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Correlation between Psoriasis Area Severity Index and Dermatology Life Quality Index in Patients of Psoriasis: A Cross-Sectional Study

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Abstract

Introduction: Psoriasis is a chronic skin disease that affects both the physical and social aspects of a patient's life. The disease's severity, as measured by the Psoriasis Area Severity Index (PASI), can significantly impact the patient's quality of life, which can be calculated using the Dermatology Life Quality Index (DLQI).

Objectives: To assess the correlation between PASI and DLQI in patients with clinically proven psoriasis, describe the impact of psoriasis on quality of life among study participants, and explore the relationship.

Materials and Methods: A cross-sectional study was conducted over three months, including 45 psoriasis patients at the Dermatology Department in a tertiary care hospital. Demographic data, disease severity, and quality of life were assessed using the PASI and DLQI, respectively. Data was analysed using SPSS, and Spearman's correlation was employed to determine the relationship between PASI and DLQI.

Results: The mean PASI score was 8.4 (±3.6), while the mean DLQI score was 11.2 (±4.7). There was a significant positive correlation between PASI and DLQI ($r=0.639$, $p<0.0001$) in males, but the correlation in females was weaker and not statistically significant. Younger patients (under 30 years) and those with longer disease duration also showed a substantial correlation between PASI and DLQI.

Conclusion: A strong correlation between PASI and DLQI was observed, particularly in males and patients with more extensive disease. The DLQI may not fully capture the disease burden in female patients and older individuals, suggesting the need for more culturally and gender-relevant tools for assessing the quality of life in psoriasis patients.

Keywords: Dermatology Life Quality Index; Psoriasis; Psoriasis Area Severity Index; Quality of Life

Introduction

Psoriasis is a chronic skin disorder affecting the professional and social aspects of a person's life. The extent of disease varies from mild itch to severely incapacitating illness.[1] Day-to-day activities are affected in direct proportion to the severity of itch, site, and extent of lesions. Disease flare-ups often cause absence from work and reduced work efficiency, resulting in an increased financial burden on the family.[2] Personal life is much more affected as psoriasis can lead to anxiety, depression, and low self-esteem along with marital problems and, in severe cases, may even generate suicidal thoughts.[3] As the disease is chronic, the quality of life decreases with time.[4]

Managing psoriasis involves a multifaceted approach where factors such as the extent and severity of the disease, site of involvement, controlling complications of disease, and treatment must be kept in mind.[5]

Recently, quality of life has emerged as a critical outcome in clinical studies, and there has been a growing interest in evaluating quality of life among patients with skin diseases based on the Dermatology Life Quality Index (DLQI).[6] Psoriasis can influence the

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quality of life by restricting personal daily activities, impairing social and psychological well-being, and even affecting family members with an increased risk of depression than other cutaneous diseases and even lead to suicidal thoughts, especially in patients with moderate to severe psoriasis.[3,7]

However, dermatologists pay less attention to the DLQI dimension during disease evaluation. Thus, we should emphasize the association between psoriasis severity, impaired physical and social functioning, and psychological distress.

Materials and Methods

This cross-sectional study was conducted over three months at the Dermatology Department of tertiary care hospital in Mandya, following approval from the Institutional Ethics Committee. We included 45 psoriasis patients aged 18 and above who had been clinically diagnosed for at least six months. Patients with coexisting inflammatory skin diseases or other debilitating illnesses were excluded.

The demographic data of the patients were recorded on a specially designed patient pro forma, which included their name, gender, age, and socioeconomic status, along with other details of treatment. A complete cutaneous examination of these skin lesions, including their morphology, distribution, and sites involved, was carried out according to the pre-structured pro forma (Figure 1 (a) and Figure 1 (b)). The researcher recorded the patient's DLQI score and extent of disease from the patients using a standard questionnaire in the patients' local language. This questionnaire consisted of 10 questions in which patients were asked about the clinical severity of symptoms such as itching, pain, and soreness over the previous week, as well as difficulties in household functioning and social interactions such as sports, workplace, shopping, and leisure activities. The questionnaire also included queries about social problems, such as personal relationships with relatives and friends, with a maximum score of 3 for each question, giving a maximum score of 30. Each domain had four alternatives: 0 (not at all), 1 (a little), 2 (a lot), and 3 (very much), and the total score ranged up to 30. The interpretation of the score and its impact on quality of life (QOL) was made as follows: 0-1 = nil (Grade 1), 2-5 = mild (Grade 2), 6-10 = moderate (Grade 3), 11-15 = considerable (Grade 4), 16-20 = severe (Grade 5), and 21-30 = very severe (Grade 6). The same researcher clinically assessed all patients to establish disease severity using the Psoriasis Area Severity Index (PASI).

The data were entered into MS Excel software, and the Statistical Package for Social Sciences (SPSS) software was used to analyse the data. Mean and standard deviation were calculated for numerical variables such as age. Frequencies and percentages were presented for categorical variables such as gender, extent of disease, and DLQI score categories. Spearman's correlation was used to assess the strength of the association.

Results

In this study, 45 patients were included, with a mean age of 42.6 years (±12.8). Among these patients, 30

Demographic Characteristic	Category	Number of Patients	Percentage (%)
Gender	Male	30	66.7
	Female	15	33.3
Age	< 30	3	6.7
	30 – 50	16	35.6
	> 50	26	57.8
Duration of Lesions	< 1 year	6	13.3
	1 – 10 years	25	55.6
	> 10 years	14	31.1
Comorbidities	Present	35	77.8
	Absent	10	22.2
Treatment Status	On treatment	35	77.8
	Not on treatment	10	22.2
History of Treatment	Topical	5	11.1
	Systemic	20	55.6
	Both	10	33.3
Sites Involved	> 3	40	88.9
	< 3	5	11.1
Factors	Social life	13	28.9
	Professional life	22	48.9
	Both	10	22.2

Table1: Demographics and clinical characteristics of study participants

(66.7%) were male, and 15 (33.3%) were female. Most participants (55.6%) reported having lesions for a duration between 1 to 10 years. This was followed by 31.1% of subjects who had lesions for more than 10 years and 13.3% who had lesions for less than 1 year. A significant proportion of the study population (77.8%) was receiving treatment for psoriasis at the time of the study, while 22.2% of patients were not on any treatment regimen. Among those receiving treatment, 55.6% were on systemic therapies, while 11.1% received topical treatments. The data also revealed that most patients (88.9%) had lesions involving more than three anatomical sites. The study analysed the distribution of patients across different occupational and social strata, revealing that 48.9% of the participants had a negative impact on their professional life and 28.9% on their social life, indicating the widespread impact of psoriasis on various segments of life (Table 1).

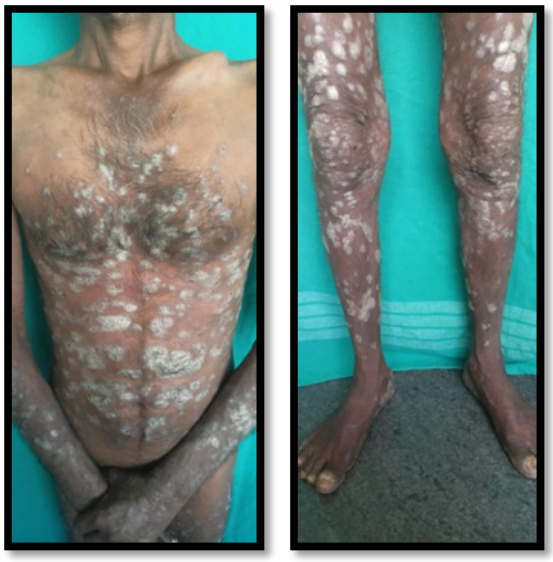

Figure 1 (a) & (b): Well demarcated scaly plaques with silvery white scales seen over trunk and extensor aspects of legs

PASI and DLQI Correlation

The mean Psoriasis Area and Severity Index (PASI) score of the study group was 8.4 (±3.6), ranging from 2.5 to 18.5. Similarly, the mean Dermatology Life Quality Index (DLQI) score was 11.2 (±4.7), signifying a substantial impact of psoriasis on patients' quality of life. Figures 2 and 3 show the distribution of both PASI and DLQI scores using Box and Whisker plots. Extreme outliers were assessed, and Spearman rank correlation was computed to find the strength of the correlation between PASI and DLQI scores. The correlation between PASI scores and DLQI scores was assessed, yielding an R-value of 0.673, with a p-value

Correlation	N	Minimum	Maximum	Mean	Std. Deviation
PASI	45	5	22	12.00	4.369
DLQI	45	2	5	2.98	1.055

R value = 0.673 (Strong correlation). p = **<0.0001**

Table 2: Correlation of PASI score and DLQI score:

Variables	Correlation coefficient	Correlation strength	p-value
Stratification by sex			
Male	0.639	Strong	<0.0001
Female	0.242	Weak	0.109
Stratification by age			
< 30	0.300	Weak	0.045
30 – 50	0.290	Weak	0.053
> 50	0.142	Very weak	0.352
Stratification by disease duration			
<1 year	0.507	Moderate	0.305
1- 10 years	0.834	Very strong	<0.0001
> 10 years	0.895	Very strong	<0.0001
Stratification by total sites involved			
>3	0.599	Moderate	<0.0001
<3		0.275	0.067

Table 3: Post-stratification correlation coefficients

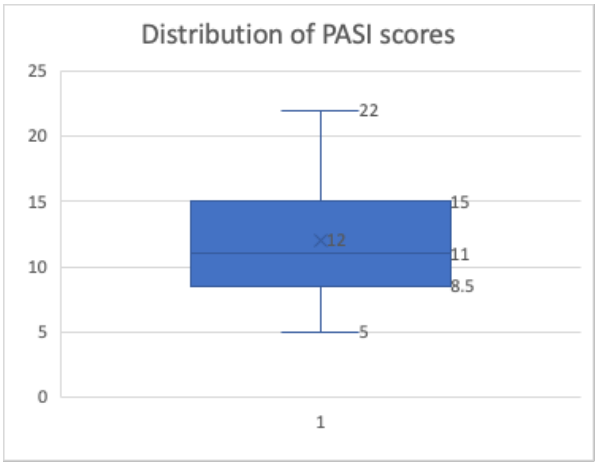

Figure 2: Box and whisker plot showing distribution of PASI scores

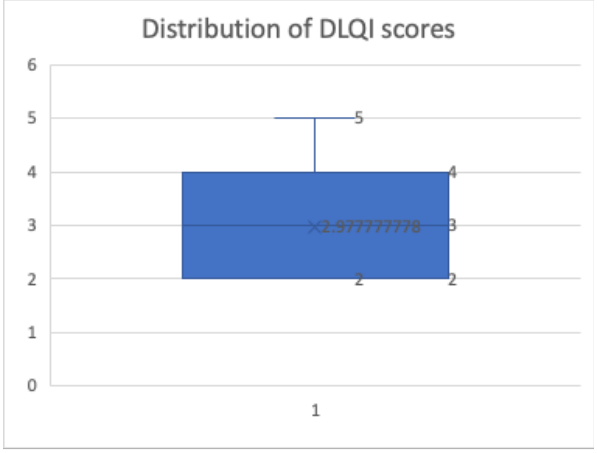

Figure 3: Box and whisker plot showing distribution DLQI scores

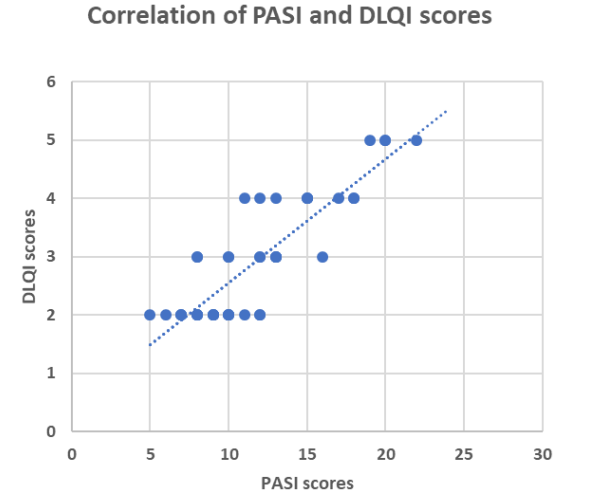

Figure 4: Scatter plot showing correlation of PASI and DLQI scores

of <0.0001, indicating a statistically significant strong positive correlation between disease severity and its impact on quality of life (Table 2) (Figure 4).

When cases were stratified according to sex, males showed a significant positive correlation with strong strength of association (r= 0.639, p<0.0001), whereas females also showed a positive correlation however correlation; strength was weak and not significant (r= 0.242, p value = 0.109). With regard to age stratification, cases with less than 30 years showed a significant weak positive correlation (r= 0.300, p value = 0.045), while other age groups did not show a significant correlation. When stratified by disease duration, cases with 1 to 10 and more than 10 years of the lesion showed a significant positive correlation (r= 0.834, p value = <0.0001 & r = 0.895, p value = <0.0001 respectively). When stratified by total sites involved, cases with more than three sites involved showed a significant positive correlation (r = 0.599, p value = <0.0001).

Discussion

This cross-sectional study was conducted among 45 psoriatic patients, with the primary objective of determining the correlation between PASI and DLQI scores.

Our present study shows a strong positive correlation between PASI and DLQI scores. Similar to our findings, in a study by Simi SM et al., the mean PASI and DLQI scores showed a strong positive correlation.[8] In a study conducted by Moradi et al., involving a cohort of 62 individuals diagnosed with psoriasis possessing a mean age of 40.4 years, the median scores for the Dermatology Life Quality Index (DLQI) and Psoriasis Area Severity Index (PASI) were recorded at 8 and 11.75, respectively, whereas moderate positive correlation was observed between DLQI and PASI.[9] In another study done by Mattei PL et al., a predictable correlation was identified between mean PASI and DLQI scores in patients suffering from chronic moderate-to-severe plaque psoriasis who were receiving treatment with biological agents.[10] In contrast, a study by Tariq Z et al., found a significant but weak correlation (r=0.266, p<0.05) between PASI and DLQI scores.[11]

In our present study, the majority of the cases belonged to males (66.7%). When stratified by gender, our study found a significant correlation only concerning males. The reason may be because of the structure of the DLQI questionnaire, which does not contain relevant questions related to females who were committed to working inside the home. Another study showed similar results, where their subgroup analysis found a significant positive correlation between PASI and DLQI scores in males but not in females. Therefore, emphasis must be placed on exploring the challenges linked to culinary practices, laundering, diverse domestic obligations, and caretaking of other children and other family members.

In our present study, with respect to subgroup analysis related to age category, cases aged less than 30 years showed a significant positive correlation, while other age groups showed a non-significant weak correlation between PASI and DLQI scores. Similar to our study, another study observed a weak correlation between age and the Dermatology Life Quality Index (DLQI). The non-significant positive correlation of weaker strength observed among older age groups may be due to advanced age, which was found to be marginally correlated with reduced levels of physical functioning and disability while concurrently being associated with slightly elevated levels of psychological functioning and overall quality of life.

Majority 88.9% of the cases in our current study had lesions involving more than three sites. Numerous studies indicated that exacerbations in emotionally sensitive anatomical regions, including the head, scalp, hands, nails, and/or genitalia, may detrimentally affect the quality of life.

A study by Tariq Z et al., revealed in their multivariable analysis that PASI is a reliable, independent predictor of psoriasis patients' quality of life. Their results also showed that any intervention that lessens the clinical severity of psoriasis would enhance the patient's quality of life. Furthermore, psoriasis is a chronic illness that has lasted for years, but DLQI provides information about the past week but does not provide a detailed analysis. Thus, we require quality of life evaluation instruments made especially for psoriasis. Furthermore, a limited sample size that reduces the statistical capability may be the reason for the inability to find a meaningful association in a number of the stratified subgroups. Subgroup analysis might be possible with larger sample sizes.

Conclusion

The only reliable indicator of psoriasis patients' dermatological quality of life is still the Psoriasis Area Severity Index. The correlation between PASI and DLQI was strong in our study; however, effective validation could be made possible only with larger sample sizes. The impact of psoriasis on the quality of life using the DLQI index showed some loopholes and could not be applied to routine clinical practice. Dermatologists should address the psychological and physical aspects of the disease equally since this could improve the efficacy of treatment.

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