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Assessing Psychosocial Burden in Psoriasis Patients Using the PRISM-RII Tool: A Comprehensive Evaluation

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ABSTRACT

Introduction: Psoriasis is a chronic, immune-mediated inflammatory disease that significantly impacts patients' quality of life due to its visible lesions and associated stigma. Psychological comorbidities are prevalent among psoriasis patients.

Objectives: This study aimed to evaluate the utility of the Pictorial Representation of Illness and Self Measure Revised II (PRISM-RII) tool in assessing the psychosocial burden, including internalized stigma, in psoriasis patients.

Methods: A cross-sectional study was conducted with 190 psoriasis patients recruited from a university hospital dermatology treatment center. Participants completed the PRISM-RII Psoriasis Internalized Stigma Scale (PISS), Hospital Anxiety and Depression Scale (HADS), and Dermatology Life Quality Index (DLQI). Clinical severity was measured using the Psoriasis Area and Severity Index (PASI).

Results: Significant correlations were observed between PRISM-RII parameters and measures of quality of life, internalized stigma, anxiety, and depression. Our study revealed significant differences in PASI scores among different Illness Perception Measures (IPM). A negative correlation was found between PASI and Self-Illness Separation (SIS), suggesting that increased disease severity is associated with a higher perceived burden of illness. Additionally, significant negative correlations were observed between SIS and DLQI, HADS, and PISS. Patients with larger IPM reported higher levels of anxiety, depression, and internalized stigma, as well as lower treatment satisfaction.

Conclusions: The PRISM-RII tool effectively captures the psychosocial burden of psoriasis including internalized stigmatization, highlighting the need to address both physical and psychological aspects in clinical practice. Incorporating PRISM-RII into routine assessments can enhance patient-centered care by identifying and addressing the psychosocial dimensions of psoriasis.

Introduction

Psoriasis is a prevalent and chronic immune-mediated inflammatory disease that profoundly impacts patients' quality of life [1]. Characterized by the presence of erythematous, scaly plaques, psoriasis not only imposes a physical burden but also significantly affects psychological well-being. The chronic nature of the disease, coupled with the visibility of lesions, contributes to the high psychosocial morbidity [2]. Stigmatization is a major concern for patients with psoriasis, stemming from the visibility of their skin lesions. This stigmatization can lead to social isolation, diminished self-esteem, and a deteriorated quality of life.[1] Recently, the focus has expanded to internalized stigma, where patients internalize societal prejudices and develop negative self-perceptions [3-4]. Internalized stigma exacerbates the psychological burden, manifesting as feelings of worthlessness, shame, and social withdrawal [5]. A multicenter cross-sectional study has shown that internalized stigma in psoriasis patients is linked to increased disease severity, involvement of visible body parts, poorer quality of life, negative perceptions of general health, and various psychological disorders [4]. Additionally, psoriasis patients are susceptible to psychiatric conditions such as anxiety, depression, bipolar disorder, cognitive impairment, addictions, and suicidal ideation [2, 6-9].

To accurately assess the psychosocial burden of psoriasis, effective measurement tools are essential. The Pictorial Representation of Illness and Self Measure (PRISM) is a validated graphical tool used to measure illness-related suffering in various chronic conditions, including dermatological diseases [10-12]. PRISM-RII, a refined version of PRISM, includes 2 key parameters: Self-Illness Separation (SIS) and Illness Perception Measure (IPM) [13]. Through these parameters, PRISM-RII provides a holistic view of the emotional and psychological dimensions of disease burden.

Objectives

To the best of our knowledge, the PRISM-RII version has not been previously utilized in patients with psoriasis. Moreover, no studies to date have investigated the relationship between PRISM and internalized stigma in any patient population. The primary aim of this study was to investigate the relationship between PRISM-RII, quality of life, internalized stigmatization and psychological conditions in psoriasis patients. By evaluating the utility of the PRISM-RII tool, we aim to enhance the understanding of the psychosocial burden in psoriasis and support the development of more effective, patient-centered care strategies. The insights gained from this study could inform future interventions aimed at reducing stigma and improving the mental health and quality of life for individuals living with psoriasis.

Methods

Study Design and Participants

In this cross-sectional study, the patients were recruited from the psoriasis treatment center at the Department of Dermatology, Gazi University, Ankara, Turkey. Ethical approval was obtained from the Institutional Review Board (approval number: 512, date: 07.08.2020) The study was conducted in accordance with the ethical standards described in an appropriate version of the 1975 Declaration of Helsinki, as revised in 2018. Following written informed consent, we employed several validated tools to comprehensively assess the psychosocial burden of psoriasis on patients. These tools included PRISM-RII, Psoriasis Internalized Stigma Scale (PISS), Hospital Anxiety and Depression Scale (HADS), and Dermatology Life Quality Index (DLQI). In addition to the questionnaires, self-reported treatment satisfaction was measured by a single statement that patients responded on a 5-point *Likert*-type scale. All dermatological assessments including PASI (Psoriasis Area and Severity Index) were performed by qualified dermatologists.

Measurement Tools

Pictorial Representation of Illness and Self Measure Revised II (PRISM-RII)

PRISM is a non-verbal instrument designed to measure illness-related suffering [12]. In 2008, Wouters et al [13] developed 2 modifications of the original PRISM tool: the PRISM-R1 and PRISM-RII. In the article, the authors reported that PRISM-RII in particular would be useful and applicable tool for assessing patients suffering [13].

The PRISM-RII consists of a large white circle (186 mm in diameter) labeled "My life environment." Patients place a yellow circular 52-mm disc (the self-disc) in the center of this white circle, representing their life (Figure 1). Participants then choose 1 of 3 differently sized red discs (the illness discs) according to the perceived size of their illness. This quantitative variable is called the Illness Perception Measure (IPM). The illness discs are smaller, equal, or larger in size

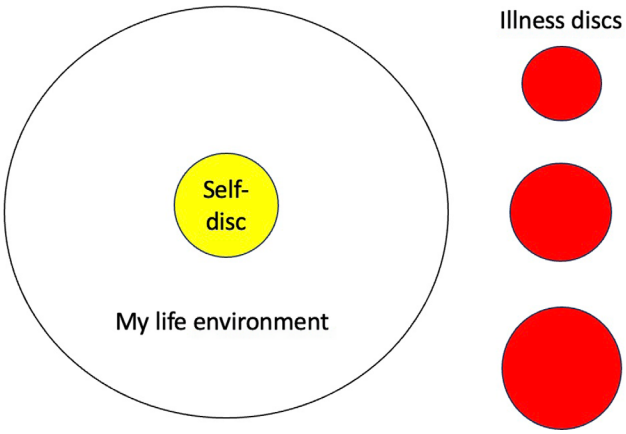

Figure 1. Illustration of the Pictorial Representation of Illness and Self-Measure-Revised II (PRISM-RII). The patient is instructed to place the yellow disc on the board and then select 1 of the 3 red discs of varying sizes to place on the board.

(IPM-1 = 35 mm, IPM-2 = 52 mm, and IPM-3 = 65 mm, respectively) than the self-disc. Larger illness disc indicates a greater perceived severity of the illness. Self-Illness Separation (SIS) is calculated by measuring the distance between the centers of the yellow disc and the red disc, with possible SIS values ranging from 0 to 93 mm [13].

Psoriasis Internalized Stigma Scale (PISS)

The scale was adapted from the Internalized Stigma Scale (ISS) [14] to effectively measure the subjective experience of stigma in psoriasis patients [3-4]. The PISS is a 4-point Likert-type scale composed of 29 items measuring the stigma across multiple dimensions; (i) alienation (6 items); (ii) stereotype endorsements (7 items); (iii) perceived discrimination (5 items); (iv) social withdrawal (6 items); and (vi) stigma resistance (5 items). The total PISS scores range from 4 to 91.

Hospital Anxiety and Depression Scale (HADS)

HADS is a widely used tool for detecting anxiety and depression in patients with physical illnesses [15]. The scale includes two subscales for anxiety and depression, each comprising seven items rated on a 4-point Likert scale. The Turkish validity and reliability study of the scale was performed by Aydemir et al [16].

Dermatology Life Quality Index (DLQI)

The scale is a specific health-related quality of life (HRQOL) instrument consisting of 10 items that assess the impact of skin disease on various aspects of daily life using a 4-point Likert scale [17]. The Turkish version of the DLQI has been validated [18]. The total scores of DLQI range from 0 to 30.

Statistical Analysis

The statistical analyses were conducted using IBM SPSS Statistics Version 23.0. Data normality was assessed with the Shapiro-Wilk test. Descriptive statistics were used to summarize demographic data and disease characteristics. Continuous variables were presented as mean±standard deviation (SD), while categorical variables were expressed as frequency counts and percentages. To compare the means of normally distributed continuous variables across more than two groups, one-way analysis of variance (ANOVA) was used, followed by post-hoc analyses with the Tukey HSD test. For non-parametric data across more than 2 groups, the Kruskal-Wallis test was utilized. Correlations were assessed with Spearman rank correlation coefficient for non-parametric data and Pearson correlation for parametric data. The significance threshold was set at $P < 0.05$.

Table 1. Sociodemographic and Clinical Data of the Patients.

Sociodemographic and Clinical Data		N (%)
Age, Mean±SD		44.07±14.18
Gender (female)		93 (48.9)
Marital status	Married	141 (74.2)
	Single	41 (21.6)
	Divorced/ widowed	8 (4.2)
Educational level	Primary school	42 (22.1)
	Secondary school	74 (38.9
	Bachelor	74 (38.9)
Occupation	Employed	82 (43.2)
	Unemployed	63 (33.2)
	Student	16 (8.4)
	Retired	29 (15.3)
Family history of psoriasis (yes)		68 (35.8)
Type of psoriasis	Chronic plaque psoriasis	160 (84.2)
	Palmoplantar pustular psoriasis	26 (13.7)
	Generalized pustular psoriasis	4 (2.1)

SD = standard deviation.

Results

Study Population

The study population comprised 190 psoriasis patients aged 18 years and over, recruited from the psoriasis treatment center at a university hospital. The severity of chronic plaque psoriasis was assessed using PASI, with a mean score of 4.10 (range: 0-26). The sociodemographic and clinical characteristics are presented in Table 1.

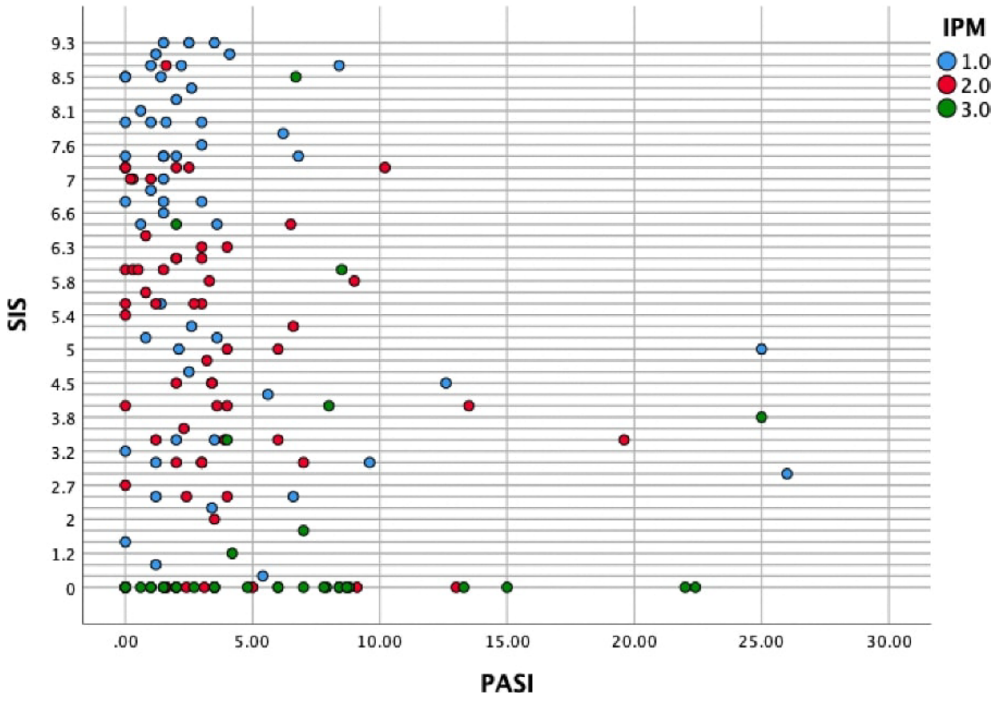

Figure 2. The relationship between Self-Illness Separation (SIS), Illness Perception Measure (IPM), and Psoriasis Area Severity Index (PASI).

PRISM-RII Parameters and Disease Severity

A Kruskal-Wallis test revealed significant differences in PASI scores among the three different IPM sizes [$\chi^2(2) = 18.934$, $P < 0.001$]. Post hoc Mann-Whitney tests indicated significant differences between IPM-1 and IPM-3 ($Z=4.10$, $P < 0.001$) and IPM-2 and IPM-3 ($Z=3.54$, $P < 0.001$), but not between IPM-1 and IPM-2 ($P = 0.232$). These results suggest that as disease severity increases, the IPM value also increases, indicating a broader perceived impact of psoriasis on the patient life. A significant negative correlation was observed between PASI and SIS (Spearman rho = -0.238, P = 0.003), indicating that higher PASI scores are associated with lower SIS scores. The relationships between SIS, IPM, and PASI are presented in Figure 2.

Relationship Between SIS and Psychological Measures

The relationship between SIS and various psychological measures including DLQI, HADS, and PISS was evaluated using Spearman rank correlation coefficient (Table 2). A significant negative correlation was found between SIS and DLQI, indicating that a lower SIS score, which reflects a higher perceived burden of illness, is associated with poorer quality of life. Similarly, significant negative correlations were observed between SIS and HADS-Anxiety, HADS-Depression, and HADS-Total, suggesting that patients who perceive their illness to be closer to themselves experience higher levels of anxiety and depression. Further analysis revealed significant negative correlations between SIS and PISS-Total, and PISS subscales of alienation, stereotype endorsements, perceived discrimination, and social withdrawal. These results suggest that higher levels of internalized stigma are associated with a greater perceived burden of illness. Furthermore, significant correlations were noted between DLQI and HADS-Total (r = 0.388, P = 0.000), HADS-Anxiety (r = 0.400, P = 0.000), and HADS-Depression (r 0= .301, P = 0.000).

Table 2. Evaluation of the Relationship Between SIS and DLQI, HADS, and PISS.

	SIS (Self-Illness Separation) r, P
DLQI	R = -0.326, P < 0.001
HAD-Anxiety	r= -0.191, P = 0.009
HAD-Depression	r= -0.148, P = 0.043
HAD-Total	r= -0.187, P = 0.010
PISS-Alienation	r= -0.335, P < 0.001
PISS- Stereotype endorsements	r= -0.264, P < 0.001
PISS- Perceived discrimination	r= -0.221, P = 0.002
PISS- Social withdrawal	r= -0.313, P <0.001
PISS- Stigma resistance	r= -0.038, P = 0.603
PISS-Total	r= -0.319, P < 0.001

DLQI = Dermatology Quality Life Index; HAD Hospital Anxiety Depression; PISS = Psoriasis Internalized Stigmatization Scale.

Analysis of Variance in IPM

Comparisons of HADS, PISS, and treatment satisfaction across the three IPM sizes were conducted using ANOVA (Table 3). ANOVAs revealed significant differences between

Table 3. Comparison of IPM With HAD, PISS, and Treatment Satisfaction Using One-Way Analysis of Variance (ANOVA).

	IPM-1 Mean ± SD	IPM-2 Mean ± SD	IPM-3 Mean ± SD	F	P	P^1	P^2	P^3
HAD-Anxiety	6.17±4.32	7.62±4.17	9.42±4.11	7.77	0.001	0.098	<0.001	0.069
HAD-Depression	4.72±2.96	6.65±3.99	7.57±4.22	8.83	<0.001	0.006	<0.001	0.402
HAD-Total	10.89±6.73	14.28±7.36	17.00±7.60	9.81	<0.001	0.014	<0.001	0.122
PISS-Alienation	10.19±3.32	12.89±3.79	15.07±4.59	21.99	<0.001	<0.001	<0.001	0.010
PISS- Stereotype endorsements	10.86±3.14	12.74±3.31	13.70±2.80	11.90	<0.001	0.001	<0.001	0.254
PISS- Perceived discrimination	7.75±2.33	9.35±2.80	10.14±2.94	11.84	<0.001	0.001	<0.001	0.281
PISS- Social withdrawal	9.58±3.50	11.88±3.88	13.58±4.27	14.80	<0.001	0.001	<0.001	0.059
PISS- Stigma resistance	14.66±3.10	13.83±2.45	13.90±2.25	1.97	0.142	0.151	0.324	0.990
PISS-Total	23.85±11.84	33.21±12.09	38.75±13.22	21.02	<0.001	<0.001	<0.001	0.053
Treatment satisfaction	3.91±1.26	3.70±1.21	3.11±1.45	4.30	0.015	0.607	0.011	0.076

P^1: IPM1 vs IPM2, P^2: IPM1 vs IPM3, P^3: IPM2 vs IPM3. *F*: One-way analysis of variance (ANOVA), post-hoc analyses were performed using the Tukey HSD test. IPM = Illness Perception Measure; HAD = Hospital Anxiety Depression; PISS = Psoriasis Internalized Stigmatization Scale; SD = standard deviation.

the size of IPM and HADS-Anxiety, HADS-Depression, and HADS-Total. Post-hoc analyses indicated that patients with larger IPM sizes, indicating greater perceived illness severity, had significantly higher anxiety and depression scores compared to those with smaller IPM sizes.

IPM and Internalized Stigma

Significant differences were noted between IPM sizes for PISS subscales: alienation, stereotype endorsements, perceived discrimination, and social withdrawal. Patients with larger IPM sizes reported higher levels of internalized stigma across all subscales except stigma resistance.

Treatment Satisfaction

There were also significant differences in treatment satisfaction, with patients perceiving their illness as more severe reporting lower satisfaction with treatment. There were no significant differences in PRISM-RII index parameters (SIS and IPM) among the subgroups of patients receiving topical therapy, conventional systemic drugs, or biological drugs.

Summary of Findings

Overall, our results indicate that the PRISM-RII effectively captures the psychosocial burden of psoriasis. Significant correlations between PRISM-RII parameters (SIS and IPM) and measures of quality of life, internalized stigma, anxiety, and depression underscore the importance of addressing both physical and psychological aspects of psoriasis in clinical practice.

Conclusions

The present study demonstrates the role of PRISM-RII in highlighting the significant impact of quality of life, internalized stigma, and psychological comorbidities such as depression and anxiety, on patients with psoriasis. Our findings align with existing literature, emphasizing the importance of addressing both the physical and mental health aspects of psoriasis [1,2,7,13,19]. This discussion explores the complex interplay between psoriasis severity, psychological comorbidities, internalized stigmatization and patient quality of life.

Patient perception of the disease impact often diverges from objective disease parameters that assess the extent, thickness, and erythema of lesions in skin disorders [20]. Consequently, scales such as DLQI, Skindex-29, and HRQOL have been developed to evaluate patients' quality of life. Patient- reported outcomes such as quality of life questionnaires and other psychometric assessments measuring stigmatization and psychological comorbidities provide valuable insights into the disease burden in psoriasis patients. However, these questionnaires and scales have certain limitations. Firstly, they can be perceived as time-consuming and cumbersome, a phenomenon known as 'respondent burden' may be caused due to the repeated assessments and this also affects the willingness of the patient to complete the scales [11]. Moreover, while written qualitative questionnaires may be valid in the cultural region where they were developed, they may not yield equally meaningful results when applied to

patients from regions with different cultural backgrounds [11,21]. Hence, the PRISM scale emerges as an alternative and practical tool to written questionnaires.

In a study by Büchi et al [10] the PRISM was preliminarily validated as an effective method to assess suffering in patients with chronic illnesses. This tool has since been validated in various chronic conditions, including, rheumatoid arthritis[12,22], chronic obstructive pulmonary disease [23], systemic lupus erythematosus [24], diabetes mellitus [10], chronic pain [25] and skin diseases [11,26-28] including mainly psoriasis [19]. This validation supports the use of PRISM-RII in our study, reinforcing its relevance in measuring the psychosocial burden in psoriasis patients. In our study, there was a statistically significant relationship between PRISM-RII SIS scores and DLQI, similar to findings by Mühleisen et al [11], which linked PRISM-SIS scores to quality of life measures like Skindex-29 and DLQI in a study involving 186 patients. In the same study, including different patient groups such as psoriasis, dermatitis, leg ulcers, and tumors, the highest correlation between PRISM-SIS and DLQI was observed in patients with psoriasis and those with tumors [11]. Additionally, a study by Fotiou et al [19] validating an earlier version of PRISM with DLQI in psoriasis patients found a correlation between SIS and DLQI. These findings are consistent with our results, where significant associations were observed between PRISM-RII scores and DLQI, highlighting the tool ability to capture the multifaceted impact of psoriasis.

Our results indicate that the SIS subscale of PRISM-RII is an effective method for evaluating quality of life in dermatology. The DLQI is one of the most commonly used dermatology-specific HRQOL instrument [21]. However, while DLQI focuses more on functional impairment, PRISM-RII captures the emotional and psychological dimensions of disease burden, providing a more holistic view of the patient experience. The PRISM-RII offers several advantages over traditional patient-reported outcome measures, such as the DLQI. PRISM-RII graphical and non-verbal nature makes it less susceptible to cultural biases and easier for patients to complete, compared to traditional questionnaires [13]. This is particularly beneficial in dermatology, where visible symptoms can lead to varying degrees of psychological distress across different cultural contexts Corazza et al [29] highlighted the sensitivity of PRISM in detecting the emotional impact of eczematous diseases, especially in cases involving the face. Their study found that PRISM was more accurate than DLQI in measuring the burden of diseases that have significant visible symptoms. This is particularly relevant for psoriasis patients, in which visible lesions can contribute to increased psychological distress and perceived stigma.

The relationship between disease severity and PRISM-RII parameters, specifically SIS and IPM, was thoroughly explored in our study. The findings revealed significant associations between disease severity and these PRISM-RII measures, aligning with prior research conducted by Fotiou et al [19], which also indicated a relationship between PRISM scores and disease severity in psoriasis. Fotiou et al [19] research further supports our findings, demonstrating that PRISM scores are influenced by the psychological distress attributable to psoriasis severity. They observed that higher disease severity correlated with lower SIS scores, indicating a higher perceived disease burden. This aligns with our results, which showed significant negative correlations between PASI scores and SIS, suggesting that as psoriasis severity increases, the perceived burden of illness intensifies. However, in a study by Reimus et al [28] involving 59 psoriasis patients using PRISM-R, no significant correlation was found between PASI and PRISM-R ($P = 0.14$). This discrepancy may be attributed to differences in study populations or methodologies. In the same study, while no relationship was found between SIS and subjective health measures, a negative correlation was found between IPM and subjective health status, life satisfaction, and psychological well-being. In line with this, in our study, significant correlations were observed between the size of IPM and HADS-Anxiety, HADS-Depression, HADS-Total and self-reported treatment satisfaction.

The present study also found significant correlations between IPM and various psychological measures, including the HADS scores and self-reported treatment satisfaction. This highlights the role of perceived illness severity in affecting patients' mental health and their satisfaction with treatment outcomes. Depression is a well-documented comorbidity in psoriasis, significantly affecting patients well-being [30]. Higher PASI scores have been correlated with increased depression symptoms. Studies indicate that depression in psoriasis patients may result from several factors, including the visibility of lesions, stigmatization, and the chronic nature of the disease [7,9]. Anxiety is another prevalent issue among psoriasis patients, often triggered by the chronic nature of the disease and its visible symptoms. Studies show a bidirectional relationship where anxiety can both result from and exacerbate psoriasis [9,31]. Our study found significant correlations between PRISM-RII parameters and measures of anxiety and depression. A lower SIS score, indicating a higher perceived burden, was significantly associated with higher anxiety and depression scores. This finding aligns with previous research suggesting that the closer patients perceive their illness to themselves, the higher the psychological burden [19]. Larger IPM, reflecting greater perceived illness severity, were also correlated with higher scores on the HADS. This suggests that patients who perceive their illness as more severe are more likely to experience anxiety and depression [13]. Our results

underscore the importance of using comprehensive tools like PRISM-RII to capture the multifaceted impact of psoriasis on patients lives.

Our study also examined psoriasis-related internalized stigma, elucidating the relationship between the size of IPM and PISS-Total, along with its subscales. Our study found significant negative correlations between SIS and PISS. Our findings demonstrate that higher PISS scores are significantly correlated with lower scores on the PRISM-RII SIS subscale, indicating that patients who perceive a greater distance between themselves and their illness experience less internalized stigma and associated psychological distress. Patients with higher levels of internalized stigma reported poorer quality of life. This finding aligns with the literature, which indicates that internalized stigma is associated with a lower quality of life and increased psychological comorbidities in psoriasis patients [4]. Our study highlights the significant role of internalized stigma in psoriasis patients and its impact on psychological well-being, as measured by the PRISM-RII. The results of the present study reveal that the PRISM-RII is a practical instrument that can be used to measure internalized stigma in psoriasis patients. The integration of PRISM-RII into clinical practice can help healthcare providers identify patients with internalized stigma, enabling targeted interventions aimed at reducing stigma and improving psychological well-being. Addressing internalized stigma is crucial for enhancing the overall treatment and management of psoriasis.

The PRISM-RII stands out as an exceptional measure for assessing the psychosocial burden in psoriasis patients. It effectively captures the intricate interplay between disease severity, perceived illness burden, quality of life, psychological comorbidities and internalized stigma, offering invaluable insights that can enhance patient-centered care strategies. One of the key advantages of the PRISM is that it is an easy-to-apply and practical graphical tool, making it less susceptible to cultural differences compared to traditional written questionnaires. By integrating tools like PRISM-RII into routine clinical assessments, healthcare providers can comprehensively address the psychosocial dimensions of psoriasis, paving the way for more holistic and effective patient care. Future research should consider longitudinal studies to observe changes in the psychosocial burden of psoriasis over time and the long-term effectiveness of interventions targeting internalized stigma, anxiety, and depression. Additionally, exploring the application of PRISM-RII in a broader range of dermatological and chronic conditions could validate its applicability and reliability.

Limitations

Firstly, the cross-sectional design of this study limits our ability to draw causal inferences about the relationships between parameters. Secondly, the study sample was recruited from a single treatment center, which may limit the generalizability of the findings. Thirdly, the reliance on self-reported measures may introduce bias due to social desirability or recall inaccuracies.

References

1. Zhang H, Yang Z, Tang K, Sun Q, Jin H. Stigmatization in patients with psoriasis: a mini review. *Front Immunol*. 2021;12:715839. DOI: 10.3389/fimmu.2021.715839. PMID: 34867945. PMCID: PMC8634029.
2. Ferreira BIRC, Da Costa Abreu JLP, Dos Reis JPG, Da Costa Figueiredo AM. Psoriasis and associated psychiatric disorders: a systematic review on etiopathogenesis and clinical correlation. *J Clin Aesthet Dermatol*. 2016;9(6):36-41. PMID: 27386050; PMCID: PMC4928455.
3. Alpsoy E, Babadag K, Karaman BF. Reliability and validity of internalized stigmatization scale in psoriasis. *Turkderm-Arch of the Turkish Dermatol and Venerol* 2015;49(1):45-9. DOI: 10.4274/turkderm.54521
4. Alpsoy E, Polat M, Fettahlıoglu-Karaman B, et al. Internalized stigma in psoriasis: a multicenter study. *J Dermatol*. 2017;44(8):885-91. DOI: 10.1111/1346-8138.13841. PMID: 28407292.
5. Corrigan PW, Druss BG, Perlick DA. The impact of mental illness stigma on seeking and participating in mental health care. *Psychol Sci Public Interest*. 2014;15(2):37-70. DOI: 10.1177/1529100614531398. PMID: 26171956.
6. Dalgard FJ, Gieler U, Tomas-Aragones L, et al. The psychological burden of skin diseases: a cross-sectional multicenter study among dermatological out-patients in 13 European countries. *J Invest Dermatol*. 2015;135(4):984-91. DOI: 10.1038/jid.2014.530. PMID: 25521458; PMCID: PMC4378256.
7. Innamorati M, Quinto RM, Lester D, et al. Cognitive impairment in patients with psoriasis: a matched case-control study. *J Psychosom Res*. 2018;105:99-105. DOI: 10.1016/j.jpsychores.2017.12.011. PMID: 29332640.
8. Zink A, Herrmann M, Fischer T, et al. Addiction: an underestimated problem in psoriasis health care. *J Eur Acad Dermatol Venereol*. 2017;31(8):1308-15. DOI: 10.1111/jdv.14204. PMID: 28281329.
9. 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. DOI: 10.1016/j.jpsychores.2017.01.007. PMID: 28183400.
10. Büchi S, Buddeberg C, Klaghofer R, et al. Preliminary validation of PRISM (Pictorial Representation of Illness and Self Measure) - a brief method to assess suffering. *Psychother Psychosom*. 2002;71(6):333-41. DOI: 10.1159/000065994. PMID: 12411768.
11. Mühleisen B, Büchi S, Schmidhauser S, et al. Pictorial Representation of Illness and Self Measure (PRISM): a novel visual instrument to measure quality of life in dermatological inpatients. *Arch Dermatol*. 2009;145(7):774-80. DOI: 10.1001/archdermatol.2009.121. PMID: 19620558.
12. Büchi S, Sensky T, Sharpe L, Timberlake N. Graphic representation of illness: a novel method of measuring patients'

perceptionsoftheimpactofillness.*PsychotherPsychosom*.1998;67(4-5):222-5. DOI: 10.1159/000012284. PMID: 9693349.
13. Wouters E, Reimus J, Van Nunen A, et al. Suffering quantified? Feasibility and psychometric characteristics of 2 revised versions of the Pictorial Representation of Illness and Self Measure (PRISM). *Behav Med*. 2008;34(2):65-78. DOI: 10.3200/BMED.34.2.65-78. PMID: 18682339.
14. Ritsher JB, Otilingam PG, Grajales M. Internalized stigma of mental illness: psychometric properties of a new measure. *Psychiatry Res*. 2003;121(1):31-49. DOI: 10.1016/j.psychres.2003.08.008. PMID: 14572622.
15. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand*. 1983;67(6):361-70. DOI: 10.1111/j.1600-0447.1983.tb09716.x. PMID: 6880820.
16. Aydemir Ö, Güvenir T, Küey L, Kültür S. Reliability and validity of the Turkish version of Hospital Anxiety and Depression Scale. *Turk Psikiyatri Dergisi*. 1997;8:280-7.
17. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)–a simple practical measure for routine clinical use. *Clin Exp Dermatol*. 1994;19(3):210-6. DOI: 10.1111/j.1365-2230.1994.tb01167.x. PMID: 8033378.
18. Öztürkcan S, Ermertcan AT, Eser E, Turhan Şahin M. Cross validation of the Turkish version of dermatology life quality index. *Int J Dermatol*. 2006;45(11):1300-7. DOI: 10.1111/j.1365-4632.2006.02881.x. PMID: 17076710.
19. Fotiou K, Hofmann M, Kaufmann R, Thaci D. Pictorial representation of illness and self measure (PRISM): an effective tool to assess the burden of psoriasis. *J Eur Acad Dermatol Venereol*. 2015;29(12):2356-62. DOI: 10.1111/jdv.13232. PMID: 26332649.
20. Grob JJ. Why are quality of life instruments not recognized as reference measures in therapeutic trials of chronic skin disorders? *J Invest Dermatol*. 2007;127(9):2299-301. DOI: 10.1038/sj.jid.5701081. PMID: 17853918.
21. Nijsten T, Meads DM, De Korte J, et al. Cross-cultural inequivalence of dermatology-specific health-related quality of life instruments in psoriasis patients. *J Invest Dermatol*. 2007;127(9):2315-22. DOI: 10.1038/sj.jid.5700875. PMID: 17495953.
22. Niedermann K, de Bie RA, Kubli R, et al. Effectiveness of individual resource-oriented joint protection education in people with rheumatoid arthritis: a randomized controlled trial. *Patient Educ Couns*. 2011;82:42-8. DOI: 10.1016/j.pec.2010.02.014. PMID: 20451345.
23. Büchi S, Brändli O, Klingler K, Klaghofer R, Buddeberg C. Inpatient rehabilitation in inpatients with chronic obstructive lung diseases (COPD): effect on physical capacity for work, psychological wellbeing and quality of life. *Schweiz Med Wochenschr*. 2000;130(5):135-42. PMID: 10701230.
24. Buchi S, Villiger P, Kauer Y, et al. PRISM (Pictorial Representation of Illness and Self Measure)- a novel visual method to assess the global burden of illness in patients with systemic lupus erythematosus. *Lupus*. 2000;9(5):368-73. DOI: 10.1191/096120300678828479. PMID: 10878730.
25. Kassardjian CD, Gardner-Nix J, Dupak K, et al. Validating PRISM (Pictorial Representation of Illness and Self Measure) as a measure of suffering in chronic non-cancer pain patients. *J Pain*. 2008;9(12):1135-43. DOI: 10.1016/j.jpain.2008.06.016. PMID: 18755635.
26. Rumpf HJ, Löntz W, Uesseler S. A self-administered version of a brief measure of suffering: first aspects of validity. *Psychother Psychosom*. 2004;73(1):53-6. DOI: 10.1159/000074440. PMID: 14665796.
27. Töndury B, Büchi S, Kauer Y, Schärer L, Villiger PM. The Pictorial Representation of Illness and Self Measure (PRISM) instrument reveals a high burden of suffering in patients with chronic urticaria. *J Investig Allergol Clin Immunol*. 2011;21(2):93-100. PMID: 21462798.
28. Reimus JLM, Vingerhoets AJJM, Soons PHGM, Korstanje MJ. Suffering in psoriasis patients: its relation with illness severity and subjective well-being. *Int J Dermatol*. 2007;46(10):1042-5. DOI: 10.1111/j.1365-4632.2007.03191.x. PMID: 17910711.
29. Corazza M, Flacco ME, Schettini N, Borghi A. Suffering and quality of life impairment in patients with eczematous diseases: results from an observational study assessing the relevance of the involvement of two sensitive body sites, namely, the face and hands. *Dermatology*. 2023;239(4):368-78. DOI: 10.1159/000528822. PMID: 36642071.
30. Min C, Kim M, Oh DJ, Choi HG. Bidirectional association between psoriasis and depression: two longitudinal follow-up studies using a national sample cohort. *J Affect Disord*. 2020;262:126-32. DOI: 10.1016/j.jad.2019.10.043. PMID: 31733456.
31. Mizara A, Papadopoulos L, McBride SR. Core beliefs and psychological distress in patients with psoriasis and atopic eczema attending secondary care: the role of schemas in chronic skin disease. *Br J Dermatol*. 2012;166(5):986-93. DOI: 10.1111/j.1365-2133.2011.10799.x. PMID: 22211355.