasis affects the physical appearance of individuals, which may lead to low self-esteem, depression, anxiety, and social isolation. This may cause sexual dysfunction in patients with psoriasis.

No statistically significant difference was found between female patients' and control groups in terms of ASEX scores ($P = 0.114$). Female patients had lower FSFI scores in terms of sexual desire, arousal, lubrication, orgasm, satisfaction, and pain than female control group. However, no significant difference was found between female patients and control group ($P = 0.102$). An increased sexual dysfunction was found in female patients with psoriasis in both Ermertcan *et al.*'s[24] and Maaty *et al.*'s[25] studies. No significant difference in terms of sexual dysfunction between female patients and controls in our study suggested an increased risk for sexual dysfunction in the female control group. The high ASEX scores in both groups may be related to women's inability to express their sexual needs comfortably and sociocultural characteristics of them.

Statistically significant differences were found between male patients' and control groups in terms of ASEX and IIEF scores in our study, consistent with the literature ($P = 0.012$ and $P < 0.001$, respectively).[24,26] Statistically significant differences were found between the patient and control groups in terms of erectile dysfunction, sexual desire, and sexual and general satisfaction other than orgasmic function in the present study.

Many studies have shown that smoking, alcohol use, DM, hypertension, CVS, and drugs can cause erectile dysfunction.[27-29] Since psoriasis patients who have received any systemic treatment for the last 3 months were not included in our study, the risk for erectile dysfunction caused by drugs was eliminated. Our study shows that psoriasis has an increased risk for erectile dysfunction in male patients regardless of potential risk factors such as smoking, alcohol, DM, hypertension, and CVS.

In our study, no statistically significant association was found between the severity (PASI), duration of psoriasis, and the risk for sexual dysfunction (ASEX, FSFI, and IIEF scores). In the study of Ermertcan *et al.*,[24] no correlation was found between PASI and both FSFI and IIEF scores. Gupta and Gupta[4] reported that no association was found between the severity, duration of psoriasis, and the risk for sexual dysfunction. A negative correlation between PASI and IIEF scores was found, whereas no significant correlation between the duration of psoriasis and IIEF scores was detected in a study investigating erectile dysfunction in male patients with psoriasis.[26] Maaty *et al.*[25] observed that the duration of psoriasis had an effect on sexual dysfunction and reported a negative correlation between PASI and FSFI scores in female patients with psoriasis. More research on possible relationship between the severity and duration of psoriasis and sexual dysfunction is needed. Our study revealed that sexual functions are impaired regardless of the severity and duration of psoriasis.

No statistically significant difference was found between patients with and without joint involvement, with and without skin lesions on visible body areas, with and without genital lesions in terms of the risk for sexual dysfunction in our study. Gupta *et al.*[4] reported that increased risk for sexual dysfunction was more prevalent in psoriasis patients with joint and genital involvement than in patients without joint or genital involvement. A study of Maaty *et al.*[25] investigating female patients with psoriasis showed a significant relationship between genital involvement and FSFI scores. A study including 487 patients reported that no significant relationship was found between male psoriasis patients with and without genital involvement in terms of IIEF scores, but increased sexual dysfunction was found in female patients.[30] Our study shows that sexual dysfunction in psoriasis may occur regardless of the course of the disease and affected body sites. Essentially, the risk for sexual dysfunction in psoriasis patients appears to be related to patients' perceptions of the disease.

A significant positive correlation was found between depression, anxiety (BDI and BAI scores), and sexual dysfunction (ASEX scores) ($P = 0.003$ and $P = 0.001$, respectively). Accordingly, increased depression and anxiety scores are associated with the risk for sexual dysfunction. In the present study, although a significant negative correlation was found between BDI, BAI, and total IIEF scores, no significant correlation was found between BDI, BAI, and FSFI scores. Similarly, Tasliyurt *et al.*[26] found a negative correlation between BDI and IIEF scores. It seems that depression and anxiety in psoriasis increase the risk for sexual dysfunction in males, and sexual dysfunction develops regardless of depression and anxiety in females.

Mood changes impact directly or indirectly sexual life. In a study, a low libido, difficulties in ejaculation, and orgasm were observed in 40–50% of patients with depression.[31] The relationship between depression, anxiety, and sexual dysfunctions is rarely clarified in the literature. It can be said that this complex relationship consists of many interactions that lead to a vicious cycle. Even, in many cases it is unclear which is the primary disorder. In our study, the risk for sexual dysfunction was increased in male patients with psoriasis who had high depression and anxiety scores. However, we did not find this relationship in female psoriasis patients, although high depression, anxiety, and sexual dysfunction scores were detected in females. Large-scale studies on this issue are needed.

There are some limitations in our study. First, a structured interview for clinical assessment of psychiatric conditions

in our participants was not used; instead self-report questionnaires were used in our study. Secondly, our sample was relatively small and more representative of less-educated, middle aged, and married patients.

Conclusion

Our study shows that psoriasis increases the risk for impaired quality of life, depression, anxiety, and sexual dysfunction in individuals. This increase is not always associated with the clinical characteristics of psoriasis such as severity, duration, and sites of involvement. Large-scale studies investigating the relationship between psoriasis and depression, anxiety, sexual dysfunctions are needed. It is important that dermatologists should question the accompanying psychiatric conditions in patients with psoriasis. So, in the treatment of psoriasis, dermatologists should consider not only the skin findings of psoriasis but also the psychosocial status of the patient and refer the patient to psychiatry if necessary.

Informed consent

Informed consent was obtained from all participants in the study. All participants' information was kept confidential and was used only for research purposes. Approval for the study was obtained from the local Ethics Committee (Balıkesir University Ethics committee, decision number 2019/81; 03/07/2019).

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Conflicts of interest

There are no conflicts of interest.

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