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Original Article

Comparative Analysis of Topical versus Systemic Treatments in Managing Psoriasis — A Dermatologist's Perspective

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ABSTRACT

Introduction: *Psoriasis is a chronic inflammatory skin condition that significantly affects patients' quality of life due to its physical and psychological impact. Managing psoriasis requires a careful balance between efficacy and safety, as treatments range from topical applications for mild cases to systemic therapies for more severe presentations. This study aimed to compare topical vs. systemic treatments in managing psoriasis.* ***Methods & Materials:*** *The retrospective cross-sectional study was conducted in the Department of Dermatology in 250 Bedded District Sadar Hospital, Gopalganj, Bangladesh, from January 2023 to January 2024. The data was collected from the patient records of the hospital. Data analysis was performed using SPSS (version 26).* ***Results:*** *The study included mostly individuals aged 18–49 (75%) and showed no significant gender-based differences. Comorbidities, especially hypertension, were common (30%). Treatment was split evenly between topical and systemic approaches; topical treatments led to skin irritation (15%), while systemic ones were linked to gastrointestinal issues (10%) and liver enzyme elevations (7%). Moderate PASI improvement was achieved by 30%, with notable QoL gains of 25%. Treatment discontinuation (38%) was mainly due to a lack of efficacy and adverse effects.* ***Conclusion:*** *This study concludes that systemic treatments may provide better efficacy, especially for severe cases, while topical therapies are more prone to causing skin irritation. The findings highlight the importance of personalized*

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treatment plans to balance efficacy, side effects, and quality of life for optimal psoriasis management.

Keywords: *Topical Treatment, Systemic Treatment, Psoriasis, Psoriasis Area and Severity Index (PASI)*

INTRODUCTION

Psoriasis is a chronic inflammatory skin disease that affects approximately 2–3% of the global population, posing both physical and psychological burdens on affected individuals due to its persistent and often visible lesions. Characterized by abnormal keratinocyte proliferation and immune system dysregulation, psoriasis manifests in various clinical forms, including plaque psoriasis, guttate psoriasis, and erythrodermic psoriasis, with plaque psoriasis being the most prevalent form[1,2]. Although the precise etiology of psoriasis remains unclear, it is understood to involve a complex interplay of genetic, immunologic, and environmental factors. For patients, symptom management and improvement in quality of life (QoL) are primary goals, especially since psoriasis is associated with comorbidities like cardiovascular disease, metabolic syndrome, and depression, which can further complicate treatment and increase healthcare costs[3]. In clinical practice, psoriasis treatment is often categorized into two main approaches: topical and systemic therapies. Each has its unique advantages, limitations, and adverse effects, and the choice of treatment depends on several factors, including the severity of psoriasis, patient preference, and the presence of comorbid conditions. Systemic treatments, on the other hand, are prescribed primarily for moderate to severe cases of psoriasis or for patients who have not responded to topical therapies. These treatments include traditional oral medications, such as methotrexate, cyclosporine, and acitretin, as well as newer biologic agents that specifically target immune pathways implicated in psoriasis, such as tumor necrosis factor-alpha (TNF-α) inhibitors and interleukin (IL)-17 and IL-23 inhibitors[4]. Comparing topical and systemic treatments involves understanding not only their mechanisms of action but also their impact on patients' QoL and the balance between efficacy and tolerability. QoL is a crucial consideration in psoriasis management, as patients often experience psychological and social challenges due to the visibility of their lesions and the chronic nature of the disease[5]. Some research has also explored the role of combination therapies in managing psoriasis, with some studies suggesting that using topical and systemic treatments concurrently or in rotation may optimize outcomes while minimizing adverse effects. This approach may be particularly beneficial for patients with moderate psoriasis or those transitioning between treatment types. For example, the combination of a topical corticosteroid with a systemic biologic may enable lower doses of each, thereby reducing the risk of adverse

effects associated with both treatments while maintaining efficacy. Moreover, combination therapy could offer an advantage in terms of treatment adherence, as it allows for more flexibility and potentially shorter durations of high-potency treatments. Treatment adherence remains a significant challenge in psoriasis management, particularly with topical therapies, which require consistent application to maintain efficacy[6]. Adverse effects, such as skin irritation, are among the most common reasons for discontinuation of topical treatments, while the higher incidence of systemic side effects, including fatigue and gastrointestinal issues, may deter patients from adhering to systemic treatments[7]. Studies suggest that patient education and shared decision-making can improve adherence by ensuring patients are well-informed about their treatment options, potential side effects, and the importance of maintaining therapy to achieve long-term disease control[8]. So, this study aimed to compare topical vs. systemic treatments in managing psoriasis.

METHODS & MATERIALS

The retrospective cross-sectional study was conducted to evaluate and compare the efficacy and side effect profile of topical versus systemic treatments in managing psoriasis. The study was conducted in the Department of Dermatology in 250 Bedded District Sadar Hospital, Gopalganj, Bangladesh, from January 2023 to January 2024. The data was collected from the patient records of the hospital. All patients with psoriasis who visited the department were considered as the study population. A total of 100 patients were selected as study subjects as per inclusion and exclusion criteria. Patient demographic and clinical information was extracted, including age, gender, duration of disease, comorbidities, and lifestyle factors. Details on treatment types, dosages, duration of treatment, and outcomes were also collected. The treatment outcomes were assessed based on the Psoriasis Area and Severity Index (PASI) scores documented pre- and post-treatment, as well as patient-reported quality of life scores. Adverse events, if any, were also recorded, focusing on severity and impact on the continuation of treatment. Data analysis was performed using SPSS (version 26). Ethical clearance was taken from the ethics committee of 250 Bedded District Sadar Hospital, Gopalganj, Bangladesh.

Inclusion Criteria

- Patients 18 years old and above
- Patients who were diagnosed with psoriasis
- Patients who received either topical or systemic treatments

Exclusion criteria

- Patients with incomplete records
- Patients who received both types of treatments simultaneously

RESULTS

The study population comprises 100 individuals with varied age distribution, predominantly between the ages of 18 to 49 years (75%), while a smaller proportion is aged 50 years or older (25%). Males constitute a majority, making up 60% of the sample,

compared to 40% of females, with no significant gender-based differences observed (p = 0.45). Comorbidities are present in a notable portion of the population, with hypertension being the most prevalent (30%), followed by diabetes (25%) and cardiovascular disease (10%). Notably, 35% of the participants reported no comorbidities. Treatment methods are evenly split, with half receiving topical treatments and the other half systemic, showing a significant association with certain demographic or clinical characteristics *p*=0.03 (**Table I**).

Table – I: Basic Characteristics of the Study Population (*n*=100)

Basic Characteristics	Frequency (*n*)	Percentage (%)	*p*-value
Age (Years)			-
18–29	20	20.0	
30–39	25	25.0	
40–49	30	30.0	
50–59	15	15.0	
60+	10	10.0	
Gender			
Male	60	60.0	0.45
Female	40	40.0	
Comorbidities			
Hypertension	30	30.0	0.02
Diabetes	25	25.0	
Cardiovascular Disease	10	10.0	
None	35	35.0	
Treatment Type			
Topical	50	50.0	0.03
Systemic	50	50.0	

The study population's duration of psoriasis diagnosis varies, with the largest group (40%) having been diagnosed within the past 1 to 5 years. Those with a more recent diagnosis of less than a year make up 15% of the population, while 25% have had the condition for 6 to 10 years. A smaller proportion, 10%, has had psoriasis for 11 to 15 years, and another 10% for over 16 years. The data shows a statistically significant association between the duration of diagnosis and certain characteristics or outcomes (p = 0.04) (**Table II**).

Table – II: Duration of Psoriasis Diagnosis (*n*=100)

Duration of Diagnosis (Years)	Frequency (*n*)	Percentage (%)	*p*-value
<1	15	15.0	0.04
1–5	40	40.0	
6–10	25	25.0	
11–15	10	10.0	
16+	10	10.0	

At baseline, the severity of psoriasis among participants, categorized by the Psoriasis Area and Severity Index (PASI) score, shows that 30% of the study population had mild psoriasis (PASI 0–9), while the largest group, 45%, fell into the moderate category (PASI 10–19). Severe cases (PASI 20+) comprised 25% of the participants. The distribution indicates a statistically significant association between PASI

score severity and other study variables $p = 0.03$ (**Table III**).

Table – III: Severity of Psoriasis at Baseline (Based on PASI Score) (*n*=100)

PASI Score Category	Frequency (n)	Percentage (%)	*p*-value
Mild (0–9)	30	30.0	0.03
Moderate (10–19)	45	45.0	
Severe (20+)	25	25.0	

The types of treatments administered to the study population revealed that 40% received alternating topical and systemic therapies, making it the most common approach. Topical monotherapy was used in 30% of cases, while systemic monotherapy was employed in 20%. A smaller group (10%) received combination therapy involving both topical and systemic treatments concurrently. The distribution of treatment types is significantly associated with patient characteristics or outcomes, as indicated by a p-value of 0.01 (**Table IV**).

Table – IV: Type of Treatment Administered (*n*=100)

Treatment Type	Frequency (*n*)	Percentage (%)	p-value
Topical Monotherapy	30	30.0	0.01
Systemic Monotherapy	20	20.0	
Combination Therapy (Topical + Systemic)	10	10.0	
Alternating (Topical/Systemic)	40	40.0	

Approximately 30% of participants achieved moderate improvement (31–50% reduction), while 25% showed minimal improvement (11–30% reduction). Notably, 20% experienced little to no improvement (0–10% reduction), and 15% had significant improvement (51–75% reduction). A smaller group of 10% achieved a major improvement of over 75% reduction in PASI scores. The distribution of these outcomes demonstrates a statistically significant association with treatment and other factors, with a p-value of 0.02 (**Table V**).

Table – V: Improvement in PASI Score Post-Treatment (*n*=100)

PASI Score Reduction (%)	Frequency (n)	Percentage (%)	*p*-value
No Improvement (0–10%)	20	20.0	0.02
Minimal (11–30%)	25	25.0	
Moderate (31–50%)	30	30.0	
Significant (51–75%)	15	15.0	
Major (>75%)	10	10.0	

Skin irritation was more commonly associated with topical treatment, affecting 15 participants compared to 5 in the systemic group, with a statistically significant difference (p = 0.04). Gastrointestinal issues and fatigue were more frequently observed in those receiving systemic treatment, affecting 10 and 8 participants, respectively, compared to 2 and 5 in the topical group. Elevated liver enzymes were noted only in the systemic treatment group (7 participants), while a substantial portion of both groups—28 on topical and 20 on systemic—reported no adverse effects (**Table VI**).

Table – VI: Reported Adverse Effects by Treatment Type (*n*=50)

Adverse Effect	Topical (*n*)	Systemic (*n*)	*p*-value
Skin Irritation	15	5	0.04
Gastrointestinal Issues	2	10	
Fatigue	5	8	
Elevated Liver Enzymes	0	7	
None	28	20	
Total	50	50	

Slight improvement was the most common outcome, reported by 30% of individuals. Moderate improvement was noted in 25% of the sample, while significant and major improvements were experienced in 15% and 10%, respectively. Conversely, 20% reported no change in their QoL following treatment. The levels of QoL improvement showed a statistically significant relationship with treatment factors, as indicated by a p-value of 0.03 (**Table VII**).

Table – VII: Quality of Life (QoL) Improvement Post-Treatment (*n*=100)

QoL Improvement Level	Frequency (n)	Percentage (%)	*p*-value
No Change	20	20.0	0.03
Slight Improvement	30	30.0	
Moderate Improvement	25	25.0	
Significant Improvement	15	15.0	
Major Improvement	10	10.0	

Lack of efficacy led to discontinuation in 12% of cases, followed closely by skin irritation (10%) and systemic side effects (8%). Cost issues were a factor for 5% of participants, while other unspecified reasons accounted for 3%. Notably, 62% of participants continued treatment without any need for discontinuation. The distribution of discontinuation reasons suggests a statistically marginal significance, with a p-value of 0.05 (**Table VIII**).

Table – VIII: Treatment Discontinuation Due to Adverse Effects (*n*=100)

Reason for Discontinuation	Frequency (n)	Percentage (%)	*p*-value
Skin Irritation	10	10.0	0.05
Systemic Side Effects	8	8.0	
Lack of Efficacy	12	12.0	
Cost Issues	5	5.0	
Other	3	3.0	
None	62	62.0	

DISCUSSION

The study population predominantly consisted of individuals aged 18–49 years (75%), with a smaller proportion (25%) over the age of 50. This age distribution is in line with prior studies that show psoriasis is more commonly diagnosed in individuals between the ages of 20 and 50, although psoriasis can affect individuals across the lifespan, including those over 50 years old[9,2]. A slight male predominance (60%) was noted in our sample, despite this, no significant gender-based differences in clinical outcomes or treatment responses were observed (p=0.45), suggesting that gender may not be a major factor influencing treatment efficacy in this cohort, corroborating findings from previous studies that have shown mixed results regarding the impact of gender on psoriasis treatment outcomes[10]. Comorbidities were common in our

population, with hypertension (30%) being the most prevalent, followed by diabetes (25%) and cardiovascular disease (10%). These findings echo the well-established associations between psoriasis and comorbid conditions, particularly cardiovascular disease and metabolic syndrome, which have been reported in multiple studies[11]. In terms of disease duration, the majority of participants (40%) had been diagnosed within the past 1–5 years, with a smaller proportion of participants having a more chronic disease course (25% for 6–10 years, 10% for 11–15 years, and 10% for over 16 years). These findings are consistent with previous studies where the majority of psoriasis patients were diagnosed within the first 5 years, and the disease was more likely to be severe in patients with a longer duration of illness[12]. The severity of psoriasis at baseline, as measured by the Psoriasis Area and Severity Index (PASI), showed that the majority of participants had moderate disease (45%), followed by mild (30%) and severe (25%) cases. This distribution aligns with typical clinical populations, where moderate psoriasis is often the most common severity category[13]. Regarding treatment modalities, the study found that treatment approaches were evenly split between topical and systemic treatments, with 50% of participants receiving each treatment type. Among those treated with topical therapies, skin irritation (15 participants) was the most commonly reported adverse effect, consistent with prior literature that recognizes skin irritation as a frequent side effect of topical psoriasis treatments such as corticosteroids[14]. Conversely, systemic treatments were associated with gastrointestinal issues (10 participants), fatigue (8 participants), and elevated liver enzymes (7 participants), highlighting the common systemic side effects associated with treatments such as biologics and methotrexate[15]. Quality of life (QoL) outcomes were also significant in this study, with a considerable proportion (30%) reporting moderate improvement in QoL, while 20% reported no change. These results align with previous research showing that psoriasis significantly impacts QoL, often leading to emotional distress and social stigma[16]. Treatment discontinuation was reported in 38% of cases, primarily due to lack of efficacy (12%) and adverse effects, including skin irritation (10%) and systemic side effects (8%). These findings highlight the challenges associated with long-term psoriasis management, where side effects or lack of efficacy can lead to treatment cessation. Similar reasons for discontinuation have been reported in other studies, emphasizing the importance of ongoing patient education and monitoring to minimize discontinuation rates[17].

Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

Conclusion

This study concludes that systemic treatments may provide better efficacy, especially for severe cases, while topical

therapies are more prone to causing skin irritation. The findings highlight the importance of personalized treatment plans to balance efficacy, side effects, and quality of life for optimal psoriasis management.

Recommendation

It is recommended that psoriasis treatment be individualized, considering disease severity, patient preferences, and potential side effects. For mild to moderate cases, topical treatments may suffice, but for more severe cases, systemic therapies could be more effective. Regular monitoring for side effects, especially in those on systemic treatments, is essential to ensure patient safety and improve adherence. Additionally, ongoing patient education about treatment options and potential side effects can enhance long-term management and quality of life.

Ethical Approval:

The study was approved by the Institutional Ethics Committee

REFERENCES

1. *Boehncke WH, Schön MP. Psoriasis. The Lancet. 2015 Sep 5;386(9997):983-94.*
2. *Griffiths CE, Armstrong AW, Gudjonsson JE, Barker JN. Psoriasis. The Lancet. 2021 Apr 3;397(10281):1301-15.*
3. *Takeshita J, Grewal S, Langan SM, Mehta NN, Ogdie A, Van Voorhees AS, Gelfand JM. Psoriasis and comorbid diseases: epidemiology. Journal of the American Academy of Dermatology. 2017 Mar 1;76(3):377-90.*
4. *Armstrong AW, Read C. Pathophysiology, clinical presentation, and treatment of psoriasis: a review. Jama. 2020 May 19;323(19):1945-60.*
5. *Sampogna F, Tabolli S, Abeni D. Living with psoriasis: prevalence of shame, anger, worry, and problems in daily activities and social life. Acta dermato-venereologica. 2012 Apr 5;92(3):299-303.*
6. *Richards HL, Fortune DG, Griffiths CE, Main CJ. The contribution of perceptions of stigmatization to disability in patients with psoriasis. Journal of psychosomatic research. 2001 Jan 1;50(1):11-5.*
7. *Ryan C, Korman NJ, Gelfand JM, Lim HW, Elmets CA, Feldman SR, Gottlieb AB, Koo JY, Lebwohl M, Leonardi CL, Van Voorhees AS. Research gaps in psoriasis: opportunities for future studies. Journal of the American Academy of Dermatology. 2014 Jan 1;70(1):146-67.*
8. *Vyas J, Johns JR, Ali FM, Singh RK, Ingram JR, Salek S, Finlay AY. A systematic review of 454 randomized controlled trials using the Dermatology Life Quality Index: experience in 69 diseases and 43 countries. British Journal of Dermatology. 2024 Mar;190(3):315-39.*
9. *Hawkes JE, Chan TC, Krueger JG. Psoriasis pathogenesis and the development of novel targeted immune therapies. Journal of Allergy and Clinical Immunology. 2017 Sep 1;140(3):645-53.*
10. *Levi SS, Ramot Y. Gender differences in psoriasis. Gender and dermatology. 2018:63-81.*
11. *Perez-Chada LM, Elman S, Villa-Ruiz C, Armstrong AW, Gottlieb AB, Merola JF. Psoriatic Arthritis: A comprehensive review for the dermatologist Part I: Epidemiology, Comorbidities, Pathogenesis, and Diagnosis. Journal of the American Academy of Dermatology. 2024 Jun 8.*
12. *Segaert S, Calzavara-Pinton P, de la Cueva P, Jalili A, Lons Danic D, Pink AE, Thaçi D, Gooderham M. Long-term topical management of psoriasis: the road ahead. Journal of Dermatological Treatment. 2022 Jan 2;33(1):111-20.*
13. *Menter A, Griffiths CE. Current and future management of psoriasis. The Lancet. 2007 Jul 21;370(9583):272-84.*
14. *Alikhan A, Hocker TL. Review of Dermatology E-Book. Elsevier Health Sciences; 2023 Mar 10.*
15. *Calabrese L, Malvaso D, Antonelli F, Mannino M, Peris K, Chiricozzi A. Investigational systemic drugs for moderate to severe plaque*

psoriasis: What's new? Expert Opinion on Investigational Drugs. 2023 Mar 4;32(3):229-43.

16. *Reich K, Korge B, Magnolo N, Manasterski M, Schwichtenberg U, Staubach-Renz P, Kaiser S, Roemmler-Zehrer J, Gómez NN, Lorenz-Baath K. Quality-of-life outcomes, effectiveness and tolerability of apremilast in patients with plaque psoriasis and routine German dermatology care: results from LAPIS-PSO. Dermatology and therapy. 2022 Jan;12(1):203-21.*
17. *Egeberg A, See K, Garrelts A, Burge R. Epidemiology of psoriasis in hard-to-treat body locations: data from the Danish skin cohort. BMC dermatology. 2020 Dec;20:1-8.*