

Correlation Between Changes in Psoriasis Severity Score and Quality of Life Before and After Treatment in Psoriasis Vulgaris Patients

Tessa Thendria¹, Afif Nurul Hidayati², Diah Mira Indramaya³, Dwi Murtiastutik⁴, Rahmadewi⁵, Budi Utomo⁶, Menul Ayu Umborowati⁷, Cita Rosita Sigit Prakoeswa⁸

Abstract

Background: Psoriasis not only causes physical comorbidities but also leads to psychological problems in patients. The severity of the disease is believed to be related to the patient's quality of life. However, research on the relationship between PASI and DLQI often shows inconsistent results. Evaluation of changes in PASI and DLQI scores is expected to provide an overview of the relationship between changes in disease severity and improvements in the patient's quality of life after therapy.

Objective: To evaluate the relationship between changes in PASI and DLQI score in patients with psoriasis vulgaris at Department of Dermatology and Venereology, Dr. Soetomo General Hospital, Surabaya, Indonesia.

Methods: This was a retrospective study with a cross-sectional approach. This research included a total of 50 newly diagnosed psoriasis vulgaris patients who met the inclusion criteria and received treatment from January 2021 to July 2023.

Results: A significant correlation was found between PASI and DLQI scores prior to treatment ($p=0.001$; $r=0.483$). A marked improvement was observed in both PASI and DLQI scores after treatment ($p=0.001$; $p=0.001$ respectively). However, no significant correlation was observed between PASI and DLQI scores after treatment ($p=0.209$), nor was there a significant correlation between changes in disease severity (Δ PASI) and QoL (Δ DLQI) following therapy ($p=0.120$).

Conclusion: Improvements in disease severity for psoriasis vulgaris do not consistently translate into better quality of life for patients. Therefore, regular QoL evaluations and psychological support are essential for all patients, regardless of the degree of severity and the changes of PASI score.

Keywords: Psoriasis vulgaris, dermatology life quality index, psoriasis severity index.

How to Cite this: Thendria T, Hidayati AN, Indramaya DM, Murtiastutik D, Rahmadewi, Utomo B, et al. Correlation Between Changes in Psoriasis Severity Score and Quality of Life Before and After Treatment in Psoriasis Vulgaris Patients. *J Pak Assoc Dermatol.* 2025;35(3):183-188.

Received: 16-07-2024

1st Revision: 22-04-2025

2nd Revision: 17-05-2025

Accepted: 25-07-2025

Authors Affiliation:

^{1-5,7,8}Departement of Dermatology and Venereology, Faculty of Medicine, Universitas Airlangga/Dr. Soetomo General Academic Hospital, Surabaya, Indonesia; ⁶Departement of Public Health and Preventive Medicine, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

Corresponding Author: Afif Nurul Hidayati, Department of Dermatology and Venereology, Faculty of Medicine, Universitas Airlangga/Dr. Soetomo General Academic Hospital, Surabaya, Indonesia. **Email:** afif_nurulhidayati@fk.unair.ac.id

Introduction

Psoriasis vulgaris is a devastating and debilitating condition with a chronic and relapsing nature. The global prevalence varies from 0.14% to 1.99%, depending on the geographic and age distribution of the population. The prevalence of psoriasis vulgaris in Indonesia is estimated to be app-

roximately 0.46% to 0.78% of the population.¹⁻³

The severity of psoriasis vulgaris is commonly assessed using the Psoriasis Severity Index (PASI), which categorizes the condition as mild, moderate, or severe based on the assigned score. The PASI score serves as a crucial factor in determining the appropriate treatment for the patient and a tool

to evaluate disease progression and improvement.⁴

Patients with psoriasis vulgaris endure not only physical suffering, but also face psychological challenges. Most of patient with psoriasis report a varying degree of decrease in their quality of life (QoL).⁵ This decline in QoL serves as an indicator for stress, anxiety, and depression, which may exacerbate the progression of the disease. Furthermore, patients with a diminished QoL may show lower treatment compliance.⁶

Dermatology Life Quality Index (DLQI) has been used worldwide to evaluate the QoL in patients with chronic dermatological diseases. In addition to PASI score, the DLQI scores has becomes an indicator of the successful of the psoriasis vulgaris treatment. It has also been utilized as a determining factor in treatment decisions for patients.⁷

The relationship between PASI and DLQI scores has been studied for years. It is generally believed that patients with a high PASI score will have higher DLQI scores, and vice versa; however, the results are often inconsistent. Several studies have reported a correlation between PASI and DLQI scores, while others have not. Hesselvig *et al*, reported a significant association between PASI and DLQI scores, while Silva *et al*, and Rahmayanti *et al*, observed no correlation between PASI and DLQI scores.⁸⁻¹⁰

In this study, our objective was to assess the correlation between the changes of severity of psoriasis vulgaris and the changes of QoL in patients before and after treatment.

Methods

This was a retrospective study with a cross-sectional approach. There were 125 medical records of psoriasis vulgaris patients at the Dermatology and Venereology Outpatient Clinic of the General Academic Hospital of Dr. Soetomo from January 2021 to July 2023. The severity of psoriasis vulgaris was assessed using the PASI score, while the QoL was evaluated through the DLQI score.

Table 1: Demographic and Clinical Characteristics of Psoriasis Vulgaris Patients.

Variable	Number of Patients (%) n (%)
Sex	
Male	22 (44)
Female	28 (56)
Age	
17-25 years	7 (14)
26-35 years	9 (18)
36-45 tahun	13 (26)
46-55 years	9 (18)
56-65 years	10 (20)
>65 years	2 (4)
Educational level	
Elementary school	5 (10)
Junior high school	4 (8)
Senior high school	19 (38)
University/college	22 (44)
Occupation	
Employed	38 (76)
Unemployed	12 (24)
Family history of psoriasis	
No family with psoriasis	49 (98)
Family with psoriasis	1 (2)
PASI score before treatment	
Mild	2 (4)
Moderate	11 (22)
Severe	37 (74)
DLQI score before treatment	
No effect at all on patient's life	0 (0)
Small effect	2 (4)
Moderate effect	19 (38)
Very large effect	22 (44)
Extremely large effect	7 (14)
Duration	
<1 years	11 (22)
1-5 years	18 (36)
>5 years	21 (42)
Types of therapy	
Topical steroid	7 (14%)
Topical steroid and NbUVB	5 (10%)
Topical steroid, systemic therapy, and NbUVB	8 (16%)
Topical steroid, NbUVB and systemic therapy	30 (60%)
PASI Score after Treatment	
PASI50	24 (48%)
PASI75	13 (26%)

The inclusion criteria were newly diagnosed psoriasis vulgaris who completed 8 weeks of treatment with complete records of PASI and DLQI scores before and after the treatment period.

The sampling technique employed was non-probability sampling using a consecutive sampling

method. The Estimated sample size was calculated using the formula for non-experimental correlation analysis. Based on this calculation, a minimum required sample size was 38 subjects. After applying a 20% correction factor to account for potential dropouts, the final required sample size was determined to be 50 subjects. The Ethics Committee of the hospital approved this study under protocol number 1361/LOE/301.4.2/VII/2023. All patients underwent a comprehensive medical evaluation. The PASI and DLQI scores were assessed before treatment and after the treatment. The change in psoriasis severity (Δ PASI) was calculated by subtracting the PASI score at the end of treatment from the PASI score at the beginning of treatment. Similarly, the change in quality of life (Δ DLQI) was determined by subtracting the DLQI score at the end of treatment from the DLQI score at the beginning of treatment.

All data collected was entered into the computer using Microsoft Excel. Analysis of data distribution and frequency were conducted using SPSS for Windows software. Spearman's correlation test was further used to analyze the relationship between changes in PASI scores and changes in DLQI scores before and after therapy.

Results

A total of 50 patients who met the inclusion criteria were included in the study. The majority of psoriasis patients were female (56%) while 22 patients (44%) were male. Thirty-seven patients (74%) had severe psoriasis, 11 patients (22%) had moderate psoriasis, and 2 patients (4%) had mild psoriasis. In our hospital, due to cost-related difficulties in accessing biologic agent, treatment options are limited to topical steroid therapy, methotrexate, and Nb-UVB phototherapy. The majority of patients (60%) received a combination of topical steroid and systemic therapy of methotrexate.

Table 2: Improvement of the PASI and DLQI scores before and after treatment.

	Before Treatment (n=50)	After Treatment (n=50)	% improvement	p Value
PASI Score				
Median (Range)	14,85 (1,1-31,4)	7,10 (1-24.5)	52.18	0,001*
DLQI Score				
Median (Range)	12,00 (6-27)	8,5 (2-30)	29.1	0,001*

*Wilcoxon's signed-rank test

Table 3: Correlation of the PASI and DLQI scores before and after treatment.

	Median (Range)	r value	p value
Before Treatment (n=50)			
PASI score	14,85 (1,1-31,4)	0,483	0,001*
DLQI score	12 (6-27)		
After Treatment (n=50)			
PASI score	7,10 (1-24,50)	0,181	0,209*
DLQI score	8,50 (2-30)		
Δ PASI score	-4,30 (-26 - 9)	0,223	0.120*
Δ DLQI score	-4 (-16 - 7)		

*Spearman's correlation test

The changes in PASI and DLQI scores before and after therapy were analysed using the Wilcoxon signed-rank test (Table 2), which showed a significant improvement in both PASI and DLQI scores following therapy ($p < 0,05$).

Spearman's correlation test was employed for analysis, yielding a p-value of 0.001 and r-value 0.483, indicating a significant relationship between the PASI and DLQI scores before treatment ($p < 0,05$) (Table 3). In contrast, the analysis of the relationship between PASI and DLQI scores of psoriasis vulgaris patients after treatment resulted in a p-value of 0.209 ($p > 0,05$), indicating no significant relationship. Correlation analysis using Spearman's correlation test to evaluate the changes in severity (Δ PASI) and changes in QoL (Δ DLQI) before and after treatment resulted in a p-value of 0.120 ($p > 0,05$) (Table 3), indicating no significant relationship between changes in PASI scores and changes in DLQI scores before and after therapy.

Discussion

The decrease in PASI scores in this study was in line with the decrease in DLQI scores after therapy but did not find a significant relationship between PASI scores and DLQI after therapy ($p = 0.209$) nor

a relationship between changes in PASI scores and changes in DLQI after therapy ($p=0.120$). Few studies have assessed changes in DLQI scores in response to therapy. Although improvements in the severity of psoriasis vulgaris are expected to correspond with improvements in quality of life (QoL), several studies have reported no significant relationship between PASI and DLQI scores, indicating that reducing disease severity alone may not be sufficient to improve QoL in psoriasis vulgaris patients.^{8,9,11,12}

Study by Silva *et al*, did not find a significant correlation between changes in PASI and DLQI scores. The researchers suspect that the chronic nature of the disease leads patients to adapt to their condition.⁸ The study by Nowowiejska *et al*, also reported no relationship between the severity of psoriasis and QoL, both before and after therapy. They concluded that severity is not the sole factor influencing the QoL in psoriasis patients.¹² Similarly, the study by Umborowati *et al*, indicated that the DLQI score was more related to obesity, work, and joint complaints.¹¹

Different findings were reported in the study of Torres *et al*, which evaluated changes in PASI scores and DLQI scores across three visits: before therapy, at the second visit, and at the third visit. They observed improvements in DLQI scores in line with improvements in PASI scores ($p<0.05$) at each control visit, with the strongest correlation at the second visit ($r=0.531$).¹³ The study by Hesselvig *et al*, aimed to assess the long-term correlation between PASI and DLQI scores in patients treated with Ustekinumab. They found a significant correlation between the change scores of PASI and DLQI, with a moderate correlation observed after 4 months but a weak correlation after 12 months of therapy.¹⁰

In this study, we found a significant correlation between PASI and DLQI scores before treatment, as well as a significant decrease in both PASI and DLQI scores after treatment. However, there was no significant correlation between PASI and DLQI scores after treatment. This suggests that mere clinical improvement may not suffice to achieve a meaningful enhancement in QoL.

Differences in research outcomes may also be caused by the failure to achieve PASI 75, which can interfere with the improvement in DLQI scores for patients. In our study, although a significant reduction in PASI scores was observed, only 13 patients (26%) successfully achieved PASI 75. Mattei *et al*, conducted a literature review on PASI and DLQI scores in psoriasis vulgaris patients treated with various biological agents over 8-16 weeks. They reported that meaningful reductions in DLQI required a PASI score reduction greater than 75%. The study also noted that patients achieving only a 50-75% reduction in PASI scores did not experience significant reductions in DLQI scores.¹⁴

The quality of life of psoriasis patients can be influenced by factors beyond disease severity, such as gender, age, occupation, disease duration, affected body areas, recurrence frequency, type of therapy, comorbid conditions, financial status, and psychological status of the patient.¹⁵ Discrepancies in severity and QoL may also be influenced by cultural backgrounds, social dynamics, and economic factors among different patient groups studied.¹⁶ The PASI score evaluates only skin lesions, while psoriasis patients often experience co-morbidities which cannot be adequately assessed by PASI scores alone, such as a joint involvement. This condition may contribute to the disparities between the changes of PASI and DLQI scores.¹⁷

The limitations of this study include the small sample size and short observation period, as we only included data from newly diagnosed psoriasis patients. Another limitation is the absence of biologic therapy due to limited facility access, which may have affected the optimal achievement of PASI 75.

Conclusion

The study found that although the PASI score before therapy was correlated with the DLQI score before therapy, and decreases in PASI scores aligned with decreases in DLQI scores, there was no statistically significant relationship between the changes in PASI and DLQI scores after therapy. The findings underscore that improvements in disease severity do not always correspond with

the improvements in a patient's QoL. The degree of a patient's QoL is not only influenced by the severity of the condition but may also be affected by the clinical characteristics of each patient and the sociodemographic conditions. Hence, clinicians should not solely rely on clinical improvements but also consider the psychosocial aspects and QoL of patients. Identifying psychological issues such as stress or depression in patients with reduced QoL is essential and should be followed by timely support from healthcare providers. Given the chronic nature of psoriasis vulgaris, all patients, no matter the severity of their condition, should receive regular QoL assessments and appropriate psychological care when needed.

Ethical Approval: The Ethics Committee of the hospital approved this study under protocol number 1361/LOE/301.4.2/VII/2023.

Conflict of Interest: There was no conflict of interest to be declared by any author.

Funding Source: None.

Author's Contribution

TT: Conception & design, acquisition of data, analysis & interpretation, drafting of article.

ANH: Conception & design, acquisition of data, analysis & interpretation, drafting of article, final approval of the version to be published.

DMI: Conception & design, drafting of article, revising it critically.

DM: Conception & design, drafting of article, revising it critically.

R: Conception & design, drafting of article

BU: Conception & design, acquisition of data, analysis & interpretation of data, drafting of article, revising it critically, final approval of the version to be published

MAU: Critical revision of the article, final approval of the version to be published.

CRSP: Conception & design, drafting of article, Analysis & interpretation of data.

References

1. Parisi R, Iskandar IYK, Kontopantelis E, Augustin M, Griffiths CEM, Ashcroft DM. National, regional, and worldwide epidemiology of psoriasis: Systematic analysis and modelling study. *BMJ*. 2020;28(1) : 369:m1590. doi: 10.1136/bmj.m1590.
2. Hidayati AN, Hendaria MP, Listiawan MY, Utomo B, Damayanti D, Prakoeswa CRS, et al. The profile of psoriasis vulgaris patients: A descriptive study. *Berkala Ilmu Kesehatan Kulit dan Kelamin*. 2021;33(3):173-81. doi:10.20473/bikk.V33.3.2021.173-181
3. Hendaria MP, Hidayati AN, Ervianti E, Listiawan MY, Damayanti, Citrashanty I, et al. Clinical improvement of patients with moderate-to-severe psoriasis treated with methotrexate at Dr. Soetomo General Hospital, Surabaya, Indonesia. *Bali Med. J*. 2022;11(1):328-33. doi:10.15562/bmj.v11i1.3417.
4. Leonardi C, See K, Gallo G, McKean-Matthews M, Zhang Y, Goldblum O, et al. Psoriasis severity assessment combining physician and patient reported outcomes: the optimal psoriasis assessment tool. *Dermatol Ther (Heidelb)*. 2021; 11(4):1249-63. doi: 10.1007/s13555-021-00544-6
5. Zhang XJ, Lin JR, Ou MX, Yan HW, Liu SN, Dai L, et al. Factors associated with quality of life in Chinese people with psoriasis: a cross-sectional study. *BMC Public Health*. 2023 25;23(1):1860. doi: 10.1186/s12889-023-16758-6
6. Gonzaga H, Gigliotti M, Gonzaga MLJ de S, Marcos EVC, Covolo F, Santana FC de S, et al. Psoriasis area and severity index (PASI) and dermatological life quality index (DLQI) correlation in patients with cutaneous psoriasis. *International Journal of Development Research*. 2022;12(09):58679-83. doi.org/10.37118/ijdr.25322.09.2022.
7. Zou Q, Luo Y, Hao D, Li M, Jihui C. Validation and application of the Dermatology Life Quality Index score, a modification of the DLQI score, in psoriasis patients *J Health Popul Nutr*. 2024;22;43(1):92. doi: 10.1186/s41043-024-00587-3
8. Silva MF, Fortes MR, Miot LD, Marques SA. Psoriasis: correlation between severity index (PA-SI) and quality of life index (DLQI) in patients assessed before and after systemic treatment. *An Bras Dermatol*. 2013;88(5):760-3. doi: 10.1590/abd1806-4841.20132052.
9. Rahmayanti ND, Hidayati AN, Ervianti E, Muhdi N. Association of psoriasis severity degree with self-esteem, depression and dermatology life quality index. *J Pak Assoc Dermatol*.2019;30(1):117-27.
10. Hesselvig JH, Egeberg A, Loft ND, Zachariae C, Kofoed K, Skov L. Correlation between dermatology life quality index and psoriasis area and severity index in patients with psoriasis treated with

- ustekinumab *Acta Derm Venereol.* 2018;98(3): 335-9. doi: 10.2340/00015555-2833
11. Umborowati MA, Syamsuri A, Endaryanto A, Surono IS, Thio HB, Prakoeswa CRS. Correlation between disease severity and quality of life index in psoriasis patients treated with *Lactobacillus plantarum* IS-10506. *Int J of Health Sci.* 2022;23:2433-43. doi.org/10.53730/ijhs.v6nS9.12957
 12. Nowowiejska J, Baran A, Grabowska P, Lewoc M, Kaminski TW, Flisiak I. Assessment of Life Quality, Stress and Physical Activity Among Patients with Psoriasis. *Dermatol Ther (Heidelb).* 2022;12(2):395-406. doi: 10.1007/s13555-021-00662-1
 13. Torres RA, Silva SA, Magalhães RF, Morcillo AM, Velho PE. Comparison of quality-of-life questionnaires and their correlation with the clinical course of patients with psoriasis. *An Bras Dermatol.* 2011;86(1):45-9. doi: 10.1590/s0365-05962011000100005.
 14. Mattei PL, Corey KC, Kimball AB. Psoriasis Area Severity Index (PASI) and the Dermatology Life Quality Index (DLQI): The correlation between disease severity and psychological burden in patients treated with biological therapies. *J Eur Acad Dermatol Venereol.* 2014;28(3):333-7. doi: 10.1111/jdv.12106.
 15. Agarwal K, Das A, Das S, De A. Impact of psoriasis on quality of life *Indian J Dermatol.* 2022 ;67(4):387-91. doi: 10.4103/ijd.ijd_572_22.
 16. Rompoti N, Tsiori S, Kontoangelos K, Kouzoupis A, Papageorgiou C, Gregoriou S, et al. Rigopoulos D. Psychopathological profile of patients with moderate-to-severe plaque psoriasis and its correlation to dlqi: results from a prospective, monocentric clinical study. *J Clin Med.* 2024 ;13(21):6424. doi: 10.3390/jcm13216424
 17. Kirsten N, Rustenbach S, von Kiedrowski R, Sorbe C, Reich K, Augustin M. Which PASI outcome is most relevant to the patients in real-world care? *Life.* 2021;11(11):1151. doi: 10.3390/life11111151.