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ORIGINAL ARTICLE

Internalized stigma in psoriasis: A multicenter study

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ABSTRACT

Internalized stigma is the adoption of negative attitudes and stereotypes of the society regarding a person's illness. It causes decreased self-esteem and life-satisfaction, increased depression and suicidality, and difficulty in coping with the illness. The primary aim of this study was to investigate the internalized stigma state of psoriatic patients and to identify the factors influencing internalized stigma. The secondary aim was to identify the correlation of internalized stigma with quality of life and perceived health status. This multicentre, cross-sectional study comprised 1485 patients. There was a significant positive correlation between mean values of Psoriasis Internalized Stigma Scale (PISS) and Psoriasis Area and Severity Index, Body Surface Area, Dermatological Life Quality Index and General Health Questionnaire-12 ($P < 0.001$ in all). Lower percieved health score ($P = 0.001$), early onset psoriasis ($P = 0.016$), family history of psoriasis ($P = 0.0034$), being illiterate ($P < 0.001$) and lower income level ($P < 0.001$) were determinants of high PISS scores. Mean PISS values were higher in erythrodermic and generalized pustular psoriasis. Involvement of scalp, face, hand, genitalia and finger nails as well as arthropathic and inverse psoriasis were also related to significantly higher PISS scores ($P = 0.001$). Our findings imply that psoriatic patients experience high levels of internalized stigma which are associated with psoriasis severity, involvement of visible body parts, genital area, folds or joints, poorer quality of life, negative perceptions of general health and psychological illnesses. Therefore, internalized stigma may be one of the major factors responsible from psychosocial burden of the disease.

Key words: Dermatology Quality of Life Index, General Health Questionnaire-12, internalized stigma, psoriasis, Psoriasis Internalized Stigma Scale.

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INTRODUCTION

Psoriasis is a common, chronic, immune-mediated, inflammatory disease. The severity of psoriasis is described in general with the extensiveness and the severity of symptoms in the body and their influence on the quality of life of the patient.[1] Several studies have revealed that because of the visible nature of the lesions as with some other skin diseases, psoriasis discriminates the individual from others; in other words, stigmatizes the patient.[2–10]

Internalized stigma, another aspect of the stigma, is the feeling of stigma experienced by the individual even though he/she is not stigmatized by the society. Negative stereotype judgments of the society regarding the illness are conceded. The patient presumes that other people have a reaction towards his/her illness and eventually withdraws from the social life ending up with decreased self-esteem and life satisfaction, increased depression and suicidality, and difficulty in coping with the illness.[11] Consequently, patients may face social cohesion problems and unemployment. Furthermore, compliance with treatment may become affected, increasing the risk of treatment failure and poor disease control.[12] Altogether, although these underscore the importance of identifying stigma in psoriatic patients, current knowledge on this issue is very limited.[13]

The hypothesis of this study is that internalized stigma in psoriasis may influence perceived health and quality of life negatively, causing psychosocial comorbidity and more severe disease course. Hence, the primary aim of this study was to investigate the internalized stigma state of psoriatic patients and to identify the factors influencing internalized stigma. The secondary aim was to identify the correlation of internalized stigma with quality of life, perceived health status and disease severity.

METHODS

This study was a multicenter, prospective, cross-sectional study. One thousand four hundred and eight-five psoriatic patients (692 female, 793 male; mean age $\pm$ standard deviation, 42.02 $\pm$ 14.9 years) from 18 study centers from different geographic regions of Turkey, were consecutively enrolled in the study. Informed consent was obtained from all participants, and the study was conducted according to the principles of the Declaration of Helsinki. Ethics committee approval for the study was granted by Akdeniz University School of Medicine (70904504/215).

Sociodemographic characteristics of the patients and other parameters which may influence internalized stigma and quality of life (age, sex, duration of disease and the age of onset, history of psoriasis in the family, accompanying diseases, level of income, educational level, marital status, smoking and alcohol consumption) were recorded.

Subtype of psoriasis has been defined and body mass index (BMI) was calculated. Active involvement of the scalp, face, hands, genital area, folds (inverse psoriasis [IP]), fingernails, mucosa and/or joints were recorded. The Psoriasis Area and Severity Index (PASI), body surface area (BSA) and Nail Psoriasis Severity Index (NAPSI) were used to assess disease severity. However, the Physician Global Assessment (PGA) was used to assess severity in disease subtypes, like palmoplantar plaque psoriasis (PP), IP and palmoplantar pustular psoriasis (PPP), where PASI was not the optimal tool.

Data collection scales

The Internalized Stigma Scale (ISS) is a Likert-type scale composed of 29 items measuring the internalization of stigma experienced by the patients. It has five dimensions; (i) alienation (six items); (ii) stereotype endorsements (seven items); (iii) perceived discrimination (five items); (iv) social withdrawal (six items); and (vi) stigma resistance (five items). ISS values range 4–91. High ISS score indicates more severe internalized stigma.[14] ISS has been adapted for many diseases other than psychological disorders, and its validity and reliability have been shown in our country.[15] In a recent study by Alpsoy *et al.*,[13] the Psoriasis ISS (PISS) has been shown to be a valid and reliable scale in identifying internalized stigma (Cronbach's alpha = 0.89).

The Dermatology Life Quality Index (DLQI) is the first quality of life scale developed for dermatological disorders. It is composed of 10 questions in total and scores range 0–30. High values indicate that the disease has significant influence on daily life, job, school life, leisure time activities and interpersonal relationships. The Turkish version has been validated by Ozturkcan *et al.*[16]

Perceived Health Status is a Likert-type scale examining general health using a single question. In analyses, Likert scorings are classified as 1, 2 and 3 ("worse than good"), and 4 and 5 ("good").

The General Health Questionnaire (GHQ)-12 scale has been developed by Goldberg and Hillier in order to define mental status in public and in primary health-care establishments.[17] Although the GHQ-12 has been developed to distinguish general mental disorders, it contains items questioning basic symptoms of depression including enjoyment, sense of calm, distractibility and sleeplessness.[18] Validity and reliability of the Turkish version has been performed by Kilic *et al.* (Cronbach's alpha = 0.78).[19]

The PASI is a scale to grade the symptoms of the disease having a value ranging 0–72.

The NAPSI is a scale for evaluation of nail bed psoriasis and nail matrix psoriasis. In this study, each fingernail was evaluated to receive a score ranging 0–8. The scores for all the fingernails were added together to obtain the NAPSI score, which ranged 0–80.

The BSA is a scale assessing the severity of disease by evaluating the body with the rule of nines used in the assessment of burn.

On the day of enrollment, all patients were asked to complete the ISS adapted to psoriasis (PISS), DLQI, Perceived Health Status and GHQ-12 forms.

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Table 1. Sociodemographic and clinical characteristics of the patients

	n	%
Sex		
Male	793	53.4
Female	692	46.6
Age		
<40 years	654	44.0
≥40 years	831	56.0
Family history		
No	998	67.2
Yes	487	32.8
Marital status		
Single	292	19.7
Married	1092	73.5
Divorced	40	2.7
Widowed	47	3.2
Other	14	0.9
Income level		
Low: income is less than expenses	601	40.5
Moderate: income is equal to expenses	733	49.4
High: income exceeds expenses	137	9.2
Education		
Illiterate	34	2.3
Primary school graduate	548	36.9
Secondary school graduate	236	15.9
High school graduate	398	26.8
Postgraduate	130	8.8
Faculty	123	8.3
Master	14	0.9
Comorbidities		
Yes	524	35.3
No	961	64.7
Other dermatological diseases		
Yes	83	5.6
No	1402	94.4
Inpatient treatment		
Yes	392	26.4
No	1093	73.6
Active treatment		
Yes	1272	85.7
No	213	14.3
Perceived health		
Very good	84	5.7
Good	538	36.2
Moderate	579	39.0
Bad	223	15.0
Very bad	61	4.1
Clinical condition[†]		
Chronic plaque psoriasis	1263	73.6
Guttate psoriasis	174	10.1
Inverse psoriasis	47	2.7
Palmoplantar psoriasis	115	6.7
Erythrodermic psoriasis	17	0.9
Generalized pustular psoriasis	21	1.2
Palmoplantar pustular psoriasis	29	1.8
Arthropathic psoriasis	50	2.9
Scalp involvement	863	58.1
Hand involvement	588	39.6
Genital area involvement	269	18.1
Face involvement	264	17.8
Inverse involvement	234	15.8
Mucosal involvement	10	0.7
Nail involvement	574	38.7
Articular involvement	135	9.1

[†]More than one option has been marked.

Statistical methods

Descriptive statistics such as mean, standard deviation and percentage were used as statistical methods. In this study with no control group, in cases where parametric test assumptions were used to compare continuous variables, Student's *t*-test was used to compare the variables between the groups defined according to the patients' characteristics. Additionally, correlation was applied for correlation detecting statistics.

RESULTS

The mean age of the patients was 42.02 ± 14.9 years (women, 40.7 ± 14.7; men, 43.2 ± 14.8). Mean age of disease onset was 28.9 ± 14.9 years. The onset of the disease was earlier in women (27.7 ± 15.5) than in men (29.9 ± 14.3). During the course of the study, 85.7% of the patients were receiving local and/or systemic treatment(s) for psoriasis. The rest of the sociodemographic and clinical features of the patients participating in the study are presented in Table 1.

The mean PISS value was 60.1 ± 15.1. There was no significant difference in the mean values of PISS between male and female patients (59.9 ± 15.2 vs 60.2 ± 15.1, respectively; $P = 0.666$). PISS reliability was interpreted by calculating internal consistency coefficients for subscales and for the scale as a whole. The internal consistency coefficient for the whole scale was 0.91 and two-half reliability of the scale was found to be 0.85; reliability coefficients for subscales are presented in Table 2 together with Cronbach's alpha values obtained from reliability validity study of the original English form[14] of the scale and from the reliability validity study for psychological diseases[15] and psoriasis[13] performed in Turkey. Scores of subscales ranged 0.52–0.87. The lowest value among the five subscales was the stigma resistance whereas the highest value belonged to withdrawal from social life.

When the relationships between PISS and DLQI, PASI and BSA were examined, a statistically significant correlation was found between the mean values of PISS and DLQI (10.9 ± 8.9) ($r = 0.431$, $P < 0.001$). Similarly, there was a significant positive correlation between PASI (7.4 ± 7.9) and PISS ($r = 0.212$, $P < 0.001$) and also BSA (13.3 ± 17.1) and PISS ($r = 0.223$, $P < 0.001$). Significant differences were also found between the patients with a PASI score of more than 10 ($n = 316$, 65.6 ± 14.7) and those patients with a PASI score of 10 or less ($n = 1057$, 58.7 ± 14.8) ($P = 0.001$), or between patients with a

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Table 2. Reliability coefficients for subscales of PISS (Cronbach's alpha)

Internalized stigma subscales	Psoriasis (n = 1485)	Psoriasis (n = 100)[13]	Turkish form (n = 203)[15]	Original form (n = 127)[14]
Alienation	0.84	0.83	0.84	0.79
Stereotype endorsement	0.75	0.70	0.71	0.72
Perceived discrimination	0.72	0.70	0.87	0.75
Social withdrawal	0.87	0.84	0.85	0.80
Stigma resistance	0.51	0.68	0.63	0.58
Total	0.91	0.89	0.93	0.90

Table 3. Correlation between Psoriasis Internalized Stigma Scale (PISS) subscales and Dermatology Life Quality Index (DLQI), Psoriasis Area Severity Index (PASI) and body surface area (BSA) (n = 1485)

Internalized stigma subscales	DLQI	PASI	BSA
Alienation	0.390*	0.206*	0.191*
Stereotype endorsement	0.402*	0.171*	0.185*
Perceived discrimination	0.375*	0.203*	0.232*
Social withdrawal	0.376*	0.214*	0.218*
Stigma resistance	0.06*	0.03**	0.015***

*P = 0.001 or P < 0.001. **P = 0.910. ***P = 0.592.

BSA score of more than 10 (n = 446, 64.6 ± 14.5) and those patients with a BSA score of 10 or less (n = 869, 58.5 ± 15.1) (P = 0.001).

When we analyzed the relationship between all PISS domains and DLQI we found moderately positive correlations. All PISS domains except stigma resistance also showed a positive relationship with PASI and BSA (Table 3). However, no correlation was found between PGA and PISS values in a total of 380 patients in the study (r = 0.009, P = 862).

A statistically significant positive correlation was found between GHQ-12 (2.7 ± 2.6) and PISS mean values (r = 0.324, P < 0.001). Also, there was statistically significant positive correlation between GHQ and PASI (r = 0.117, P < 0.001), BSA (r = 0.100, P < 0.001) and DLQI (r = 0.306, P < 0.001).

The mean PISS scores of those patients with a perceived health score of "worse than good" were significantly higher than that of those with a perceived health score of "good" (63.9 ± 15.0 and 54.8 ± 13.5, respectively; P = 0.001). Mean DLQI score was found to be 12.9 ± 8.5 in patients who defined their perceived health as "worse than good" and 8.2 ± 8.8 in those defined as "good" (P = 0.001).

No correlation was found between PISS and BMI (r = 0.015, P = 0.58) and age (r = −0.005, P = 0.895). A statistically significant correlation was observed between PISS and disease duration (r = 0.77, P = 0.03). The mean PISS score of patients with a family history of psoriasis (61.3 ± 14.6) was significantly higher than those without (59.5 ± 15.3) (P = 0.0034). Mean scores of PISS (60.6 ± 15.3 vs 58.4 ± 14.4, P = 0.016), GHQ (2.8 ± 2.6 vs 2.2 ± 2.4, P < 0.001) and DLQI (11.2 ± 9.0 vs 10.0 ± 8.9, P = 0.03) were significantly higher in patients with early onset psoriasis (<40 years of age) compared with cases with late onset psoriasis.

When illiterate patients were compared with the other groups of different educational levels, both PISS and DLQI values were found to be significantly higher (P < 0.001). With regard to income level, PISS (P < 0.001), GHQ (P = 0.001) and DLQI (P < 0.001) values were significantly higher in the group with low income level (patients whose monthly income do not cover their expense). No significant relationship was found between PISS score and marital status (P = 0.166). Mean PISS values (62.3 ± 14.4) of patients who were hospitalized at least once during the course of the disease was higher than those of other psoriatic patients (59.1 ± 15.2) but this value did not reach statistical significance (P = 0.060). PISS scores did not show statistically significant differences between the patients who had additional disease or those who did not (60.7 ± 15.2 vs 59.7 ± 15.1, respectively; P = 0.263), or who had another dermatological disease(s) in addition to psoriasis or those who did not (55.2 ± 17.2 vs 60.1 ± 15.1, respectively; P = 0.287), and the patient group receiving active treatment and the patient group that did not (59.9 ± 15.1 vs 61.3 ± 14.9, respectively; P = 1.87).

The number of patients who did not smoke cigarettes was 843 (56.8%) and the number of those who did not consume alcohol was 1435 (96.6%). PISS (61.5 ± 15.1 vs 56.0 ± 14.9, P = 0.002), DLQI (11.7 ± 9.0 vs 10.3 ± 8.8, P = 0.004) and PASI (8.2 ± 8.5 vs 6.8 ± 7.2, P = 0.001) values were significantly higher in smokers whereas PASI was the only significant parameter affected by alcohol consumption (9.9 ± 10.6 vs 7.4 ± 7.7, P = 0.026).

Statistically significant relationships were found between clinical subgroups of psoriasis and PISS. Mean PISS values of patients with erythrodermic psoriasis (74.2 ± 13.2) (P = 0.002) and generalized pustular psoriasis (70.6 ± 12.7) (P = 0.004) were found to be significantly higher when compared with those patients with guttate psoriasis (56.2 ± 14.4) (P = 0.014) and palmoplantar psoriasis (56.4 ± 15.2) (P = 0.034) (Table 4).

Mean PISS values were significantly higher in patients with active involvement of the scalp, face, hand, genital organs and fingernails, and in arthropathic and inverse psoriatic patients (P = 0.001 in all) (Table 5).

DISCUSSION

In this study, we evaluated 1485 psoriatic patients and found high PISS scores which significantly correlated with quality of life, severity of the disease, perceived health parameters and psychological illnesses. The lowest value among the five subscales of the PISS was the stigma resistance whereas the highest value belonged to withdrawal from social life. Similar results were also observed when the reliability coefficients regarding the subscales of the PISS are compared with Cronbach's alpha values obtained from the original reliability validity

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Table 4. Mean Psoriasis Internalized Stigma Scale (PISS) values in psoriasis clinic subtypes

Clinic subtype	*n*	Mean PISS	*P*
Chronic plaque psoriasis	1073	59.9 ± 14.9	NS
Guttate psoriasis	83	56.2 ± 14.4	0.014
Inverse psoriasis	8	61.7 ± 14.2	NS
Palmoplantar psoriasis	72	56.4 ± 15.2	0.034
Erythrodermic psoriasis	11	74.2 ± 13.2	0.002
Generalized pustular psoriasis	17	70.6 ± 12.7	0.004
Palmoplantar pustular psoriasis	20	55.0 ± 14.3	NS
Chronic plaque psoriasis + guttate psoriasis	72	62.9 ± 15.0	NS
Chronic plaque psoriasis + inverse psoriasis	20	62.4 ± 18.6	NS
Chronic plaque psoriasis + palmoplantar psoriasis	27	61.9 ± 14.7	NS
Chronic plaque psoriasis + arthropathic psoriasis	27	61.9 ± 14.7	NS

NS, not significant.

Table 5. Relationship of mean Psoriasis Internalized Stigma Scale (PISS) with psoriasis localizing on visible parts of the body, nails, genital area or mucosa, inverse and articular psoriasis

	Mean PISS values		
Clinical features	Yes	No	*P*
Scalp involvement	61.6 ± 15.1	57.9 ± 14.9	0.001
Face involvement	64.3 ± 15.0	59.2 ± 14.9	0.001
Hand involvement	62.3 ± 15.3	58.7 ± 15.3	0.001
Nail involvement	64.4 ± 15.5	59.3 ± 14.9	0.001
Genital organ involvement	64.0 ± 15.3	59.2 ± 14.9	0.001
Mucosal involvement	67.5 ± 10.4	60.1 ± 15.1	0.121
Inverse psoriasis	64.4 ± 15.5	59.3 ± 14.9	0.001
Articular psoriasis	64.2 ± 14.9	59.7 ± 15.1	0.001

study,[14] and the reliability validity studies of the Turkish version for psychiatric disorders[15] and psoriasis[13] performed in Turkey (Table 2). All values other than stigma resistance are 0.70 or over in each of the four studies. The stigma resistance value (0.51) of our study is similar to that of the studies conducted for the original form (0.58),[14] psychiatric disorders (0.63)[15] and psoriasis (0.68).[13] The subscale for stigma resistance, on the contrary to the remaining four subscales, assesses the resistance of the individual against stigma. This should be taken into account during interpretation because the results are under 0.70. Stigma resistance can be described as the capacity of an individual to counteract or remain unaffected by the stigma of the respective disease. Internalized stigma state can trigger a vicious cycle and reduce the individuals' stigma resistance abilities. In our study, we found a positive correlation between all PISS domains and the DLQI. Interestingly, all PISS domains except stigma resistance showed a positive relationship with the PASI and BSA. Our results show that stigma resistance is related to quality of life rather than severity of the psoriasis. Indeed, building up of the stigma resistance ability of psoriatic patients with new treatment approaches or modifying existing treatments may play an important role in decreasing internalized stigma and increasing the quality of life.

In our study, the mean PISS value (60.1 ± 15.1) was similar to those of mean Internalized Stigma of Mental Illness Scale (ISMI) values of studies performed in different psychiatric patient populations. Farrelly *et al.*[20] from the UK evaluated 202 patients (96 with schizophrenia, 65 depression and 41 bipolar disorder) in their study and reported the mean ISMI values to be 63.3 ± 10.4. Margetić *et al.*[21] from Croatia, in a cohort of 120 schizophrenic patients, found the mean total PISS values to be 62.1 ± 12.9. Bassirnia *et al.*[22] from the USA (n = 112) and Cerit *et al.*[23] from Turkey (n = 80) assessed patients with bipolar disorder using the ISMI scale and reported the mean scores as 55.37 ± 13.70 and 61.52 ± 11.36, respectively. In a total of 109 patients with anxiety disorders and possible comorbid depressive or personality disorders, Ociskova *et al.*[24] from the Czech Republic reported mean total PISS values of 65.10 ± 11.5. Our results are comparable with those obtained from psychiatric patient populations which stress the importance of internalized stigma in psoriatic patients. This situation can be explained by the physically stigmatizing properties of psoriasis. However, there is a need for studies comparing psoriatic patients with other dermatological and psychiatric diseases.

Our study shows that psoriasis stigmatizes the patients more significantly when the disease is localized on visible parts of the body such as the scalp, face, hand or fingernails. Similarly, mean PISS scores of patients with genital area involvement, inverse psoriasis and arthropathic psoriasis were found to be higher. Our results indicate that similar to other diseases which are noticeable from outside, psoriasis located on visible parts of the body also causes a significant internalized stigma. Because genital, flexural and joint involvement affects quality of life significantly, these cases might have developed internalized stigma more easily. These results evidence further the rationale of recommendations suggesting that psoriasis located on the face, scalp, hands and genital region must be regarded as more severe psoriasis and treated accordingly.

Psoriasis Internalized Stigma Scale scores were significantly higher in groups of illiterate patients and patients with low income level. These results are in compliance with the published work[25] and indicate that educated individuals and patients with higher income level are able to cope better with internalized stigma and the disease in general. One of the interesting findings of this study was the lack of relationship between internalized stigma scores and marital status, age, sex and BMI. These findings reveal that basic determinants of internalized stigma are the presence, localization and severity of psoriasis. In fact we have shown a positive correlation between PISS and PASI and BSA, indicating that disease severity is one of the major determinants of internalized stigma. This fact is further evidenced by higher scores of patients with erythrodermic psoriasis and generalized pustular psoriasis. Previous studies in psychiatric diseases have shown that internalized stigma may influence attaining health care, compliance with treatment and, as a result of these, affect disease severity negatively.[26,27] Therefore, it can be claimed that internalized stigma may also have an influence on increased severity of the

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disease. As can be expected, we have found a correlation between DLQI and PISS, indicating significance of internalized stigma on poor quality of life. Taken together, effective disease control in patients may be claimed to be necessary to prevent stigmatization and poor life quality.

In addition to disease severity and localization, disease duration and family history were found to be correlated with higher internalized stigma. Similar to patients with mood disorders,[28] internalized stigma scores were higher in early onset psoriatic patients. How can one relate family history and internalized stigma? One of the explanations can be the amplification of personal perceptions through continuous exposure to a person with similar experiences. Previous studies showed that relatives of the patient with mental disorders feel embarrassed having a mentally ill individual in the family and they tend to hide this.[29] Family history of psoriasis in our study also means that exposure to stigma takes place in an earlier period. Children may have internalized the perception of stigma in the family earlier and may be more vulnerable.

When the relation between internalized stigma and general health and mental illnesses was investigated, mean PISS values of those patients with a perceived health score of "worse than good" were significantly higher than that of those with a perceived health score of "good". Similarly, a significant correlation was found between GHQ-12 and mean PISS values. These results indicate that internalized stigma, general health and mental illnesses show parallel trends with each other and this is in compliance with the results in mental diseases.[25] When these results are considered altogether, it is possible to think that strategies for improving internalized stigma may be effective, not only in the improvement of the quality of life, but also in negative perception of their health status. In fact, studies in psychiatric diseases[27] support that such interventions may influence the treatment results and quality of life positively.

Is there any impact of internal stigma beyond its psychosocial burden? Stigma has been shown to be one of the most important obstacles for the patient to access treatment.[30] The high level of internalized stigma and the decreased self-efficacy and self-esteem influences patients' compliance in a negative way. Because it is important to reverse the vicious cycle of incompliance, increased disease severity and poorer quality of life, cognitive behavioral interventions addressing internalizing personality disorders for selected patients along with an educational approach about internalized stigma will help effective disease contol.[14,31] Recently, Halioua *et al.*[32] in an online survey of 1005 persons who were representative of the French population, evaluated the prevalence of misconceptions, negative prejudices and discriminatory behavior towards psoriasis in the general public. Almost 20% of respondents had misconceptions about the disease, and 8% had negative feelings about psoriasis. Interestingly, approximately 50.0% of respondents showed discriminatory behavior towards psoriatic patients. In 62.4% of respondents who reported not having information about psoriasis, the prevalence of misconceptions, discriminatory behavior and negative prejudices was significantly more frequent. Taken together, the lack of knowledge about psoriasis seems to be an important factor. Therefore, there is an urgent need for campaigns to educate the general public and the people around the patient to raise awareness and decrease stigma about psoriasis. The patient's family and the health-care professionals may have stigmatizing attitudes. It should be taken into consideration that such attitudes can lower the compliance to treatment. Therefore, the patient's family and health-care team working with the psoriatic group should also be trained about the disease.

Recently, Beugen *et al.*[33] in another online survey of a cohort of 514 psoriatic patients examined predictor variables for perceived stigmatization using a 6-item subscale of the Impact of Chronic Skin Disease on Daily Life questionnaire. They reported that stigmatization was experienced by 73% of those patients to some degree, and it was associated with higher impact on daily life, lower education, higher disease visibility, severity and duration, higher levels of social inhibition, having a type D personality and not having a partner.

The present study, however, has some limitations too. Because this is a cross-sectional study, it cannot determine the causality. Another general limitation of this study was the use of self-report questionnaires. Additionally, only patients who were seeking treatment in those 18 training and university hospitals (tertiary health institutions in Turkey) were enrolled in this study. Therefore, it should be taken into account when generalizing results of this study to the entire population. Another is the lack of a control group enabling us to make any comparison with other dermatological disorders. However, we studied a large nationwide sample of psoriatic patients and investigated internalized stigma with clinical and quality of life correlations which are major strengths of our study.

In conclusion, our study shows that individuals with psoriasis concede (internalize) the negative stereotype judgments of the society for themselves. There is a strong relationship between high levels of internalized stigma and severity of the disease, negative quality of life, general health status and psychological disorders. Therefore, it would be useful to run programs to reduce internalized stigma to improve psychosocial morbidity. Training of medical personnel and the public through media may help not only patients with psoriasis but individuals with other diseases causing stigma. Thus, better compliance and effective use of health care could be provided.

CONFLICT OF INTEREST: None declared.

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