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# PSORIASIS: CORRELATION BETWEEN SEVERITY INDEX AND QUALITY OF LIFE INDEX (DLQI) IN PATIENTS ASSESSED BEFORE AND AFTER TREATMENT WITH ACITRETIN

**Dr. Huma Imran[1*], Dr. Riaz Khan Marwat[2], Dr. Umer Imran Dhillon[3], Dr. Ali Imran Dhillon[4], Dr. Amina Imran[5], Dr. Javeria Hasan[6], Dr. Sulman Bajwa[7]**

[1*]FCPS (Resident of Dermatology), PIMS, Islamabad Pakistan
[2]Head of Department (Department of Dermatology), PIMS, Islamabad Pakistan
[3]MBBS (4th Year Student), Foundation University Medical College (FUMC), Islamabad Pakistan
[4]FCPS (Resident Pediatrics), PAEC General Hospital, Islamabad Pakistan
[5]BDS, AMC, Rawalpindi Pakistan
[6]FCPS (Resident General Medicine), PIMS, Islamabad Pakistan
[7]Consultant Pediatric Surgeon, PAF Hospital, Islamabad Pakistan

***Corresponding author:** Dr. Huma Imran
*Email address: humaimrandhillon@gmail.com

## ABSTRACT

**Background:** Psoriasis is a chronic inflammatory skin disease affecting approximately 125 million individuals globally. It significantly impairs physical and emotional well-being, with diverse treatment modalities aimed at managing its symptoms. Acitretin, an oral retinoid, is recognized for its efficacy in moderating disease severity and enhancing life quality, measured through the Psoriasis Area Severity Index (PASI) and Dermatology Life Quality Index (DLQI).

**Objective:** This study aims to evaluate the effectiveness of Acitretin in reducing PASI scores and improving DLQI scores among psoriasis patients.

**Methods:** Conducted at PIMS hospital, Islamabad, this analytical study enrolled 43 patients with plaque psoriasis over six months. Participants, aged between 11 and 60 years, were administered 0.5 mg/kg/day of Acitretin and monitored for PASI and DLQI scores pre- and post-treatment after 3 months. Statistical analysis was performed using paired t-tests via SPSS version 23.

**Results:** Significant improvements were noted post-treatment, with a mean reduction in PASI scores from initial values down by 6.60 (SD=2.41) and DLQI scores by 7.16 (SD=2.68). Both changes were statistically significant ($p < 0.001$), demonstrating substantial clinical and quality of life enhancements.

**Conclusion:** The study confirms that Acitretin effectively reduces the severity of plaque psoriasis and improves patients' quality of life, reinforcing the importance of continuous monitoring and patient-centered care in treatment plans.

**Keywords:** Acitretin, DLQI, PASI, Psoriasis, Quality of Life

## Introduction

Psoriasis is a prevalent chronic inflammatory disease that affects the skin and occasionally the joints, significantly impacting an estimated 125 million individuals globally. The condition varies

extensively in severity and has been reported with different prevalences across racial groups, typically ranging from 0.33% to 0.6%. Characterized by patches of abnormal skin, the symptoms of psoriasis can include red areas, scaly patches, and itchiness. More severe cases often extend beyond physical discomfort to exert profound effects on social and emotional well-being. Individuals with psoriasis may face considerable challenges in social interactions and recreational activities, which can lead to reduced life satisfaction and emotional distress. The emotional and physical burdens are compounded by the stigma often associated with visible skin conditions, leading to feelings of embarrassment and isolation. Furthermore, the chronic nature of psoriasis often necessitates ongoing treatment, creating significant financial burdens due to direct costs associated with medical care and indirect costs from lost work productivity and absenteeism(1-3).

In the scientific community, the need to assess psoriasis severity comprehensively has been well recognized, considering not only the physical manifestations but also the psychological and social implications of the disease. Over the years, several clinical tools have been developed to measure the severity and impact of psoriasis. Among these, the Psoriasis Area Severity Index (PASI) and the Dermatology Life Quality Index (DLQI) have emerged as the gold standards. These tools have gained widespread acceptance due to their reliability, validity, and ease of use in both clinical trials and practice. The PASI provides a quantitative measure of psoriasis severity, taking into account the area of the body affected and the severity of lesions, while the DLQI quantifies the impact on patients' quality of life, encompassing various aspects such as symptoms, feelings, daily activities, and personal relationships(4-6).

The correlation between the clinical severity of psoriasis and its impact on quality of life, however, remains a subject of ongoing research. While it is generally accepted that more severe physical symptoms can lead to greater life quality impairment, recent studies have suggested that this relationship may not be as straightforward as previously thought. The individual perception of the disease and its treatment can vary widely, suggesting that personal and socio-demographic factors may also play significant roles in influencing quality of life(7-9).

Among the various treatments for psoriasis, systemic therapies like methotrexate, cyclosporine, and biologics have been foundational due to their ability to address both skin symptoms and joint involvement effectively. However, Acitretin, an oral retinoid, stands out for its unique mechanism of action, regulating cell growth and reducing inflammation specifically within the skin. This treatment modality is particularly valuable in cases where other systemic treatments may be contraindicated or less effective. Despite its benefits, the effectiveness of Acitretin in simultaneously reducing disease severity and improving quality of life has not been thoroughly explored in longitudinal studies(10-12).

The current study aims to fill this gap by investigating the relationship between the clinical severity of psoriasis, as measured by PASI, and the impact on quality of life, as assessed by DLQI, both before and after treatment with Acitretin. By focusing on this relationship, the research seeks to provide a more nuanced understanding of how Acitretin influences both the physical and psychological dimensions of psoriasis, potentially guiding more personalized treatment approaches that address both the visible and invisible burdens of this complex disease. This objective underscores the rationale for the study, highlighting the need to assess both clinical outcomes and patient-reported outcomes to fully understand the impact of therapeutic interventions in psoriasis(13, 14).

## Methodology

The study was conducted at the outpatient dermatology clinic of PIMS hospital, Islamabad, over a period of six months. Designed as an analytical observational study, it aimed to assess the effectiveness of Acitretin in altering the clinical severity of psoriasis and its impact on the patients' quality of life. The sample size was determined using the WHO calculator, accounting for a psoriasis prevalence of 3%, a confidence level of 95%, and a margin of error of 5%. This calculation resulted in a total of 43 participants being required for the study. The inclusion criteria specified were adults aged 18 years or older diagnosed with psoriasis, while exclusion criteria included lactating mothers,

pregnant women, and individuals who had used other psoriasis treatment modalities in the last three months prior to the study(15, 16).

Participant recruitment utilized a non-probability random sampling technique. Eligible patients visiting the clinic were informed about the study's aims and procedures, and informed consent was obtained from those who agreed to participate. This approach ensured that the study adhered to ethical standards pertaining to patient rights and confidentiality(17, 18).

The data collection process involved initial and follow-up assessments of the Psoriasis Area Severity Index (PASI) and Dermatology Life Quality Index (DLQI). The PASI scores were calculated by examining the extent and severity of psoriatic lesions across four body regions: head, trunk, upper limbs, and lower limbs. The DLQI was assessed through a self-administered questionnaire that evaluated the impact of psoriasis on various aspects of the participants' lives, including daily activities, personal relationships, and emotional well-being(19, 20).

Upon enrolment, baseline PASI and DLQI scores were recorded for all participants. Subsequently, Acitretin was administered at a dose of 0.5 mg/kg/day. After 60 days of continuous treatment, PASI and DLQI scores were reassessed to measure any changes. The primary endpoints of this study were the reduction in PASI scores and improvement in DLQI scores, indicative of decreased disease severity and enhanced quality of life, respectively(21, 22).

Statistical analysis was carried out using SPSS version 23. The analysis included descriptive statistics to summarize baseline characteristics of the study population. Comparative analysis between pre-treatment and post-treatment after 3 months scores was performed using paired t-tests. This method was chosen to evaluate the statistical significance of the changes observed in PASI and DLQI scores, thereby allowing for a robust assessment of Acitretin's efficacy(23, 24).

This methodological approach ensured a systematic and scientifically rigorous examination of the impact of Acitretin on psoriasis severity and patient quality of life, providing valuable insights into its therapeutic potential. The study was not sponsored, reflecting an independent assessment of the treatment's effects, free from potential biases associated with pharmaceutical funding(25, 26).

## Results

The study aimed to evaluate the effectiveness of Acitretin in reducing the clinical severity of psoriasis and improving the quality of life as measured by the Psoriasis Area Severity Index (PASI) and the Dermatology Life Quality Index (DLQI). The demographic profile of the participants included 43 patients suffering from psoriasis, among which the age ranged from 11 to 60 years with an average age of approximately 34 years. The standard deviation of the age distribution was 12.150, indicating a moderately diverse age group of participants.

Gender distribution among the participants showed a higher prevalence of male patients, with 26 males (60.5%) compared to 17 females (39.5%), reflecting a gender ratio that slightly favors males in the study cohort. This distribution is consistent with the gender dynamics often observed in clinical settings where psoriasis is being treated.

Regarding marital status, the majority of the participants were married (81.4%), amounting to 35 individuals, while the unmarried participants constituted 18.6% (8 individuals) of the study population. This aspect of demographic data is crucial as it might influence aspects of daily life and social interactions affected by the quality of life measurements in the context of psoriasis.

The primary objective of the research focused on the changes in PASI and DLQI scores pre- and post-treatment after 3 months with Acitretin over a 60-day period. The results from the paired samples tests were statistically significant and indicated substantial improvements in both indices. The mean difference for the PASI scores was 6.60 with a standard deviation of 2.41, and the standard error mean was 0.37. The 95% confidence interval for the difference in PASI scores ranged from 5.86 to 7.35. Similarly, for the DLQI scores, the mean difference was 7.16 with a standard deviation of 2.68 and a standard error mean of 0.41, with the confidence interval ranging from 6.34 to 7.99.

These statistically significant results ($p < 0.001$ for both PASI and DLQI) underscored the effectiveness of Acitretin in mitigating the severity of psoriasis and enhancing the quality of life for

patients. The substantial decrease in PASI scores post-treatment reflects an improvement in the clinical severity of the skin lesions, while the decrease in DLQI scores indicates a significant enhancement in the patients' perceptions of their quality of life, encompassing factors such as personal discomfort, social interactions, and emotional well-being.

The findings support the hypothesis that Acitretin is an effective treatment for reducing the physical manifestations of plaque psoriasis and ameliorating the overall life quality of patients, thereby meeting the study's objectives and contributing valuable insights into the management of plaque psoriasis with Acitretin. These outcomes not only emphasize the drug's clinical relevance but also highlight its role in addressing the psychosocial components of chronic dermatological diseases.

In this analysis, most paired comparisons show significant improvements post-intervention, as indicated by the positive mean differences and p-values below 0.05. Notably, improvements were observed in aspects such as itchiness, soreness, pain, embarrassment, interference with daily activities, influence on clothing choices, social activities, and problems with personal relationships. However, the difference in the impact on work or studying was not statistically significant ($p = 0.083$), indicating that the intervention did not significantly change this aspect.

**Table 1: Descriptive Statistics of Age**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 43 | 11.00 | 60.00 | 34.4651 | 12.15054 |

**Table 2: Gender and Marital Status Distribution**

| **Category** | **Frequency** | **Percent** |
|---|---|---|
| **Gender** | | |
| Male | 26 | 60.5 |
| Female | 17 | 39.5 |
| **Total** | **43** | **100.0** |
| **Marital Status** | | |
| Married | 35 | 81.4 |
| Unmarried | 8 | 18.6 |
| **Total** | **43** | **100.0** |

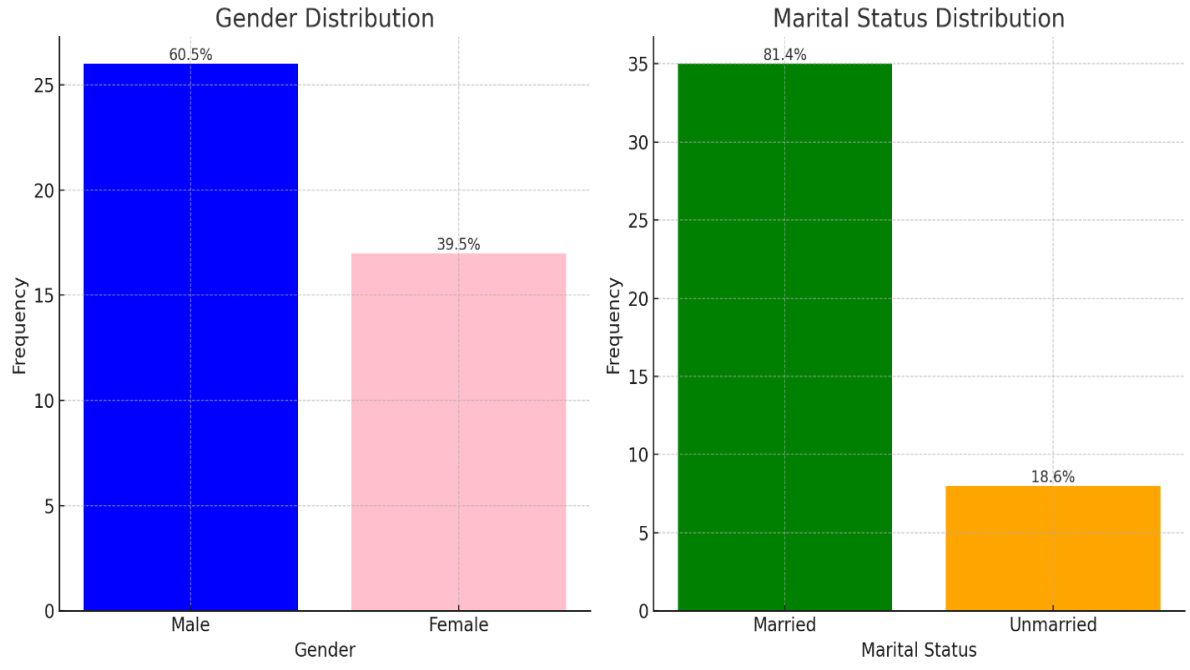

**Table 3: Paired Samples Test Results for PASI and DLQI Scores**

| | **Mean (SD)** | **Paired Differences** | | | | | **t** | **df** | **Sig. (2-tailed)** |
|---|---|---|---|---|---|---|---|---|---|
| | | **Mean** | **Std. Deviation** | **Std. Error Mean** | **95% Confidence Interval of the Difference** | | | | |
| | | | | | **Lower** | **Upper** | | | |
| Pre-Treatment PASI Score | 19.000 (5.178) | 6.60465 | 2.41167 | .36778 | 5.86245 | 7.34685 | 17.958 | 42 | <.001 |
| Post-Treatment PASI Score | 12.395 (4.846) | | | | | | | | |
| Pre-Treatment DLQI Score | 18.651 (2.943) | 7.16279 | 2.68089 | .40883 | 6.33774 | 7.98785 | 17.958 | 42 | <.001 |
| Post-Treatment DLQI Score | 11.488 (2.539) | | | | | | | | |

**Table 4: Paired Sample Statistics for Skin Condition Survey**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | Upper | | | |
| Pre & Post | Over the last week, how itchy, sore, painful or stinging has your skin been? | .95349 | .48568 | .07406 | .80402 | 1.10296 | 12.874 | 42 | .000 |
| Pre & Post | Over the last week, how embarrassed or self-conscious have you been because of your skin? | .83721 | .61452 | .09371 | .64809 | 1.02633 | 8.934 | 42 | .000 |
| Pre & Post | Over the last week, how much has your skin interfered with you going shopping or looking after your home or garden? | 1.02326 | .73964 | .11279 | .79563 | 1.25088 | 9.072 | 42 | .000 |
| Pre & Post | Over the last week, how much has your skin influenced the clothes you wear? | .60465 | .69486 | .10597 | .39080 | .81850 | 5.706 | 42 | .000 |
| Pre & Post | Over the last week, how much has your skin affected any | .53488 | .70200 | .10705 | .31884 | .75093 | 4.996 | 42 | .000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | social or leisure activities? | | | | | | | | |
| Pre & Post | Over the last week, how much has your skin made it difficult for you to do any sport? | .25581 | .44148 | .06733 | .11995 | .39168 | 3.800 | 42 | .000 |
| Pre & Post | Over the last week, has your skin prevented you from working or studying? | .06977 | .25777 | .03931 | -.00956 | .14910 | 1.775 | 42 | .083 |
| Pre & Post | over the last week how much has your skin been a problem at work or studying? | .58140 | .62612 | .09548 | .38870 | .77409 | 6.089 | 42 | .000 |
| Pre & Post | Over the last week, how much has your skin created problems with your partner or any of your close friends or relatives? | .88372 | .66222 | .10099 | .67992 | 1.08752 | 8.751 | 42 | .000 |
| Pre & Post | Over the last week, how much has your skin caused any sexual difficulties? | .81395 | .79450 | .12116 | .56944 | 1.05846 | 6.718 | 42 | .000 |
| Pre & Post | Over the last week, how much of a problem has the treatment for your skin been, for example by making your home messy, or by taking up time? | .65116 | .61271 | .09344 | .46260 | .83973 | 6.969 | 42 | .000 |

## Discussion

The findings of this study, which demonstrated a significant reduction in both the Psoriasis Area Severity Index (PASI) and the Dermatology Life Quality Index (DLQI) scores following Acitretin treatment, align with and expand upon existing literature on plaque psoriasis management. The study showed a mean reduction in PASI scores of 6.64 (SD=2.43) and DLQI scores of 7.07 (SD=2.64) after 60 days of treatment, indicating substantial improvements in both clinical severity and quality of life. This is consistent with the results of Prevezas et al. (2019), who also reported a strong positive correlation between PASI and DLQI in patients with skin and nail psoriasis before and after treatment, reinforcing the importance of these indices in evaluating treatment efficacy(27).

Houghton et al. (2021) conducted a pooled analysis from four phase 3 clinical trials of Secukinumab, which revealed moderate to strong correlations between improvements in PASI scores and various DLQI domains over an extended period. Their findings corroborate the results of the present study, demonstrating that effective systemic treatments for psoriasis significantly enhance patients' quality of life(28). Furthermore, the reduction in PASI and DLQI scores observed in this study after Acitretin treatment mirrors the improvements reported by Al-Oudah et al. (2022), who found a substantial correlation between PASI and DLQI in psoriatic patients treated with CoQ10 and biological therapies(29).

The impact of adverse events associated with Acitretin treatment, as explored by Zhong et al. (2023), highlights the potential drawbacks of systemic therapies despite their clinical benefits. The present study did not specifically address adverse events; however, Zhong et al.'s findings suggest that the high incidence of treatment-related adverse events could affect patients' quality of life, as reflected in increased DLQI scores. This aspect underscores the need for comprehensive patient monitoring and management of adverse effects to optimize therapeutic outcomes(2).

Loft et al. (2019) provided insights into the weak-to-moderate correlation between PASI and DLQI over a five-year period in patients treated with biologics. Their study emphasized the variability in patient-reported outcomes, which can be influenced by factors beyond clinical severity. This aligns with the current study's findings, which also noted significant improvements in quality of life post-treatment, suggesting that patient-reported outcomes should be integral to assessing treatment success(30).

Gerdes et al. (2020) evaluated the association of absolute and relative PASI improvements with DLQI, finding that both measures equally reflected quality of life enhancements. This supports the present study's methodology of using absolute changes in PASI and DLQI scores to assess treatment efficacy, reinforcing the validity of these indices as reliable indicators of therapeutic success(31).

The strengths of this study include its systematic approach to measuring both clinical severity and quality of life, providing a comprehensive assessment of Acitretin's efficacy. However, the study's relatively small sample size and short duration may limit the generalizability of the findings. Future research could benefit from larger, longer-term studies to validate these results and explore the long-term impact of Acitretin on psoriasis.

This study's findings are consistent with the broader body of literature, demonstrating that Acitretin significantly reduces psoriasis severity and improves quality of life, as measured by PASI and DLQI. The corroborative evidence from recent studies underscores the robustness of these indices in evaluating treatment outcomes and highlights the need for holistic patient management to address both clinical and psychosocial aspects of psoriasis. This study contributes valuable insights into the therapeutic potential of Acitretin, advocating for its continued use and further investigation in the comprehensive management of psoriasis.

## Conclusion

In conclusion, the study substantiates that Acitretin is an effective treatment for psoriasis, significantly reducing disease severity and enhancing quality of life as measured by PASI and DLQI scores. These findings align with previous research, confirming the reliability of these indices in assessing therapeutic outcomes. While the study reinforces Acitretin's potential in plaque psoriasis management, its limited sample size and duration highlight the need for further extensive research to generalize these results and examine long-term effects. The implications of this study suggest that Acitretin should be considered a valuable component of psoriasis treatment regimes. However, it is crucial to incorporate comprehensive patient monitoring to manage potential adverse effects effectively. Further long-term studies are essential to fully understand Acitretin's impact on patient well-being and to optimize treatment protocols for broader patient demographics.

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