ORIGINAL RESEARCH

Correlation of Psoriasis Disability Index and Psoriasis Area and Severity Index: A Study from Afghanistan

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Background: Psoriasis is a common skin disease that affects physical, psychological, and social well-being of patients. Several studies have assessed health-related quality of life of patients with psoriasis in different populations with large variations.

Objective: To investigate, for the first time, the impact of psoriasis on quality of life of Afghan patients with psoriasis.

Methods: This is a prospective observational study conducted at the dermatology department of Maiwand Teaching hospital in Kabul City during April 2018 to May 2019. Patients with plaque psoriasis with age ≥ 16 years were included in the study. Psoriasis Disability Index was used for the assessment of health-related quality of life. Psoriasis Area and Severity Index was used to define the severity of disease. Appropriate tests were performed using Statistical Package for Social Science.

Results: A total of 174 patients with psoriasis were included in the study, 89 of them were male (51.1%) and 85 of them were female (48.9%). The mean age of the patients was 27.7 years with 13.2 years SD, and the average duration of the disease was 3.2 years with 4.7 years SD. The mean of PASI score was 13.3 with 7.8 SD, while the mean of total PDI was 9.6 with 3.7 SD; there was a strong correlation between total PDI and PASI score (r=0.751, p<0.001). The mean of total PDI was higher among moderate-to-severe psoriasis, female patients, younger age, and those who were single.

Conclusion: Our study highlighted that psoriasis disability index was highly correlated with psoriasis area and severity index. Furthermore, the quality of life was more affected among female patients, patients younger than 40 years, and those patients who were single.

Keywords: psoriasis, correlation, quality of life, PASI, PDI, Kabul

Introduction

Psoriasis is an immune-mediated, erythrosquamous dermatosis of varying severity affecting more than 125 million people worldwide.[1] Till date, there is no cure for psoriasis although there is extensive ongoing research in this area. Psoriasis does not affect survival, but the chronic relapsing nature of psoriasis produces a significant negative impact on the quality of life (QOL) of patients. Active psoriasis has a greater influence on health-related QOL than stable psoriasis.[2] The visually noticeable skin lesions may lower the self-esteem of patients and make them feel stigmatized. Symptoms like pruritus and pain further add up to the psychosocial difficulties. Psoriasis patients are more susceptible to develop anxiety, depression, and suicidal ideation.[3] This, in turn, can lead to poor compliance to treatment and worsening of disease. Thus, besides physical distress, there is a constant emotional and psychological burden on the patients and their families.[4] It is therefore important to consider the QOL of patients as part of severity assessment when deciding the optimal treatment so as to improve the clinical symptoms and psychological burden as well.

The Psoriasis Area and Severity Index (PASI) is a well-established scoring system used to assess the clinical severity and monitor treatment response in plaque-type psoriasis. It was invented by a group of physicians in 1978 who sought

a more objective approach to monitor acitretin treatment outcome.[5] PASI takes into account the severity of individual lesions and the percentage of affected body surface area to achieve a score between 0 and 72.

Several inventories have been devised to assess health-related QOL. The Psoriasis Disability Index (PDI) is a validated disease-specific tool for use in psoriasis patients. It was devised by Finlay and Kelly in 1987 and comprises 15 questions that assess the QOL of adult psoriasis patients in the last 4 weeks. A systematic review has demonstrated that the PDI achieved good construct validity, content validity, internal consistency, reproducibility, acceptability, and sensitivity to change (responsiveness).[6] The PDI has been used in several studies and has provided consistent results. In a study of 50 psoriasis patients by Rakhesh et al from South India, significant correlation between total PDI and PASI scores was found.[7] Another study of 125 chronic plaque-type psoriasis patients by Aghaei et al in Iran demonstrated a strong correlation between mean PASI and mean PDI scores; increase in the score of PASI corresponded to higher PDI score, signifying a larger effect on QOL.[8]

Several studies have assessed the quality of life of psoriasis patients. To our knowledge, there are no such studies in Afghanistan that have been published. This study aimed to determine the psoriasis disability index in patients with psoriasis in Afghanistan, and assessed its correlation with psoriasis area and severity index.

Materials and Methods

This was a prospective observational study conducted at the dermatology department of Maiwand Teaching Hospital of Kabul University of Medical Sciences in Kabul, Afghanistan. This study was conducted in accordance with the declaration of Helsinki and it was approved by the institutional review board of Kabul University of medical sciences. A total of 174 patients aged 16 years or older and suffering from plaque-type psoriasis were recruited consecutively from April 2018 to May 2019. Patients with other type of psoriasis and aged less than 16 years were excluded from the study. Written consent was taken from all patients. Demographic data, psoriasis severity, and QOL were gathered by a dermatologist during the patients' visit. The following demographic data were collected: age, gender, education level, marital status, physical exercise, and smoking habits. The PASI was calculated by analyzing the intensity (score 0 to 4) of erythema, induration (thickness) and desquamation (scaling) of a representative plaque in each of the four areas of the body (head, trunk, upper, and lower limbs), and by calculating the percentage body surface area affected.[9] The patients were classified as moderate-to-severe psoriasis when the PASI was equal to or more than 10, and PASI less than 10 was considered as mild psoriasis. The Persian translation of PDI was used to evaluate the QOL. The questionnaire consists of 15 questions that assess 5 categories: 5 questions for daily activities, 3 questions for school or work, 2 questions for personal relationships, and 5 questions for leisure. Each question can be scored from 0 to 3 (0 = not at all, 1 = a little. 2 = a lot, 3 = very much). The final score can range from 0 to 45.[10]

The data analysis was performed by using Statistical Package for Social Science version 22.0. Descriptive statistics were presented as percentage, mean, and standard deviation. To test the difference between variables of interest, Chi square test or Fisher exact test were used for categorical data. Independent *t* test or Mann Whitney *U*-test and one-way ANOVA were used for continuous variables when appropriate. The Pearson correlation coefficient was calculated to assess the correlation between PDI and PASI scores. A p-value less than 0.05 was considered as statistically significant.

Result

The data were gathered from 174 patients with plaque psoriasis. Almost half of the patients were male (51.1% male; 48.9% female). The average age of the patients was 27.7 years with 13.2 years SD. One-third of the patients (31.6%) graduated from high school or university, while half of the patients (51.1%) were illiterate. Nearly half of the patients (46.6%) were married; 59.3% had 4 children or more and 40.7% of them had 3 or fewer children. More than half of the patients (55.2%) were not doing any physical exercise, while the remaining patients (44.8%) were doing physical exercise occasionally or regularly. Only 5.2% of the patients were ex or current smokers. About one-sixth of the patients (17.2%) had at least one smoker in their families. The average sleep duration of patients was 8.3 hours with 1.4 hours SD (Table 1). The average PASI score was 13.3 with 7.8 SD, and the average duration of disease was 3.2 years with 4.7 years SD.

Table 1 Socio-Demographic Characteristics of Patients with Psoriasis by Severity of Psoriasis

	Mild Psoriasis		Moderate-to-Severe Psoriasis		Overall		p value
	n	%	n	%	n	%*	
Sex							0.015
Male	41	46.1	48	53.9	89	51.1	
Female	24	28.2	61	71.8	85	48.9	
Age, years (mean ± SD)	28.7 ± 13.0		27.1 ± 13.3		27.7 ± 13.2		0.15
<40 years	48	35.6	87	64.4	135	77.6	
≥40 years	14	43.6	22	56.4	39	22.4	
Education level							0.063
Illiterate	40	44.9	49	55.1	89	51.1	
Primary school	11	36.7	19	63.3	30	17.2	
High school or above	14	25.5	41	74.5	55	31.6	
Marital status							0.19
Single	31	33.3	62	67.7	93	53.4	
Married	34	42.0	47	58.0	81	46.6	
Number of children, (n=81)	4.2 ± 2.2		4.0 ± 2.4		4.1 ± 2.3		0.69
≤3	13	39.4	20	60.6	33	40.7	
≥4	21	43.8	27	56.2	48	59.3	
Physical exercise*							0.10
No	41	63.1	55	50.5	96	55.2	
Occasionally/Regularly	24	36.9	54	49.5	78	44.8	
Smoking habits*							0.095
No	64	98.5	101	92.7	165	94.8	
Ex/current smoker	1	1.5	8	7.3	9	5.2	
Smoking habits in the family*							0.45
No	52	80.0	92	84.4	144	82.8	
Yes	13	20.0	17	15.6	30	17.2	
Sleep duration, hours*	8.5 ± 1.6		8.1 ± 1.3		8.3 ± 1.4		0.13
≤6	9	13.8	16	14.7	25	14.4	
7–8	25	38.5	53	48.6	78	44.8	
≤9	31	47.7	40	36.7	71	40.8	
Total	65	37.4	109	62.6	174	100.0	

Note: * Column percentage.

In total, 62.6% of patients had moderate-to-severe psoriasis and 37.4% of them had mild psoriasis. Moderate-to-severe psoriasis was more prevalent among female patients compared to male patients (71.8% vs 53.9%, p=0.015), and also it was more common among patients younger than 40 years compared to 40 years or above, but the difference was not statistically significant (64.4% vs 56.4%, p=0.15). There were no statistically significant differences between other socio-demographic factors by severity of psoriasis (Table 1).

The average of total PDI was 9.6 with 3.7 SD, whereas the average of PDI components were 4.5 ± 2.1 for daily activities, 2.3 ± 1.1 for work or school, 0.3 ± 0.5 for personal relationships, 1.3 ± 1.2 for leisure, and 1.0 ± 0.7 for treatment (Figure 1). The average of total PDI was higher among female patients compare to male patients (9.0 vs 10.2, p=0.032), among patients less than 40 years compared to 40 years or above (9.9 vs 8.4, p=0.024), among those patients who were single compared to married (10.4 vs 8.7, p<0.005), and among those who were ex or current smokers relative to non-smokers (15.0 vs 9.3, p=0.001). The total PDI also increased with increasing level of education: high school or above, primary school, and illiterate (10.7, 9.7, and 8.9, respectively, p<0.005). There was no difference in the mean of total PDI by number of children (Table 2). The mean of total PDI was higher among moderate-to-severe psoriasis compared to mild psoriasis (11.0 vs 7.3, p<0.001).

Table 3 shows the correlation between PDI and PASI scores. We found that the total PDI had a positive high correlation with PASI score (r=0.751, p<0.001) (Figure 2). Moreover, the daily activities and work or school components of PDI were moderately correlated with PASI score (r=0.577, p<0.001; r=0.556, p<0.001 respectively). However, leisure had a low correlation with PASI score (r=0.471, p<0.001). While personal relationship and treatment had weak correlation with PASI score (r=0.267, p<0.001; r=0.233, p<0.005; respectively).

Discussion

The present study was designed to reveal the effect of psoriasis on the quality of life of Afghan patients with psoriasis. Psoriasis affects the patient's physical, psychological, and social well-being greatly, and the level of distress depends on the severity and location of the lesions. Moreover, psoriasis symptoms, such as itch or pain can interfere with routine functions.
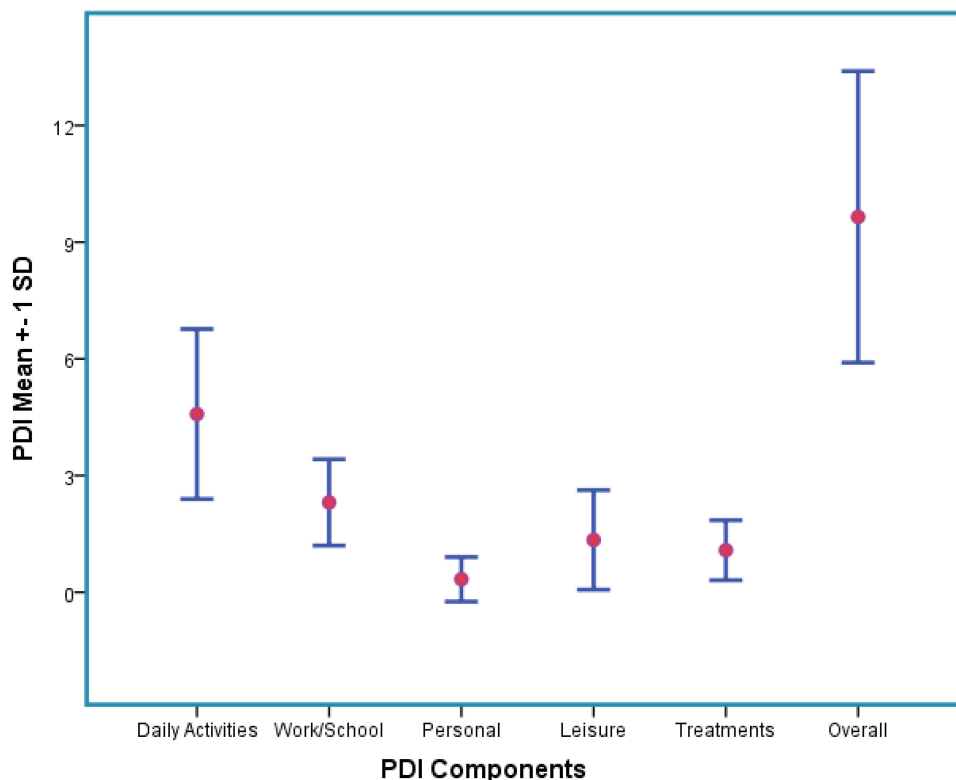

Figure 1 Descriptive statistics of the Psoriasis Disability Index components. Work/school; work or school activities, personal; personal relationships.

Table 2 Distribution of Overall Psoriasis Disability Index by Socio-Demographic Characteristics of the Patients

	Overall PDI		p value
	Mean	**SD**	
Sex			0.032
Male	9.0	3.4	
Female	10.2	3.9	
Age			0.024
<40 years	9.9	3.8	
≥40 years	8.4	3.2	
Marital status			<0.005
Single	10.4	3.9	
Married	8.7	3.3	
Number of children			0.14
≤3	9.0	2.9	
≥4	8.5	3.5	
Education level			<0.005
Illiterate	8.9	3.6	
Primary school	9.7	4.2	
High school or above	10.7	3.3	
Smoking habits			0.001
No	9.3	3.4	
Ex/current smoker	15.0	5.0	
Severity of disease			<0.001
Mild	7.3	1.9	
Moderate to severe	11.0	3.8	

Table 3 Correlation of Psoriasis Disability Index with PASI Scores

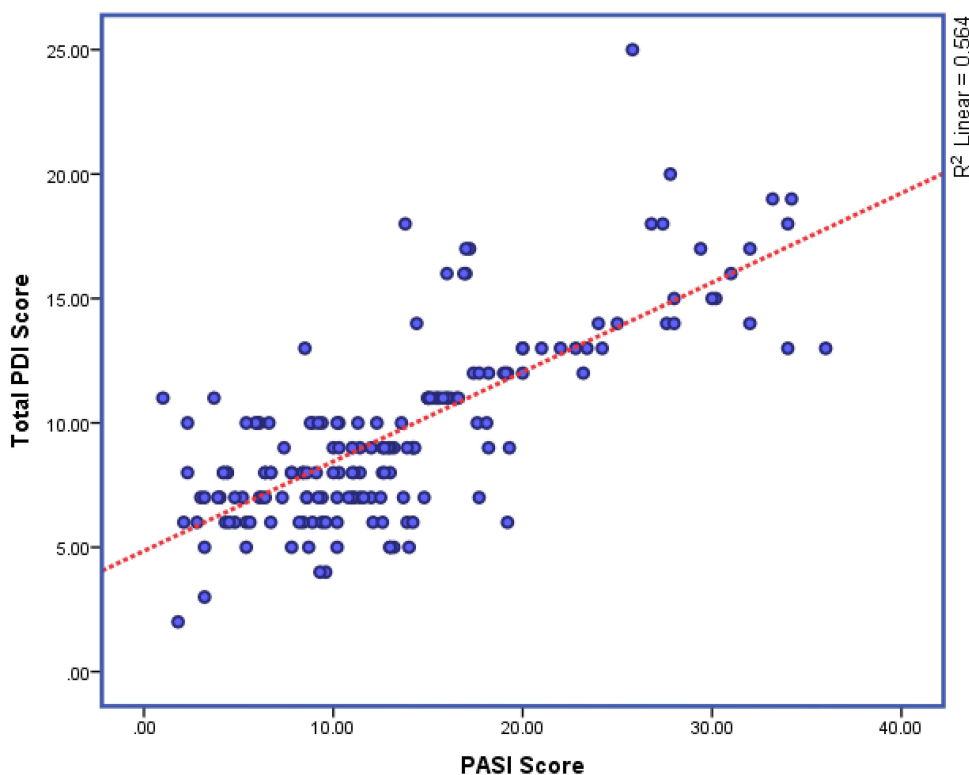| PDI Categories	PASI Score	p value
Daily activities	0.577	<0.001
Work	0.556	<0.001
Personal relationship	0.267	<0.001
Leisure	0.471	<0.001
Treatment	0.233	<0.005
Total PDI	0.751	<0.001

Figure 2 Scatter plot of PASI score with the total Psoriasis Disability Index score.

For example, palmoplantar psoriasis may cause difficulty in performing daily manual work. Having fissures and cracks on the soles may cause pain during walking. Psoriatic lesions on exposed areas of the body affect the choice of clothing, and frequent changing of clothes is required due to topical application of drugs. Psoriasis is also associated with stigmatization and psychological distress; about half of psoriasis patients feel unattractive and anxious because of the disease.[11]

Several studies reported that the quality of life of patients with psoriasis was directly related to the severity of disease. A study in Spain by Dauden et al showed a direct linear relationship between severity of psoriasis and impaired quality of life ($p<0.001$).[12] Another study in Spain by Sanchez-Carazo et al showed a moderate correlation between severity of psoriasis and impaired quality of life ($r=0.628$, $p<0.05$).[13] Kyriakou et al conducted a study on 99 patients with psoriasis in Greece and found a strong correlation between severity of psoriasis and quality of life ($r=0.892$, $p<0.001$).[14] A study conducted by Moradi et al in Iran found a moderate correlation between severity of psoriasis and impaired quality of life.[15] A study conducted in Pakistan by Khawaja et al found a low correlation between severity of psoriasis and impaired quality of life ($r=0.345$, $p<0.01$).[16] A systematic review by Mattei et al found a strong correlation between the mean dermatology life quality index (DLQI) and PASI score ($r=0.898$, $p<0.001$).[11] These studies used the DLQI questionnaire to assess the quality of life, which is similar to PDI but the number of questions is 10, and there is a strong correlation between DLQI and PDI.[8,10]

Similar findings were also reported from studies that used PDI; Aghaei et al found a strong correlation between mean of PDI and PASI scores among Iranian patients with psoriasis ($p=0.005$);[8] A study conducted by Rakhesh et al in India showed a moderate correlation between total PDI and PASI scores ($r=0.598$, $p<0.001$);[7] Another study from India by Pakran et al also showed that the total PDI moderately correlated with PASI score ($r=0.62$, $p<0.001$).[17] However, Torres et al revealed that the total PDI weakly correlated with PASI score in Brazilian patients with psoriasis ($r=0.416$, $p<0.05$).[10] Milcic et al also showed a weak correlation between total PDI and PASI scores in Serbian patients with psoriasis ($r=0.288$, $p<0.001$).[18] In the current study we found a strong correlation between total PDI and PASI scores in Afghan patients with psoriasis. These discrepancies might be due to cultural and behavioral differences. We also found

a significant correlation between each component of PDI and PASI scores, which was consistent with the study by Rakesh et al except for treatment[7] where we also found a weak correlation (Table 3).

In our study, the mean total PDI was 9.6 with 3.7 SD which is in agreement with studies conducted by Pakran et al (mean=9.38)[17] and Dauden et al (9.24 ± 8.76).[12] However, our finding was much lower than studies conducted by Aghaei et al (28.0 ± 10.6), Milcic et al (19.3 ± 9.7), and Rakhesh et al (mean=17.0). The differences might be due to clothing style, social and behavioral variations.

We also observed that the mean of total PDI was higher among moderate-to-severe psoriasis compared to mild psoriasis (11.0 vs 7.3, p<0.001), which was consistent with findings of Milcic et al,[18] Pakran et al,[17] and Rakhesh et al.[7] Furthermore, we found that the mean of total PDI was higher among female patients with psoriasis, patients younger than 40 years, and those who were single (Table 2). These findings were not evaluated in previous studies except by Pakran et al who found patients with early onset of disease had more impaired quality of life compared to late onset, but there were no differences according to gender.[17] We thought that women and young generation pay more attention to their physical appearance and think more about their future and career and therefore, might be more affected than other psoriasis patients.

In this study, questionnaire was administered by dermatologists and this was the strength of this study. To our knowledge, this was the first study on the quality of life of patients with psoriasis in Afghanistan.

Use of a single instrument (PDI) to assess health-related quality of life could be counted as a limitation of the study.

This study concluded that total PDI had a strong correlation with PASI score in Afghan patients with psoriasis. In addition, each component of PDI had significant correlation with PASI score with different strength. In general, the mean of total PDI was low in Afghan patients with psoriasis. The mean of total PDI was higher among female patients, younger age, and those who were single. Therefore, we recommend that Afghan dermatologists should pay more attention to the quality of life of patients with greater PASI score, female, and younger age.

IRB Approval Status

This study was conducted in accordance with the Declaration of Helsinki and was approved by the institutional review board of Kabul University of medical sciences. IRB; approval # 353/14-01-2018.

Disclosure

The authors report no conflicts of interest in this work.

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