

Comparative Study of Quality of Life and Psychological Aspects in Patients with Psoriasis and Hidradenitis Suppurativa

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ABSTRACT Psoriasis and hidradenitis suppurativa are two common dermatological diseases that affect physical, social, and psychological aspects of the patients' lives. The aim of this study was to compare quality of life, depression, anxiety, self-esteem, and loneliness in patients with psoriasis and hidradenitis suppurativa. One hundred and eight patients with psoriasis, 113 patients with hidradenitis suppurativa and 116 healthy controls were included in the study. The quality of life, depression, anxiety, and loneliness of the patients as well as their self-esteem were assessed using the Dermatology Life Quality Index (DLQI), Hospital Anxiety and Depression Scale (HADS), the UCLA Loneliness Scale (UCLA-Version 3) and the Rosenberg's Self-esteem Scale (RSES), respectively. Patients with psoriasis (12.77±4.43) reported a higher mean impairment in DLQI than patients with hidradenitis suppurativa (11.10±6.53, $P=0.028$), in the univariate comparisons. Patients with psoriasis presented statistically significantly higher levels of anxiety and depression than both patients with hidradenitis suppurativa and healthy controls, while patients with hidradenitis suppurativa also had higher anxiety and depression compared with healthy controls. Patients with psoriasis (46.31±6.36) reported statistically significantly higher loneliness than both patients with hidradenitis suppurativa (43.18±7.40) and controls (40.42±4.41), while the patients with hidradenitis suppurativa also presented higher loneliness in comparison with controls. Lower levels of self-esteem were found in patients with psoriasis (15.08±3.11) compared with both patients with hidradenitis suppurativa (18.89±1.69) and controls (20.25±2.60), while patients with hidradenitis suppurativa also had lower self-esteem than controls. Significant levels of depression, anxiety, and impaired quality of life were strongly associated with disease severity. When patients with mild disease were compared, those with psoriasis presented with both higher levels of loneliness and lower scores for quality of life. Although both psoriasis and hidradenitis suppurativa are associated with impaired quality of life and psychological aspects, significantly worse scores were recorded in patients with psoriasis.

INTRODUCTION

Psoriasis is a chronic, scaling inflammatory skin disease that affects approximately 1.5-2.0% of the global population (1). Psoriasis has a significant im-

pact on the patient quality of life (2). The burden of living with psoriasis is equivalent or greater than that of other long-term conditions such as congestive car-

Table 1. Comparison of anxiety, depression, loneliness, and self-esteem in patients with hidradenitis suppurativa, patients with psoriasis and healthy controls

	Psoriasis	Hidradenitis suppurativa	Healthy controls	<i>p</i> -value
Total (N=337)	N=108	N=113	N=116	
Dermatology Life Quality Index	12.77±4.43	11.10±6.53	-	0.028*
Anxiety	9.38±3.97 _a	6.49±3.01 _b	4.81±1.43 _c	< 0.001*
Depression	8.51±3.03 _a	5.73±2.58 _b	4.09±1.81 _c	< 0.001*
Loneliness	46.31±6.36 _a	43.18±7.40 _b	40.42±4.41 _c	< 0.001*
Self-esteem	15.08±3.11 _a	18.89±1.69 _b	20.25±2.60 _c	< 0.001*
Men (N=167)	N=57	N=53	N=57	
Dermatology Life Quality Index	12.65±3.80	9.40±5.20	-	< 0.001*
Anxiety	9.63±4.23 _a	5.91±2.46 _b	4.58±1.03 _b	< 0.001*
Depression	8.48±3.18 _a	5.34±2.38 _b	3.95±2.03 _c	< 0.001*
Loneliness	45.57±6.05 _a	42.79±7.33 _b	40.98±2.75 _b	< 0.001*
Self-esteem	15.49±3.39 _a	18.64±1.43 _b	19.96±3.25 _c	< 0.001*
Women (N=170)	N=51	N=60	N=59	
Dermatology Life Quality Index	12.90±5.08	12.60±7.22	-	0.803
Anxiety	9.10±3.68 _a	7.00±3.36 _b	5.03±1.70 _c	< 0.001*
Depression	8.55±2.87 _a	6.07±2.72 _b	4.22±1.57 _c	< 0.001*
Loneliness	47.14±6.66 _a	43.52±7.51 _b	39.88±5.54 _c	< 0.001*
Self-esteem	14.63±2.72 _a	19.12±1.87 _b	20.53±1.76 _c	< 0.001*

Values are presented as Mean ± Standard Deviation (SD)

One-Way ANOVA was used in order to determine possible differences between the groups' mean scores.

*Statistically significant

Mean ± SDs with differing subscripts (a, b, c) within rows are statistically significantly different based on *Bonferroni post hoc* paired comparisons.

diac failure, diabetes, and cancer (3). Depending on the severity and location of outbreaks, patients may experience significant physical discomfort and disability. Relapse of disease can be a source of stress and can worsen the patient's quality of life. It can give rise to negative reactions and avoidance of such patients in the social environment, ultimately affecting the mental state of the patient (4). In addition, psychological factors such as anxiety and depression can be triggered, exacerbating skin lesion and causing resistance to treatment, thus creating a "vicious circle" that is difficult to manage.

Hidradenitis suppurativa (HS) is a chronic, recurrent inflammatory disorder characterized by inflamed lesions in the apocrine gland-bearing areas of the skin, most commonly in the axillary, inguinal, and anogenital regions (5). Recent studies estimate its prevalence to be between 1% and 4% in Western countries (6). HS occurs more frequently in women than in men and has its peak predominance among young adults (7). The painful, suppurative, deep-seat-

ed, and scarring lesions characteristic of HS abridge patient quality of life, making HS one of the most life-impacting skin diseases (8).

Psoriasis and hidradenitis suppurativa are dermatological disorders with significant impact on the patient's daily life, leading to psychological burden. In view of the high prevalence of psoriasis and hidradenitis suppurativa and the distress they cause, the present study aimed to compare the quality of life, depression, anxiety, self-esteem, and loneliness in these patients and to observe which of these two diseases has greater psychological impact on the patients' lives.

PATIENTS AND METHODS

One hundred and eight patients with psoriasis and 113 patients with hidradenitis suppurativa who were referred to the "Andreas Sygros" Skin Hospital for treatment of their skin condition were enrolled in the study. Patients were considered eligible for inclusion

Table 2. Multiple linear regression analysis predicting self-esteem among 221 patients with psoriasis and hidradenitis suppurativa

Explanatory variables	Coefficient (β)	95% Confidence Interval	p-value
Group			
Psoriasis (vs Hidradenitis suppurativa)	-3.57	-4.33, -2.80	<0.001*
Loneliness	-0.08	-0.14, -0.02	0.011*
Dermatology Life Quality Index	-0.02	-0.10, 0.06	0.596
Anxiety	-0.12	-0.25, 0.02	0.098
Depression	0.06	-0.10, 0.22	0.476
Sex			
Women (vs Men)	-0.03	-0.67, 0.61	0.925
Age (per year)	0.02	-0.01, 0.04	0.180

*Statistically significant, $F(7, 213) = 24.06, P < .001$, Adjusted $R^2 = 0.4232$

Multiple regression analysis with a view to adjusting the comparison of patients with psoriasis and patients with hidradenitis suppurativa as regards self-esteem for demographic and psychological variables.

in the study if they were older than 18 years and were able to understand the Greek language. Patients with psychiatric history or a history of psychotropic drug use were excluded from the study. The study protocol was approved by the Ethics Committee of the "Andreas Sygros" Skin Hospital and was carried out in accordance with the Declaration of Helsinki. A signed informed consent was obtained from all patients and healthy volunteers.

The Dermatology Life Quality Index (DLQI) was used to assess patient quality of life (9). Patients were also evaluated for anxiety and depression using the Hospital Anxiety and Depression Scale (HADS) (10,11), for loneliness using the UCLA Loneliness Scale (UCLA-Version 3) (12,13), and for self-esteem using Rosenberg's Self-esteem Scale (RSES) (14).

The DLQI is a validated 10-item questionnaire on issues related to personal relationships, daily activities, leisure, and treatment. The maximum score is 30, with 0 indicating the least impairment and 30 the greatest impairment in the patient's quality of life.

The HADS is a validated self-report rating scale of 14 items, designed to measure anxiety and depression which are most likely to cause psychological distress in patients (seven items for each subscale). Responses to items are indicated on a 4-point Likert Scale from 0 to 3 (score range 0-21 for each subscale), with a high score indicating more symptoms. HADS has been validated in the Greek population.

The UCLA (Version 3) is a 20-item questionnaire which measures the personal perception of loneliness and social isolation; the stronger these feelings are, the higher the UCLA score. Responses are indicated on a 4-point Likert Scale from 1 to 4 (score range 20-80). The UCLA scale has also been validated in the Greek population.

The RSES is a 10-item questionnaire answered on a 4-point scale. The scores range from 0 to 30; scores of 15-25 are considered to be within the normal range, while scores below 15 suggest feelings of low self-esteem.

All patients with hidradenitis suppurativa were evaluated according to Hurley's criteria for hidradenitis suppurativa. The Hurley staging system is the most widely used clinical classification system for hidradenitis suppurativa. The Hurley classification defines three stages of severity: stage I (mild) is characterized by recurrent abscesses without sinus tract formation, stage II (moderate) is described as one or more sinus tracts separated by normal skin, and stage III (severe) is defined as multiple interconnected sinus tracts without normal skin in between¹⁵.

Psoriasis severity was assessed by a dermatologist according to the Psoriasis Area and Severity Index (PASI score). The PASI incorporates the clinical extent of psoriasis (surface area of skin affected) and clinical severity of its manifestations (erythema, desquamation, and induration). In the present study, we considered a score 0 to 5 as mild form of psoriasis, 6 to 10 as moderate, and above 10 as indicative of severe psoriasis (16).

The healthy control group included 116 healthy, sex-matched volunteers from the general population, with no personal history of psoriasis or hidradenitis suppurativa, no psychiatric history, and no history of psychotropic drug use. They were recruited during the same time period. The participation of all the individuals was voluntary, without any financial compensation. They answered the same questionnaires as patients, except from the DLQI scale, on their own and went through all the evaluations.

Table 3. Comparison of anxiety, depression, loneliness, self-esteem, and dermatology-related quality of life for disease severity groups and the clinical groups

Psychological variables	Disease severity groups			F	Clinical groups		
	Mild (N=42)	Moderate (N=87)	Severe (N=92)		Psoriasis (N=108)	Hidradenitis suppurativa (N=113)	F
Anxiety	5.83±2.51 _a	6.76±3.39 _a	9.92±3.70 _b	21.20*	9.38±3.97	6.49±3.01	17.46*
F _{Interaction} =1.71, p=0.183							
Depression	5.69±2.76 _a	6.52±3.41 _a	8.26±2.59 _b	7.38*	8.51±3.03	5.73±2.58	38.18*
F _{Interaction} =2.84, p=0.061							
Loneliness	38.21±6.21 _a	43.64±6.40 _b	48.68±5.34 _c	37.12*	46.31±6.36	43.18±7.40	5.27*
F _{Interaction} =4.13, p=0.017							
Loneliness in Psoriasis	41.87±5.90 _a †	43.08±6.41 _a †	49.10±4.94 _b †				
Loneliness in Hidradenitis suppurativa	36.19±5.49 _a ‡	43.96±6.42 _b †	47.87±6.04 _c †				
Self-esteem	18.24±2.14 _a ‡	18.13±2.68 _a	15.45±3.24 _b	12.36*	15.08±3.11	18.89±1.69	80.24*
F _{Interaction} =8.31, p<0.001							
Self-esteem in Psoriasis	17.00±2.42 _a †	16.63±3.49 _a †	13.80±2.39 _b †				
Self-esteem in Hidradenitis suppurativa	18.93±1.64 _a ‡	19.00±1.51 _a ‡	18.68±2.02 _a ‡				
Dermatology Life Quality Index	5.60±3.92 _a	11.07±4.08 _b	15.60±4.67 _c	77.15*	12.77±4.43	11.10±6.53	0.66
F _{Interaction} =7.70, p=0.001							
Dermatology-related quality of life in Psoriasis	8.07±4.30 _a †	11.19±3.74 _b †	14.75±3.55 _c †				
Dermatology-related quality of life in Hidradenitis suppurativa	4.22±2.97 _a ‡	11.00±4.28 _b †	17.26±6.07 _c ‡				

*Statistically significant. Values are presented as Mean ± Standard Deviation (SD)
 Two-Way ANOVAs was used in order to determine the effects of disease severity categories and clinical groups
 Mean ± SDs with differing subscripts (a, b, c) within rows are statistically significantly different based on *Bonferroni* post hoc paired comparisons
 In case of statistically significant interactions, means with differing subscripts within columns (†, ‡) were statistically significantly different.

STATISTICAL ANALYSES

Descriptive statistics were measured and presented as mean \pm standard deviation for quantitative variables and absolute and relative (%) frequencies for qualitative variables. The significance of differences was examined using independent Student's *t* test or ANOVA (when comparing more than two means) for quantitative variables and the Chi-square test for qualitative variables. Two-way ANOVA was used to examine the effects of clinical group (psoriasis and hidradenitis suppurativa) and disease severity, as well as their possible interaction. A multiple linear regression analysis was performed in order to control the comparison of self-esteem between patients with psoriasis and patients with hidradenitis suppurativa for possible confounders. The statistical significance level was set at $P < 0.05$, and all statistical analyses were performed using Stata (version 13.0, Stata Corporation, TX, USA).

RESULTS

The current study included 337 participants: 108 patients with psoriasis (57 men and 51 women), 113 patients with hidradenitis suppurativa (53 men and 60 women), and 116 healthy controls (57 men and 59 women). There were no significant differences between the two groups with regard to sex ($\chi^2=0.78$, $P=0.679$). The mean age of the patients with hidradenitis suppurativa was 34.81 ± 10.78 years of age, 46.75 ± 13.92 years of age in patients with psoriasis, and 46.55 ± 10.23 years of age in the controls. Patients with hidradenitis suppurativa were significantly younger than both patients with psoriasis and healthy controls, who did not differ from each other in terms of age ($F=38.38$, $P < 0.001$).

Patients with psoriasis (12.77 ± 4.43) reported a higher mean impairment in DLQI than patients with hidradenitis suppurativa (11.10 ± 6.53 , $p=0.028$), in the univariate comparisons. This difference was mainly attributed to male patients ($P < 0.001$), as no statistically significant differences emerged within the group of female patients ($P=0.803$) (Table 1). Furthermore, when comparing men and women, DLQI was found to be statistically significantly more impaired in female (12.60 ± 7.22) than in male patients with hidradenitis suppurativa (9.40 ± 5.20 , $P=0.009$), whereas no differences were found between male and female patients with psoriasis ($P=0.769$).

Patients with psoriasis presented the highest impairment in all psychological variables. In particular, patients with psoriasis presented statistically significantly higher levels of anxiety and depression than both patients with hidradenitis suppurativa

and healthy controls, while patients with hidradenitis suppurativa also showed higher anxiety and depression compared with healthy controls. Moreover, patients with psoriasis (46.31 ± 6.36) reported statistically significantly higher loneliness than both patients with hidradenitis suppurativa (43.18 ± 7.40) and controls (40.42 ± 4.41), while the patients with hidradenitis suppurativa also presented higher loneliness in comparison with controls. Lower levels of self-esteem were found in patients with psoriasis (15.08 ± 3.11) compared with both patients with hidradenitis suppurativa (18.89 ± 1.69) and controls (20.25 ± 2.60), while patients with hidradenitis suppurativa also had lower self-esteem than controls (Table 1). These differences in anxiety, depression, loneliness, and self-esteem were also observed within both male and female participant groups. Moreover, no statistically significant differences were noted between male and female participants of all three groups in anxiety, depression, loneliness, or self-esteem.

With a view to further exploring the aforementioned significant univariate (unadjusted) difference on self-esteem between patients with psoriasis and with hidradenitis suppurativa, we controlled for demographic and psychological parameters using multiple linear regression analysis (Table 2). We found that patients with psoriasis had statistically significantly lower self-esteem ($P < 0.001$) than patients with hidradenitis suppurativa, controlling for loneliness, DLQI, anxiety, depression, sex, and age. Furthermore, higher loneliness was independently associated with lower self-esteem among dermatological patients ($P=0.011$).

Patients with psoriasis or hidradenitis suppurativa were categorized according to disease severity. Thus, 42 (19.0%) patients had mild disease severity (15 patients with psoriasis and 27 patients with hidradenitis suppurativa), 87 (39.4%) had moderate disease severity (32 patients with psoriasis and 55 patients with hidradenitis suppurativa), and 92 (41.6%) had severe disease severity (61 patients with psoriasis and 31 patients with hidradenitis suppurativa). As shown in Table 3, patients with severe disease symptoms presented higher levels of anxiety and depression compared with patients with mild or moderate disease severity, independently from their dermatological problem. With regard to loneliness, self-esteem, and DLQI, a statistically significant interaction was found between disease symptom severity and dermatological problems. In general, disease severity was associated with higher levels of loneliness and DLQI, while patients with mild psoriasis presented higher levels compared with patients with mild hidradenitis suppurativa. With regard to self-esteem, no differences

were found among patients with hidradenitis suppurativa in relation to their disease severity; on the other hand, patients with severe psoriasis presented lower self-esteem when compared with patients with mild and moderate psoriasis.

DISCUSSION

The impact on quality of life for both patients with psoriasis and HS is extensive and represents a lifelong burden for affected patients (17,18). Numerous studies have documented the impairment of psoriasis and hidradenitis suppurativa on the quality of life, but few studies have examined anxiety, depression, loneliness, and social isolation in patients suffering from these disorders. To the best of our knowledge, this is the first study to examine the comparison of both quality of life and psychosocial characteristics of these diseases.

Psoriasis is a distressing, recurrent disorder affecting the patient quality of life, with negative psychosocial implications. The low quality of life may be associated with the frequent lack of control of the disease, the fear of unexpected disease flare, and feeling of hopelessness in terms of a cure (19). Shame, anger, and anxiety have been frequently reported, leading to social isolation, low self-esteem, physical disability, and psychosocial distress (20). Patients feel stigmatized, as skin changes are often visible, causing aversion and attracting negative attention. They often feel the need to hide their condition, which affects their self-confidence and self-esteem (21). On a social level, when exposing their bodies is unavoidable (e.g. while swimming or using public showers, or living in conditions that do not offer adequate privacy), public rejection, reactions of disgust, and fear of contagion lead to the discontinuation of daily activities and social withdrawal (2).

HS has a severe impact on the quality of life of patients affected by it. The reason for this impairment is multifactorial. The nature of the condition (lesions which can be painful and uncontrollable resulting in limiting their daily activities), the areas that it affects, and its chronicity and recurrences are closely related to impaired quality of life (22). Feelings of shame, a poor self-image, isolation, and stigmatization are often described due to the malodor and the scars resulting from single or multiple abscesses. This disfigurement leads to feelings of dissatisfaction with one's appearance. Discomfort and embarrassment have been noted, especially when HS lesions involve intimate body areas (23). Patients with HS feel embarrassed and fear that people will find their scars disgusting, significantly affecting not only their social functioning but also their sexual health (24).

Our study compared psoriasis to HS, since they are both chronic skin diseases linked to a strong impact on patient quality of life. In addition, these dermatologic disorders are strongly associated with medical morbidities, including metabolic syndrome and obesity, contributing further to a decreased health-related quality of life (25,26). Patients with psoriasis had a higher quality of life burden than patients with HS. This could be attributed to various factors. Psoriasis of the hands and feet may cause difficulty in performing daily activities. Lesions are often located on the exposed parts of the body, resulting in cosmetic disfigurement. Symptoms such as itching and pain can be frustrating, interfering with basic functions and leading to limitation in daily activities as well as occupational and sexual functioning. Two recent studies have reported the opposite result, finding a greater impact of HS on quality of life than that of psoriasis (26,28). However, the sample size in both cases was smaller compared with ours. Kolli *et al.* showed that quality of life in patients with HS was worse than for patients with psoriasis, with respect body pain, social functioning, and role-emotional factors (29).

Patients with psoriasis reported significantly higher rates of anxiety, depression, low self-esteem, and social isolation compared to patients with HS. Although pain, itch, malodorous discharge, and the fear of other people's reactions in patients with HS (30) has a strong psychosocial impact on them, patients with psoriasis seem to experience higher levels of social stigmatization, stress, depression, and other psychosocial co-morbidities because of their disease. A possible explanation is that skin changes in psoriasis are more visible difficult to hide, thus more strongly affecting the patients' personal appearance and self-confidence (31). Feelings of shame, which are often reported, they can result in avoidance of public spaces, thus reducing social opportunities and even result in occupational disability (32). A possible bidirectional relationship has been reported between the patients' sense of quality of life and emotional symptoms, suggesting that as the impact on quality of life becomes greater, the depressive and anxiety symptoms become more prominent (33). However, it is worth noting that the psychological disturbances experienced by patients with psoriasis are not always proportional to disease severity (34). In our study, significant levels of depression, anxiety, and impaired quality of life were strongly associated with clinician-dependent assessments (Hurley stage and PASI score for HS and psoriasis, respectively). Patients with severe psoriasis reported lower self-esteem, while no similar relation was found among patients with hidradenitis suppurativa. When patients with

mild disease were compared, patients with psoriasis presented with both higher levels of loneliness and lower scores for quality of life than those with HS.

In conclusion, we recommended that patients with either psoriasis or HS receive a more holistic approach that encompasses both medical and psychological measures.

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