The quality of life and its related factors in patients with psoriasis

Hojat Eftekhari, MD [1]
Seyyede Zeinab Azimi, MD [2]*
Abbas Darjani, MD [1]
Rana Rafiei, MD [1]
Melika Amookhteh, MD [1]

1. Skin Research Center, Department of Dermatology, Razi Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
2. Center for Research & Training in Skin Diseases & Leprosy, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding author:
Seyyede Zeinab Azimi, MD
Center for Research & Training in Skin Diseases & Leprosy, Tehran University of Medical Sciences, Tehran, Iran
Tel: (+98) 21 8897 2220
Fax: (+98) 1333557988
E-mail: sz.azimi@yahoo.com

Background: Psoriasis is a chronic disease that may affect patients' quality of life. We investigated the quality of life (QoL) and its related factors in psoriasis patients.

Methods: In this cross-sectional study, 123 patients with psoriasis vulgaris were enrolled, who were at the age of 18-55 years. The QoL was assessed by the psoriasis disability index (PDI) questionnaire. The stress associated with psoriasis was evaluated by the psoriasis life stress inventory (PLSI) questionnaire. The severity of the disease (SoD) was measured based on the psoriasis area and severity index (PASI) score.

Results: In this study, the mean age of the patients was 40.77 ± 0.73 years, and the mean duration of the disease was 8.7 ± 8.23 years. The average PASI score was 11.06, and the average PDI score was 11.98. The average PDI and PASI scores of smoker patients were significantly more than those of non-smokers ($P = 0.017$). There was a strong relationship between all parts of QoL and PLSI scores, as well as between PASI and PLSI ($P < 0.05$).

Conclusions: Psoriasis reduced our patients' quality of life. Thus, it is recommended that the QoL in psoriatic patients be evaluated. Stress management and psychological supporting methods are necessary for these patients.

Keywords: psoriasis, quality of life, life stress

INTRODUCTION

Psoriasis is an inflammatory systemic disorder having a chronic and relapsing course [1]. Stress may cause disability in psoriasis patients, resulting in major impacts on patients' quality of life (QoL), severity of disease (SoD), and therapeutic response [2]. Many patients have poor body image or low self-confidence, poor mental fitness, defamation feeling, shame and embarrassment due to their appearance [3]. Additionally, most patients report moderate to severe anxiety, anger, and depression. It appears that an increase in the severity of psoriasis is closely associated with the severity of depression and consequently with an increase in the number of suicidal thoughts [4].

Assessment of patients' QoL allows evaluation of the effects of psoriasis and its treatment on their function [3].

Owing to the lack of sufficient and new studies on the QoL of psoriasis patients in our country as well as potential negative effects of this disease on the patients' QoL, this study aimed to determine the QoL and its effective factors in Guilan Province, Iran.

PARTICIPANTS AND METHODS

This analytical cross-sectional study was conducted in Guilan, Iran, from March 2016 till March 2017. A total of 123 patients with psoriasis referred to the educational dermatology clinic at Razi Hospital were enrolled. The inclusion criteria

were as follows: all patients with the vulgaris type of psoriasis confirmed by a dermatologist, and being aged between 18-55 years. Exclusion criteria were as follows: other autoimmune skin disorders (such as vitiligo, lichen planus, and alopecia areata), pregnancy and lactation. The data collection tool in this study was a questionnaire consisting of 4 parts:

General

This included demographic characteristics (age, sex, body mass index), social history (marital status, educational level, occupation, housing status, income, smoking, alcohol intake, and substance abuse), and disease characteristics (duration of disease, involved regions, complications), history of other skin diseases, comorbidities, history of hospitalization, type of treatment, and sampling season.

Psoriasis Area and Severity Index (PASI)

According to the PASI score, the patients were divided into three groups: mild (PASI > 12), moderate ($12 \leq PASI \leq 25$) and severe (PASI > 25) [5].

Psoriasis Disability Index (PDI)

PDI was used to evaluate the effects of psoriasis on patients' QoL. This part included 15 questions assessing five components of patients' QoL: daily activities, occupational conditions, interpersonal communications, leisure time, and treatment. All questions referred to the events of the last 4 weeks. Answers were scored from zero to 3 (zero: never, 1: little, 2: high, 3: very much); a higher score indicated lower QoL. The PDI was used in Persian.

15-item Psoriasis Life Stress Inventory (PLSI)

This was used to measure the stresses associated with daily life events. The patients were requested to choose only one option (never: 0, mild: 1, moderate: 2, high: 3) based on the stress experienced during the last 4 weeks. Based on the overall score of PLSI, the patients were divided into two groups: high-stress (score ≥ 10) and low-stress (score < 10).

Since the PLSI questionnaire had not been validated in our country, in this study, the "backward-forward" method was used as a guide for intercultural adaptation to evaluate the validity of this questionnaire in both English and Persian languages. At this step, two bilingual experts translated the questionnaire from English into Persian. Then, the primary draft of the questionnaire was prepared. Subsequently, a bilingual expert translated the questionnaire from Persian into English, and the final version of the questionnaire was prepared. After this step, the research team compared the original English questionnaire to the final version. The Persian questionnaire was finally approved after few corrections. To evaluate the content validity of the Persian questionnaire, 10 dermatologists and psychologists were asked to independently determine the relevance of the items in the questionnaire with its overall content in terms of four criteria: simplicity, clarity, relevance, and necessity. After receiving the experts' opinion, content validity was calculated using Content Validity Index (CVI) and Content Validity Rate (CVR) coefficients for the translated questionnaire. The calculated CVI and CVR of each question were in the range of 0.7-1 and 0.8-1, respectively. Overall clarity, relevance, and simplicity of the questionnaire were 0.89, 0.91, and 0.86, respectively. Owing to the calculated CVR value of more than 0.62, no question was deleted from the questionnaire. In cases with the CVI between 0.7-0.9, questions were revised.

To determine the internal consistency, the Cronbach's alpha coefficient was calculated in 30 patients, which was 0.879. It was considered valid, since the value was higher than 0.7. The Ethics Committee of GUMS approved the study.

Statistical analysis

All statistical analyses were conducted by the SPSS software version 18. Quantitative variables were described using mean and standard deviation, and qualitative variables were described using number and percentage. Normal distributions of the quantitative variables were measured using the Kolmogorov-Smirnov test. The total score of QoL and its components were compared to other variables using t-test, one-way ANOVA, Mann-Whitney test and Kruskal-Wallis test. Correlation between QoL and SoD was measured by the Spearman correlation coefficient. Linear regression with robust was used to assess the effects of

different variables on QoL. The significance level of all tests was considered a P value < 0.05.

Ethics

The Ethical Committee of Guilan University of Medical Sciences approved the present study. All participants fulfilled informed consent.

RESULTS

A total of 123 patients aged 18-55 years were enrolled (Tables 1 & 2). We found a significant

Table 1. Demographic characteristics of patients

Variables	N=123
Male/female	80/43
Age (mean ± SD) (years)	40.77 ± 10.73
Smoking	30 (24.4%)
Ex-smoker	11 (8.9%)
Alcohol use	11 (8.9%)
Drug abuse	8 (6.5%)
Body mass index (kg/m^2)	
< 18.5	1 (0.8%)
18.5-24.9	37 (30.1%)
25-29.9	53 (43.1%)
> 30	32 (26%)
Level of education	
Less than High school	62 (50.4%)
High school	40 (32.5%)
Bachelor`s degree	10 (8.1%)
Postgraduate degrees	11 (8.9%)
Occupation	
Unemployed	48 (39.0 %)
Employed	61 (49.6%)
Retired	14 (11.4%)
Marital status	
Married	97 (78.9%)
Single	23 (18.7%)
Widowed	2 (1.6%)
Divorced	1 (0.8%)
Housing	
Personal property	90 (73.1%)
Leased	33 (26.9%)
Household income	
< 100 US dollars	37 (30.1%)
100-200 US dollars	61 (49.6%)
200-400 US dollars	22 (17.9%)
400 US dollars ≤	3 (2.4%)
Season of sampling	
Spring	37 (30.1%)
Summer	51 (41.5%)
Autumn	27 (22%)
Winter	8 (6.5%)

relationship between the patients' QoL and occupational conditions, disease complications, type of treatment, and substance abuse (Table 3).

There was an inverse but non-significant statistical correlation between age and QoL of the patients (r = -0.037, P = 0.682). Positive but non-significant statistical correlation was found between patients' QoL and body mass index (BMI) (r = 0.066, P = 0.66) as well as duration of the disease (r = 0.140, P = 0.122).

Furthermore, we found a significant positive correlation between most components of the patients' QoL, including daily activity, occupational conditions and leisure times, and severity of disease (SoD) (r = 0.294, P = 0.001; r = 0.298, P = 0.001; r = 0.267, P = 0.003, respectively).

However, there was a positive non-significant correlation between other parts of the patients' QoL including personal communication and type of treatment, and SoD (r = 0.173, P = 0.056; r = 0.161, P = 0.076, respectively). Moreover, we found a

Table 2. Patients' clinical characteristics

Variables	N=123
Regions of involvement	
Trunk	100 (81.3%)
Head	99 (80.4%)
Upper extremity	103 (83.7%)
Lower extremity	97 (78.8%)
Palmoplantar	29 (23.5%)
Psoriasis side effects	67 (54.5%)
History of other skin diseases	14 (11.4%)
A positive history of comorbidities	52 (42.3%)
History of hospitalization due to psoriasis	15 (12.2%)
Type of treatment	
Topical	63 (51.2%)
Systemic	4 (3.3%)
Both	49 (39.8%)
None of them	7 (5.7%)
Psoriasis severity	
Mild	83 (67.5%)
Moderate	31 (25.2%)
Severe	9 (7.3%)
Quality of life (mean ± SD)	
Daily activity (0-15)	5.35 ± 3.56
Occupational factors (0-9)	1.65 ± 2.53
Interpersonal communication (0-6)	1.05 ± 1.50
Leisure (0-12)	3.01 ± 3.02
Treatment (0-3)	0.89 ± 0.92
Total score (0-45)	11.98 ± 9.19
Psoriasis life stress inventory	
Low stress	32 (26.8%)
High stress	90 (73.2%)

Table 3. Patients' quality of life mean scores in terms of demographic and clinical characteristics

Variables	Mean ± SD	P
Sex		
Male	12.98 ± 10.16	0.278
Female	10.11 ± 6.79	
Smoking		
Yes	16.26 ± 11.22	
Ex-smoker	13.45 ± 6.77	0.017
No	10.21 ± 8.14	
Alcohol use		
Yes	11.54 ± 8.55	0.999
No	12.02 ± 9.29	
Drug abuse		
Yes	17.25 ± 9.61	0.079
No	11.61 ± 9.09	
Level of education		
Less than High school	11.46 ± 8.48	
High school	12.17 ± 7.92	0.961
Bachelor`s degree	11.70 ± 10.17	
Postgraduate degrees	11.27 ± 10.85	
Occupation		
Unemployed	10.31 ± 6.68	
Employed	14.26 ± 9.35	0.002
Retired	6.35 ± 4.32	
Marital status		
Married	12.75 ± 9.61	
Single	9.26 ± 7.26	0.298
Widowed and divorced	8 ± 1	
Housing		
Personal property	11.39 ± 8.21	0.172
Leased	10.72 ± 9.45	
Household income		
< 100 US dollars	14.56 ± 11.30	
100-200 US dollars	10.86 ± 8.57	0.535
200-400 US dollars	10.72 ± 6.05	
400 US dollars ≤	12 ± 9.53	
Psoriasis side effects		
Yes	14.1 ± 10.31	0.015
No	9.44 ± 6.93	
History of other skin diseases		
Yes	11.14 ± 8.39	0.905
No	12.09 ± 9.32	
Comorbidities		
Yes	13.07 ± 9.02	0.144
No	11.18 ± 9.30	
History of hospitalization due to psoriasis		
Yes	16.53 ± 11.63	0.111
No	11.35 ± 8.68	
Type of treatment		
Topical	8.97 ± 7.52	
Systemic	11.25 ± 11.41	< 0.001
Both	16.88 ± 9.44	
None of them	5.29 ± 3.77	

significant correlation between the total score of QoL and SoD (r = 0.338, *P* = < 0.001). In addition, there was a significant correlation between PLSI score and SoD (r = 0.378, *P* = < 0.001).

Table 4 shows the mean scores of patients' QoL based on PASI and PLSI mean scores.

No significant statistical relationship was found between the patients' QoL in terms of daily activity, interpersonal communication and treatment, and SoD (*P* = 0.061, 0.458, 0.148, respectively). In addition, we found an association between PDI mean score in terms of occupational conditions, leisure times and overall score, and SoD (*P* = 0.002, 0.019, 0.006, respectively). These scores were higher in individuals with moderate SoD than in those with low SoD.

All components of QoL, including daily activity, occupational conditions, interpersonal communication, leisure times, type of treatment and total score, were significantly and positively correlated with the PLSI score (r = 0.553, *P* < 0.001; r = 0.466, *P* < 0.001; r = 0.481, *P* < 0.001; r = 0.654, *P* < 0.001; r = 0.477, *P* < 0.001; r = 0.707, *P* < 0.001, respectively).

The mean score of all parts of QoL, including daily activity, occupational conditions, interpersonal communication, leisure times, type of treatment, total score and PASI score, were significantly higher in patients with high stress than in those with low stress (*P* < 0.001 for all).

Based on the results of linear regression with robust correction, the QoL score in patients who received both topical and systemic treatment was 3.75 times more than those who received topical treatment (*P* = 0.004, 95% CI 1.198, 6.305, B = 3.75). Stress is one of the determinants of low QoL in patients with psoriasis (*P* < 0.001, 95% CI 0.394, 0.654, B = 0.52).

DISCUSSION

In our study, there was no significant association between sex and QoL, similar to the reports by Zandi, *et al.* [2], Milcic, *et al.* [5] and Nabaei, *et al.* [3]. In addition, age was not significantly associated with QoL in our patients, being consistent with the study conducted by Zandi *et al.* study [2]. However, in the study conducted by Javidi *et al.* [6], the disability index was significantly higher in men aged 35-45 years, which could be due to the greater role of men in this middle age group in society and

Table 4. Patients' quality of life mean scores in terms of clinical disease severity and PLSI* mean score

Quality of life	Daily activity	Occupational factors	Interpersonal communication	Leisure	Treatment	Total score
Psoriasis severity						
Mild	4.83 ± 3.58	1.15 ± 2.05	0.87 ± 1.27	2.53 ± 2.54	0.81 ± 0.82	10.21 ± 8.25
Moderate	6.41 ± 3.60	3.12 ± 3.18	1.54 ± 2.04	4.58 ± 3.73	1.19 ± 1.10	11.44 ± 6.14
Severe	6.55 ± 2.18	1.22 ± 2.38	1.00 ± 1.00	2.11 ± 2.75	0.55 ± 0.88	11.44 ± 6.14
P-value	0.061	0.002	0.458	0.019	0.148	0.006
PLSI						
Low stress	3.39 ± 2.74	0.48 ± 1.17	0.39 ± 0.74	1.09 ± 1.54	0.42 ± 0.56	5.78 ± 5.26
High stress	6.07 ± 3.57	2.08 ± 2.75	1.03 ± 1.63	3.72 ± 3.12	1.06 ± 0.96	14.25 ± 9.30
P-value	<0.001	0.002	0.003	<0.001	0.001	<0.001

*Psoriasis Life Stress Inventory

economy and the more negative impact of the disease in this age group.

No significant relation was found between the levels of education and the QoL in our study, being consistent with the study conducted by Nabaei, *et al.* [3]. On the contrary, Milcic *et al.* showed that lower level of education decreased QoL (5).

Occupational status was significantly related to QoL in our patients. Workers have more stress due to their exposure to skin lesions, which may have more negative impacts on their QoL. Based on our knowledge, the relation between the PDI score and occupational status was not evaluated in prior studies.

The PDI score was higher than in married individuals than in single adults in our study, which could be due to familial and marital stress; however, there was no significant relationship between QoL and marital status. In the study conducted by Ansar *et al.* [7], married subjects had a higher QoL than single subjects. Furthermore, in the study conducted by Nebaei *et al.* [3], married patients had a better QoL. These differences in the results could be due to differences in sampling, location of the study and data collection tools.

In our study, the PDI score was higher in individuals living in their own homes, but there was no significant relationship between the status of housing and QoL. Another study evaluating this variable was not found.

There was no significant relationship between income status and QoL in our study, but Nabaei, *et al.* reported that psoriasis patients had a significantly lower income [3]. It should be noted that patients may report lower owing to their concern for data recording.

A lower number of our patients visited in the winter may be justified due to bad weather conditions in our province. Lack of significant relation between season and QoL could be explained by the method of sample collection and the number of subjects referred to the hospital in each season.

In our study, smoker patients had a lower QoL. In the study by Ashkevari *et al.*, there was a statistically significant difference in the amounts of smoking in between the psoriasis group and the control group [8]. Fortes *et al.* showed that the risk of severe psoriasis in people who consumed more than 20 cigarettes per day was two times more than those who consumed 10 cigarettes or less [9]. Psoriasis results from disturbances in the immune system. Nicotine may induce a range of intrinsic and adaptive immune responses, affecting the function of antigen-presenting cells. These cells increase the function of the immune system cells by releasing pro-inflammatory cytokines associated with the pathogenesis of psoriasis [8]; Therefore, the relation between QoL and smoking was predictable.

There was no significant relationship between drug abuse and QoL in our patients. According to the previous studies, alcohol consumption may be associated with the risk of progression or worsening of the disease [10]. Nevertheless, in our study, due to the low number of people who consumed alcohol because of religious issues, the relation between alcohol and QoL may not be well appraised; this can be true for the use of other erotic drugs. There was no similar study investigating the relation between alcohol, drug abuse, and QoL in psoriasis patients.

The duration of the disease was not significantly associated with QoL in our study, being consistent with the studies conducted by Zandi, *et al.* [2] and Milcic, *et al.* [5].

Psoriasis patients with disease complications had a lower QoL in our study, being in line with the results obtained by Firooz *et al.* [11] and Rosen, *et al.* [12]. However, nail involvement in our study was considered a complication of the disease and therefore it was not possible to assess the relation between nail involvement and QoL separately. Furthermore, in our study, nail involvement was determined just based on clinical examination without any laboratory investigation for fungal infections, which could be one of the limitations of our study. Moreover, joint involvement was considered based on patients` history and physical examination, but in other studies, arthropathy was confirmed by a rheumatologist.

There was no significant relation between other skin diseases and the QoL in our patients. We found no study describing the relation between the history of other skin diseases and QoL in psoriasis patients.

No significant relationship between the incidence of comorbidities and the QoL of patients was found, which may be owing to the rapid initiation of the treatment for comorbid diseases.

Although the QoL score was higher in patients with a history of hospitalization, it did not show a significant relation, which may be due to the low number of patients with a history of admission.

In our study, there was a significant relationship between QoL and type of treatment; therefore, those patients received both topical and systemic treatment compared to patients who used only topical therapy. Additionally, patients who did not receive any treatment had lower QoL. Therefore, it could be concluded that SoD is higher in those who used both types of treatment. Furthermore, lower QoL for these patients could be due to frequent referring for more treatment. In the study conducted by Fortune *et al.* [13], similar to our study, QoL was lower in those who used both systemic and topical treatments, compared to patients who used only systemic therapy or topical treatment, but the difference was not significant.

The mean PDI score in patients with moderate psoriasis was significantly different from that in patients with mild psoriasis. However, this score was lower in patients with severe psoriasis than in those with moderate psoriasis, which could be due to the lower number of people with severe psoriasis. There was also a significant correlation between the total score of the PDI and the PASI score. In other words, patients with a more severe disease had lower QoL.

In general, patients with higher SoD had more problems in hairdressing, bathing or some clothing. In terms of occupational status, higher SoD could result in absence from work or avoidance of some activities in the workplace. In another study on the occupational function of patients with severe psoriasis, the occupational inefficiency was significantly higher in the course of the disease [14].

In our study, patients with a higher SoD had more problems in exercising and swimming.

The lack of relationship between interpersonal communication and SoD in our patients may be explained by the fact that the disease has been accepted by their spouses, friends, and relatives; therefore, they have been able to become compatible with their disease. The lack of effect on sexual intercourse in most patients could be explained by the culture of society and patients` embarrassment.

The treatment was not significantly related to SoD; it might be concluded that patients have been able to adapt themselves over time.

In the study conducted by Milcic *et al.* [5], the components of daily activity, occupational condition and leisure time were significantly associated with QoL, being consistent with our results. In the study by Kumar *et al.* [15], there was a significant correlation between PASI and PDI overall score, but none of the components was separately investigated. In the study by Nabaei *et al.* [3], the PDI score was significantly higher in severe psoriasis than in mild or moderate psoriasis.

In our study, there was a significant relationship between all aspects of QoL and its total score, and stress. Patients with higher stress had lower QoL. There was also a significant relationship between SoD and stress. Milcic *et al.* reported a significant correlation between all aspects of QoL and stress, being similar to our result. Moreover, SoD was higher in the high-stress group than in the low-stress group, and no significant correlation was found between PASI and PLSI [5], being inconsistent with our study. Fortune *et al.* reported that all components of QoL were at a significantly higher level in the high-stress group than in the low-stress group [13]; this was inconsistent with our results indicating no significant difference in QoL between high-stress and low-stress groups.

CONCLUSION

The results of our study indicated a significant association between SoD and QoL. Disease-related stress was another reason for the low QoL of the patients, and psoriasis had a devastating effect on different aspects of life. To reduce psoriasis patients' stress, we suggest that they should be under the supervision of a psychologist and monitored by psychiatrists; however, their skin lesions should be managed.

Acknowledgments

Conflict of Interest: None declared.

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