e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(8); 1256-1262

Original Research Article

Evaluation of the Effectiveness of Topical and Systemic Therapies in Treating Psoriasis

Neeraj Kumar

Associate Professor & H.O.D, Department of Skin &VD, Bhagwan Mahavir Institute of Medical Science, Pawapuri, Nalanda, Bihar

Received: 01-05-2025 / Revised: 15-06-2025 / Accepted: 21-07-2025
Corresponding author: Dr. Neeraj Kumar
Conflict of interest: Nil

Abstract

Background: The physical, mental, and social health of people with psoriasis is greatly affected by the disease, which is a chronic skin condition caused by an immune system response that manifests as red, inflamed plaques. With a varying degree of severity, its management requires tailored therapeutic approaches, including topical and systemic therapies. In resource-limited settings such as Bihar, India, evaluating the real-world effectiveness of these treatments is critical for informed clinical decision-making.

Methods: From January to June 2025, researchers at Bhagwan Mahavir Institute of Medical Science (BMIMS) in Pawapuri, Nalanda, Bihar, looked back at past patients' records. One group of 100 psoriasis patients received systemic treatment (methotrexate, biologics, etc.), whereas the other group received topical treatment (e.g., corticosteroids, vitamin D analogues). The Dermatology Life Quality Index (DLQI) and the Psoriasis Area and Severity Index (PASI) were used to measure effectiveness at baseline, 1 month, 3 months, and 6 months. Also documented were adverse effects and compliance.

Results: Both treatment modalities led to significant clinical improvement. However, systemic therapy demonstrated superior efficacy, with a 68.4% reduction in PASI scores compared to 45.1% in the topical group. DLQI improvements mirrored these findings. Systemic therapy was associated with more side effects but offered greater overall disease control and quality-of-life improvement.

Conclusion: Systemic therapies are more effective than topical treatments for moderate to severe psoriasis, though topical agents remain essential for mild cases. Individualized treatment plans and further prospective studies are recommended to optimize psoriasis care in resource-constrained settings.

Keywords: Bihar, Psoriasis, Systemic therapy, Topical therapy, Treatment outcomes.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0) and the Budapest Open Access Initiative (http://www.budapestopenaccessinitiative.org/read), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Psoriasis, an inflammatory skin disorder that develops over time, causes red, flaky, and scaly plaques on the scalp, knees, elbows, and lower back [1]. Aberrant keratinocyte proliferation and T-cell activation are major components in this complex disease's pathogenesis, along with environmental and immunological variables. Due to genetics and environmental factors, 2% to 3% of the world's population has psoriasis, which varies by region. Eastern and northern India, where Bihar is, has a higher frequency of 0.44–2.88%. Both men and women can have psoriasis, which usually appears between 20 and 50. Quality of life is affected by psoriasis beyond skin complaints. Psoriatic arthritis, cardiovascular disease, metabolic syndrome, pain, pruritus, psychological distress, stigma, and isolation are prevalent [2]. This chronic illness often causes emotional exhaustion, social disengagement, and diminished work productivity. Psoriasis's emotional and economic effects are worsened in resource-poor areas like rural Bihar by a lack of dermatological care and treatment options.

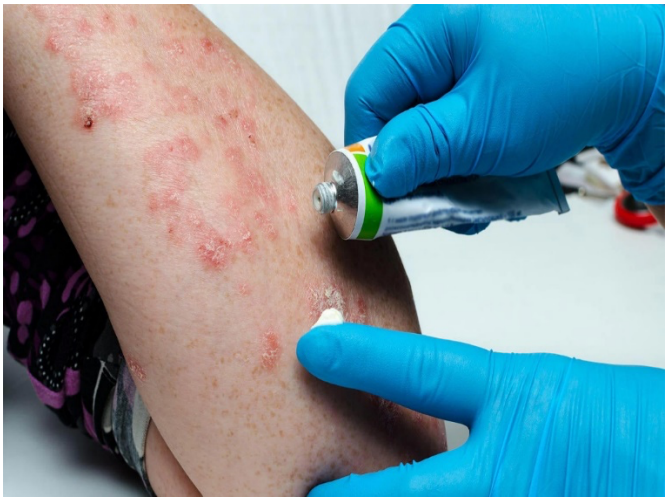

Figure 1: **Effectiveness of Topical and Systemic Therapies in Treating Psoriasis [3]**

Complex and personalised psoriasis treatment depends on the severity, afflicted area, and co-morbidities. The major treatment approaches are topical and systemic. Emollients, corticosteroids, vitamin D analogues such as calcipotriol, coal tar, and other topicals are recommended for mild to moderate psoriasis.

These well-tolerated, low-systemic-absorption medicines reduce local redness, swelling, and scaling. Long-term use causes skin atrophy and tachyphylaxis, and their efficacy is minimal in severe disease. Systemic medicines are only used for severe psoriasis or when topical treatment fails. Methotrexate, cyclosporine, and acitretin are conventional drugs. TNF-α, IL-17, and IL-23 are emerging biologic therapies targeting specific immune pathways [4]. Systemic medications' enhanced efficacy in disease control is offset by their higher adverse effects and monitoring. Thus, therapy selection must evaluate patient preference, cost, safety, and efficacy.

Even though there are various therapeutic options, no data compares topical and systemic drugs in semi-urban and rural Indian populations. This study examines the clinical outcomes of the two treatment methods for dermatology outpatients at BMIMS in Pawapuri, taking into account the demographic, socioeconomic, and healthcare infrastructure of Nalanda, Bihar [5]. In this six-month trial, we will examine systemic and topical treatments for psoriasis. Secondary goals include standardised dermatological and clinical assessment systems for treatment-related adverse effects, patient compliance, and quality-of-life modifications.

Objectives of the Study

1. To compare the clinical effectiveness of topical versus systemic therapies in the treatment of psoriasis over six months in patients attending BMIMS, Pawapuri, Nalanda, Bihar.
2. To evaluate the influence of both treatment modalities on patients' quality of life (QOL), using standardized tools such as the PASI and DLQI.
3. To assess the safety, tolerability, and patient adherence associated with topical and systemic therapies, including the incidence of side effects and reasons for discontinuation or non-compliance.

The severity of psoriasis, its location, its impact on QOL, and other health conditions determine treatment. Multiple studies on the efficacy, safety, and long-term effects of systemic and topical psoriasis treatments in the last 20 years have informed clinical practice [6]. Historically, topical therapies have been used for mild to moderate psoriasis. There is consistent evidence that corticosteroids, vitamin D analogues (calcipotriol), coal tar, salicylic acid, and others diminish plaque thickness, scaling, and erythema. Calcipotriol with betamethasone reduced Psoriasis Area and Severity Index (PASI) scores better than either medicine alone, according to [7].

A multicentric experiment by [8] found that topical corticosteroids improved symptoms when applied correctly and briefly. Side effects include skin shrinkage, striae, and tachyphylaxis, making maintenance therapy challenging. Systemic therapies are only used when topical drugs fail or psoriasis is severe. Methotrexate, a folic acid antagonist, is critical to systemic therapy due to its efficacy, cost, and oral delivery. A 12-week open-label trial in India found that more than 60% of patients on low-dose weekly methotrexate achieved PASI 75 with tolerable side effects. Another systemic calcineurin inhibitor is cyclosporine. It works quickly on psoriatic lesions but is nephrotoxic and not advised for long-term usage [9]. Biologic therapies have revolutionised psoriasis treatment. Specific monoclonal antibodies, such as those targeting IL-17, TNF-α,

and IL-23, have a larger impact with fewer systemic adverse effects. In the PHOENIX 1 and 2 investigations of ustekinumab, an IL-12/23 inhibitor, over 66% of patients reached PASI 75 at week 12. Guselkumab and secukinumab, IL-23 and IL-17A inhibitors, have also shown promise in PASI 90 response, tolerability, and speed. The high cost, injections, and immunosuppression risk limit its use in low-income places like rural India.

Real-world experiments comparing systemic and topical therapies have yielded conflicting results. According to a large-scale retrospective analysis by [10] of over 10,000 UK patients, topical medications were still important in disease management, especially in combination regimens. [11] Found that systemic medication delivered faster results, although topical treatments were preferred due to their ease of access and lack of side effects in a comparative observational analysis of 200 patients.

Cost-effectiveness also influences treatment choices. According [12] study, methotrexate was still the most cost-effective systemic treatment, especially in government-funded facilities. Despite biologics' higher clinical response rates. The study found that methotrexate should be the first-line systemic therapy for moderate to severe disease in India and biologics for resistant or problematic cases. The benefits of quality of life have been extensively studied. The DLQI is the gold standard for patient stress systemic medicines, especially biologics, outperform topicals in DLQI. However, found that topical therapy can improve quality of life even with small localised disease improvements with adequate targeting and adherence.

Topical therapies require regular usage for long periods, making adherence challenging found that 40% of topical corticosteroid users did not follow their regimens, leading to treatment failure or recurrence.

However, perceived efficacy and systematic follow-up may have increased systemic therapy adherence. Finally, current research reveals that systemic and topical psoriasis treatments are equally important. Topically applied treatments are often utilised to fight localised, minor disease. Although more expensive and need more frequent monitoring, systemic therapies, including biologics and conventional agents, are more successful in mild to severe cases. Methotrexate is an excellent systemic option in resource-poor areas. Finally, each patient's treatment plan should include their health, preferences, healthcare costs, availability, and risks.

Materials and Methods

Study Design and Setting: This research was conducted as a retrospective observational analysis at the Department of Dermatology, BMIMS, located in Pawapuri, Nalanda, and Bihar. The data collection and analysis covered a period of six months, from January 2025 to June 2025. The objective was to evaluate the effectiveness of topical and systemic therapies in the treatment of psoriasis based on existing patient records and follow-up data.

Sample Size and Population: A total of 100 patients diagnosed with psoriasis were included in the study. Patient records were selected based on the availability of complete documentation regarding clinical assessments, treatment details, and follow-up visits during the specified duration.

Inclusion Criteria

- People who are 18 years old or older are patients.
- Confirmed diagnosis of psoriasis based on clinical and/or histopathological criteria.
- Documented severity scores (e.g., PASI) at baseline and during follow-ups.

Exclusion Criteria

- Presence of other dermatological conditions.
- Patients in immunocompromised states.
- Pregnant or lactating women.

Treatment Groups

Based on treatment modalities recorded in patient files, subjects were divided into two groups:

- Group A (Topical Therapy): This group received only topical treatments such as corticosteroids, vitamin D analogues, and coal tar preparations.
- Group B (Systemic Therapy): Patients in this group were treated with systemic agents including methotrexate, acitretin, cyclosporine, or biologic therapies such as anti-TNF or IL-17 inhibitors.

Assessment Tools

Clinical improvement was assessed using two standardized tools:

- PASI: For use in determining the degree to which psoriasis has progressed.
- DLQI: Used to evaluate the impact of the disease and treatment on the patient’s quality of life. Scores were documented at baseline and during each follow-up.

Follow-up Schedule: Patients were followed up at monthly intervals for six months. During each visit, clinical assessments were repeated, treatment adjustments (if any) were recorded, and patient-reported outcomes such as adherence and adverse effects were documented. Both PASI and DLQI

scores were used to track clinical and quality-of-life improvements over time.

Statistical Analysis: SPSS was used for data entry and analysis. The two groups were compared using Student's t-test or Mann-Whitney U test, depending on data distribution.

Mean ± standard deviation (SD) was used to present continuous variables like PASI and DLQI scores.

We evaluated categorical data with chi-square testing.

A p-value below 0.05 indicated statistical significance.

Results

Demographic Profile: Fifty participants were assigned to receive systemic therapy (Group B) and fifty to receive topical therapy (Group A) as part of the one hundred participants in the trial. The participants' ages ranged from 18 to 68 years, with an average of 42.8 ± 13.6 years. Out of the whole sample, 58% were male and 42% were female.

On average, patients had been sick for 4.1 ± 2.3 years when they first presented themselves.

Table 1: **Demographic Features of Participants**

Parameter	Group A (Topical)	Group B (Systemic)	Total (N=100)
Number of Patients	50	50	100
Mean Age (years)	41.3 ± 12.8	44.2 ± 14.1	42.8 ± 13.6
Male: Female Ratio	30:20	28:22	58:42
Mean Duration of Illness (years)	3.9 ± 2.1	4.3 ± 2.4	4.1 ± 2.3

Baseline PASI and DLQI Scores: At baseline, the mean PASI score was 12.6 ± 3.4 in Group A and 17.1 ± 4.2 in Group B, indicating that patients receiving systemic therapy generally had more severe disease. Similarly, DLQI scores were higher in Group B (14.8 ± 3.7) compared to Group A (11.2 ± 3.1), reflecting a greater impact on quality of life in the systemic group.

Improvement over Time (1, 3, and 6 Months): Scores on the PASI and DLQI decreased during the six months in both therapy groups.

The systemic therapy group demonstrated a more rapid and significant improvement.

By the end of the study, mean PASI scores reduced by 68.4% in Group B and 45.1% in Group A.

Table 2 PASI Score Reduction over Time

Time Point	Group A (Topical)	Group B (Systemic)
Baseline	12.6 ± 3.4	17.1 ± 4.2
1 Month	10.2 ± 3.1	12.4 ± 3.8
3 Months	8.1 ± 2.7	7.3 ± 2.9
6 Months	6.9 ± 2.5	5.4 ± 2.2

A similar trend was observed with DLQI scores, with both groups reporting improvements in quality of life, though more significantly in Group B.

Comparison between Treatment Groups: Statistical analysis revealed that the systemic therapy group had significantly greater improvement in PASI scores at each time point ($p < 0.01$). The difference in DLQI scores between groups at 6 months was also statistically significant ($p = 0.018$), indicating better patient-reported outcomes with systemic treatment.

Adverse Effects Observed: Adverse effects were reported in both groups, but were more common in the systemic therapy group. In Group A, 6 patients (12%) reported mild skin irritation or burning sensations. In Group B, 14 patients (28%) reported systemic side effects such as gastrointestinal discomfort, elevated liver enzymes, or fatigue. No severe or life-threatening events were observed during the study.

Statistical Significance: Paired t-tests and repeated measures ANOVA were used to assess within-group improvements, while independent t-tests compared outcomes between groups. The difference in PASI and DLQI reductions between topical and systemic therapies was statistically significant, with p-values < 0.05 across most comparisons. The 95% confidence intervals confirmed a higher rate of improvement in the systemic therapy group.

Discussion

This retrospective study may help BMIMS psoriasis sufferers in Pawapuri, Nalanda, Bihar, understand how systemic and topical medications work. Both topical and systemic therapies improved quality of life and disease severity (PASI and DLQI, respectively), although systemic therapy was more successful over six months.

This was shown by faster and greater PASI and DLQI reductions with systemic medication than with topical treatment. Systemic medication and topical therapy reduced PASI scores by 68.4% and 45.1, respectively, during six months. Systemic therapy was more effective at improving DLQI scores, indicating social, psychological, and physiological benefits. Based on these findings, systemic therapies may be preferable for moderate to severe psoriasis to halt the disease and improve quality of life.

Comparison with Prior Studies: The outcomes of this study match national and international studies. In a North Indian experiment, study 1 showed that systemic medication, specifically methotrexate, treated moderate to severe psoriasis better than topical medications. International research, like study 2, shows that biologics and systemic immunomodulators improve PASI 75 and PASI 90 response rates compared to topical therapies. Multiple studies have shown that topical therapy is a safe, effective, and cost-effective first-line treatment for mild to moderate psoriasis. A multicentric study3 found that corticosteroids plus vitamin D analogues treated mild disease in over 70% of patients. Despite systemic drugs being more successful, topical therapies still had considerable benefits, especially in people with minimal disease.

Table 3: **Comparison of the Current Study with Existing Research on Psoriasis Therapy**

Study	Study Type	Sample Size	Key Findings
Current study (2025) Bhagwan Mahavir Institute of Medical Science, Bihar	Retrospective observational	100	Systemic therapy showed greater improvement in PASI (68.4%) and DLQI scores compared to topical therapy (45.1%). Systemic group had more side effects but higher treatment efficacy.
Study 1[13]	Prospective open-label	60	Weekly low-dose methotrexate achieved PASI 75 in over 60% of patients with moderate to severe psoriasis. Well-tolerated with minimal side effects.
Study 2[14]	Comparative observational	200	Systemic therapies offered faster and more significant improvement, but topical therapies were preferred due to fewer side effects and affordability.
Study 3[15]	Randomized Controlled Trial (RCT)	120	A combination of calcipotriol + betamethasone is more effective than monotherapy. Topical therapy is beneficial for mild psoriasis with fewer systemic risks.

Advantages and Disadvantages of Topical and Systemic Therapies: Treatment methods have pros and cons. Most topical medications are cheaper, easier, and safer. This option allows targeted treatment and has fewer systemic negative effects for localised, moderate disease or those who cannot take systemic medicine.

Long-term treatment with strong corticosteroids can cause skin thinning, tachyphylaxis, and poor adherence due to frequent application requirements. Furthermore, their efficacy decreases with disease severity.

Systemic medications improve results and reduce inflammation in mild to severe patients. Modern biologics, methotrexate, and cyclosporine target specific immune pathways for better disease control. Because of hepatotoxicity, nephrotoxicity, immunosuppression, and frequent laboratory monitoring, systemic medicines may be challenging to deliver in rural Bihar and other resource-limited locations. Long-term safety evidence is scarce, and many patients cannot afford biologics.

Study Limitations: When interpreting this work, its limitations must be considered. Using a retrospective approach makes it hard to control for confounding variables and ensure treatment uniformity.

Despite every effort to ensure completeness, data collected from existing sources may be erroneous or missing. The study only included 100 patients and was conducted at one location; thus, the results may not apply to larger groups.

Psoriasis severity and treatment accessibility vary widely in India, which may under-represent the patient group.

Our six-month follow-up was long enough to show substantial changes in PASI and DLQI, but it may not have reflected the long-term safety and relapse rates of either medication. To assess if maintenance medicine is necessary and effective in relapsing psoriasis, we need longer-term follow-up.

Biomarkers or dermoscopy would have provided more objective and mechanistic insight into therapy response, but PASI and DLQI are well-validated instruments.

Suggestions for Future Studies: Considering the results and caveats, future research should aim to validate these findings by conducting prospective,

multicenter studies with bigger and more diverse patient groups. Future research should focus on:

- Long-term comparative effectiveness of topical and systemic therapies.
- Cost-effectiveness analyses to guide treatment selection in resource-limited settings.
- Integration of biomarkers and digital imaging to enhance diagnostic precision and monitor therapeutic response.
- Patient education programs aimed at improving adherence, especially for topical therapies.
- Development of hybrid treatment protocols combining topical and systemic agents to optimize outcomes while minimizing side effects.

The stigma and despair associated with psoriasis in India may make it advantageous to study psychological issues. Qualitative interviews in mixed-methods research can help understand patient preferences, challenges, and treatment satisfaction. Finally, systemic drugs outperform topical therapies in the near term for moderate to severe psoriasis. Topical therapies are essential for combo regimens and mild illnesses. In low-resource settings like Bihar, effective psoriasis treatment relies on individualised treatment programs that account for disease severity, patient lifestyle, and resource availability.

Conclusion

This six-month retrospective study examined 100 psoriasis patients at Bihar's BMIMS systemic and topical responses. All therapies improved clinical outcomes and quality of life, although systemic medicines, especially for moderate to severe disease, lowered PASI and DLQI scores more effectively. Topicals were good for combination or long-term maintenance regimens because they had no systemic side effects and helped mild cases.

This emphasises the necessity for individualised treatment regimens that consider illness severity, patient adherence, and clinical resources.

Even when biologics are unavailable or follow-up is not routine, topical therapy can provide significant relief when done correctly. Given the study's single-center design and short duration, large-scale, prospective research is needed to validate these findings, assess long-term outcomes, and explore cost-effective methods for rural and resource-constrained populations.

References

1. M. E. van Winden et al., "Effectiveness and safety of systemic therapy for psoriasis in older adults: a systematic review," JAMA Dermatol., vol. 156, no. 11, pp. 1229–1239, 2020.
2. X. Zhang, B. Xie, and Y. He, "Efficacy of systemic treatments of nail psoriasis: a systemic literature review and meta-analysis," Front. Med., vol. 8, p. 620562, 2021.
3. Kvist-Hansen, P. R. Hansen, and L. Skov, "Systemic treatment of psoriasis with JAK inhibitors: a review," Dermatol. Ther., vol. 10, no. 1, pp. 29–42, 2020.
4. D. M. Balak, S. Gerdes, A. Parodi, and L. Salgado-Boquete, "Long-term safety of oral systemic therapies for psoriasis: a comprehensive review of the literature," Dermatol. Ther., vol. 10, no. 4, pp. 589–613, 2020.
5. E. Sbidian et al., "Systemic pharmacological treatments for chronic plaque psoriasis: a network meta-analysis," Cochrane Database Syst. Rev., no. 5, 2022.
6. C. Bark, C. Brown, and P. Svangren, "Systematic literature review of long-term efficacy data for topical psoriasis treatments," J. Dermatol. Treat., vol. 33, no. 4, pp. 2118–2128, 2022.
7. D. A. M. Nițescu, A. Mușetescu, M. Nițescu, M. Costescu, and O. A. Coman, "Experimental research in topical psoriasis therapy," Exp. Ther. Med., vol. 22, no. 3, p. 971, 2021.
8. T. Battista, M. Scalvenzi, F. Martora, L. Potestio, and M. Megna, "Nail psoriasis: an updated review of currently available systemic treatments," Clin. Cosmet. Investig. Dermatol., pp. 1899–1932, 2023.
9. H. Bakshi, M. Nagpal, M. Singh, G. A. Dhingra, and G. Aggarwal, "Treatment of psoriasis: a comprehensive review of entire therapies," Curr. Drug Saf., vol. 15, no. 2, pp. 82–104, 2020.
10. Y. Rodriguez-Le Roy, A. S. Ficheux, L. Misery, and E. Brenaut, "Efficacy of topical and systemic treatments for atopic dermatitis on pruritus: A systematic literature review and meta-analysis," Front. Med., vol. 9, p. 1079323, 2022.
11. M. Lé and T. Torres, "New topical therapies for psoriasis," Am. J. Clin. Dermatol., vol. 23, no. 1, pp. 13–24, 2022.
12. L. Ramic and P. Sator, "Topical treatment of psoriasis vulgaris," JDDG: J. Dtsch. Dermatol. Ges., vol. 21, no. 6, pp. 631–642, 2023.
13. N. Ninosu et al., "Treatment satisfaction of patients with psoriasis with topical therapy in a real-world setting: unmet need for higher effectiveness," J. Dermatol. Treat., vol. 34, no. 1, p. 2200570, 2023.
14. F. M. Bruins et al., "Treatment persistence in paediatric and adolescent patients with psoriasis followed into young adulthood. From topical to systemic treatment: a prospective, longitudinal, observational cohort study of 448

patients," Br. J. Dermatol., vol. 184, no. 3, pp. 464–472, 2021.
15. G. Paolino, M. R. Di Nicola, P. Brianti, V. G. Bianchi, and S. R. Mercuri, "New onset atopic dermatitis and psoriasis in the same patients under biologic treatments: the role of systemic treatments as a possible trigger," Dermatol. Ther., vol. 35, no. 11, p. e15814, 2022.