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A Comparative Analysis Of The Therapeutic Effectiveness Of Dexamethasone And Infliximab In Psoriasis Patients

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ABSTRACT

Background: Psoriasis is a chronic, immune-mediated inflammatory skin disorder characterized by hyperproliferation of keratinocytes and dysregulation of T-cell–mediated cytokine pathways. The disease significantly impairs patients' quality of life and often requires long-term pharmacological management. This study compares the therapeutic effectiveness of Dexamethasone (Corticosteroids) and Infliximab (Chimeric monoclonal antibody) in Psoriasis patients.

Methods: A comparative study was conducted for six months among 80 adults (aged 18-60yrs) with Psoriasis. Participants were grouped based on therapy with Dexamethasone or Infliximab. Clinical assessment using PASI (Psoriasis Area and Severity Index) and DLQI (Dermatology Life Quality Index) at baseline, week 4, week 12, and week 24. Data were analysed using paired and independent t-tests and Chi-square tests.

Results: Infliximab patients displayed a greater baseline mean PASI score (34.51) than Dexamethasone patients (28.51) with a comparable sample size, suggesting the severity, improving the interpretation of symptom improvement statistics. The T-test comparison showed statistically significant differences in PASI scores (p=0.035) and symptom improvement (p=0.021) in favour of Infliximab, while satisfaction scores and treatment duration had no statistically significant difference.

Conclusion: The Infliximab showed significantly better symptom improvement and slightly higher patient satisfaction, although the latter was not statistically significant. Both treatment groups had similar durations of therapy, ensuring a fair comparison. The enhanced effectiveness of Infliximab, particularly in improving clinical symptoms, positioning it as a potentially more beneficial option in treating moderate to severe plaque psoriasis.

KEYWORDS: Psoriasis, Dexamethasone, Infliximab, Therapeutic Effectiveness, Comparative Analysis.

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1. INTRODUCTION

Psoriasis, a chronic inflammatory disease, affects 1.5% to 2.5% of the UK population and is diagnosed on clinical grounds. Psoriasis is a chronic immune-mediated inflammatory condition. Population studies clearly indicate that the incidence of psoriasis is greater among first-degree and second-degree relatives of patients than among the general population[4]. The systemic inflammation increases the risk of several comorbid diseases[2][9]. A relapsing and remitting course is characteristic. There are several different phenotypes which frequently overlap and switching between phenotypic groups may occur. Around 80% of individuals present with chronic plaque psoriasis characterized by well demarcated, red, thickened patches of skin which become elevated and covered with an adherent, silvery scale[3]. Typically, plaques are located on the extensor aspect of knees, elbows, hairline, scalp, intergluteal cleft and lumbosacral area. Nail involvement, which occurs in 30% to 50% of patients, is characterized by pitting of the nail surface, onycholysis (separation of nail plate from the nail bed) and subungual hyperkeratosis. Guttate psoriasis is typified by the acute onset of multiple small patches predominantly located on the trunk. This form may be the initial presentation in children with a family history of psoriasis. External triggers in genetically

susceptible individuals activate pro-inflammatory pathways involving TNF-α and IFN-α, which stimulate myeloid dendritic cells to release IL-12 and IL-23. These cytokines drive Th1, Th17, and Th22 cell responses, leading to the release of IL-17, IFN-γ, TNF-α, and IL-22. The resulting cytokine cascade induces keratinocyte activation and proliferation, producing the characteristic psoriatic inflammation[16]. In up to 80% of cases there is a history of a preceding sore throat. Erythrodermic psoriasis denotes the involvement of the entire skin surface which, although rare, is significant because it can be life threatening with a risk of sepsis and thermoregulatory disruption. Pustular psoriasis may be localized or generalized. In the generalized variant sheets of sterile pustules are found on a background of red skin. Fever, arthralgia and malaise are common accompaniments. In palmoplantar pustulosis clusters of sterile pustules study the thenar and hypothenar eminences as well as the plantar surface, especially the instep. Controversy exists as to whether these pustular eruptions are part of the psoriasis spectrum or are separate entities.

2. MATERIALS AND METHODS

This comparative study was conducted from October 2024 to March 2025 at ESIC Hospital, Ayanavaram, and St. Isabel Hospital, Mylapore, Chennai in collaboration with the Department of Pharmacy Practice, Vels Institute of Science, Technology and Advanced Studies (VISTAS). Ethical approval for the study was obtained from the Institutional Ethics Committee (Ref. No. ECR/288/Indt/TN/2018/RR-21/116). All participants provided written informed consent before inclusion in the study.

2.1 Study Population

A total of 80 patients aged between 18 and 60 years patient suffering from Psoriasis were recruited. The participants were divided into two equal groups of 40 each based on the antidiabetic agent prescribed:

- Group A: Dexamethsone
- Group B: Infliximab

2.2 Inclusion Criteria

- Patients age between 18 to 60
- Patients suffering from psoriasis.
- Those who are willing to participate.

2.3 Exclusion Criteria

- Non-cooperative individuals
- Excluding psychiatric patients.
- Those who are not willing to participate.
- Excluding pregnant women and breastfeeding women.

2.4 Study Design and Data Collection

After enrolment, demographic and clinical details were recorded, including age, gender, disease duration, comorbidities, and concurrent medications. Baseline and post-treatment biochemical parameters were evaluated to assess both efficacy and safety profiles.

The clinical history (Duration, type, severity of Psoriasis), current treatment, efficacy assessment are been collected in the data collection form.

2.5 Sample Collection and Statistical Considerations

Blood and other samples will be collected at these scheduled visits for all participants (both groups), unless otherwise noted:

- Baseline (pre-treatment)
- Week 4
- Week 12
- Week 24

The statistical considerations for laboratory data will be based on the following:

- Continuous lab variables summarized as mean ± SD (or median/IQR if non-normal).
- Changes from baseline compared using paired t-test or Wilcoxon signed-rank test; between-group comparisons by independent t-test or Mann–Whitney U test.
- Correlation analyses (e.g., cytokine level vs PASI change) using Pearson or Spearman correlation.

3. RESULTS

3.1 Demographic Characteristics

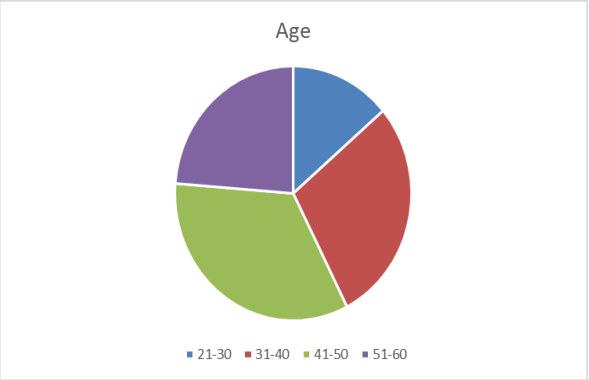
This classifies participants (N=80) into four age categories between 21 and 60 years. Most patients belonged to the 41–50 category (n=27), followed by the 31–40 category (n=23). This is in line with epidemiological patterns whereby psoriasis is most likely to occur in middle-aged adults.

Table – 1: Distribution of gender among the participants

AGE CLASSIFICATION	FREQUENCY
21-30	11

31-40	23
41-50	27
51-60	19
Grand Total	80

Figure 1: Distribution of gender among the participants



This illustrates the distribution of participants for each age group,emphasizing middle-aged predominance (41-60) in psoriasis prevalence.

Table – 2: Gender distribution among the participants

SEX	PLAQUE PSORIASIS	GRAND TOTAL
Female	33	33
Male	47	47
Grand Total	80	80

Table 2 depicts the distribution of gender ,47 were male and 33 female, suggesting a greater incidence in male patients. This finding mirrors gender trends observed in psoriasis.

Figure – 2: Distribution of age among the participants

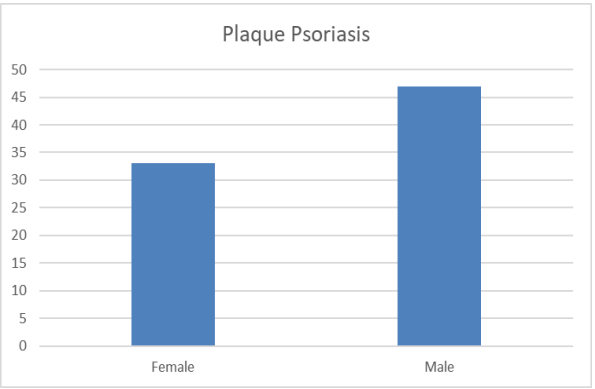


Figure 2 explains the pictorial representation of gender distribution among the participants

3.2 Comorbidities of the patients

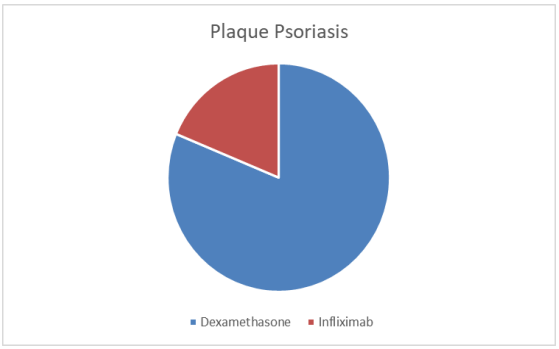
Table – 3: Treatment Group Distribution

TREATMENT GROUP	PLAQUE PSORIASIS	GRAND TOTAL
Dexamethasone	65	65
Infliximab	15	15
Grand Total	80	80

Table 3 Explains the distribution distribution between the Dexamethasone group (n=65) and the Infliximab group (n=15). This uneven distribution mirrors real-world treatment practice where corticosteroids are still first-line drugs because of cost and

availability.

Figure – 3: Treatment Group Distribution



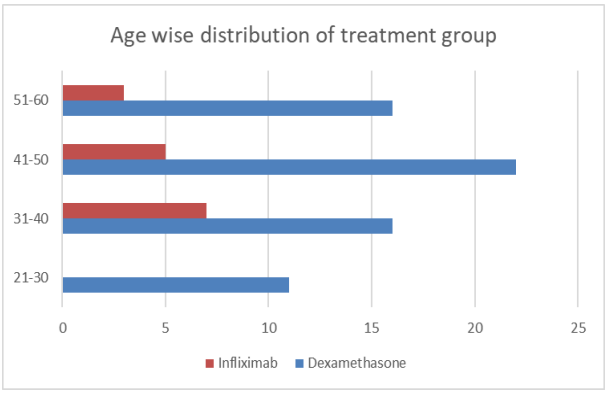
A bar chart of the number of patients in each treatment group, with a distinct dominance of Dexamethasone use owing to its traditional use and reduced cost.

Table 4: Age-wise Distribution within Treatment Groups

TREATMENT GROUP	21-30	31-40	41-50	51-60	GRAND TOTAL
Dexamethasone	11	16	22	16	65
Infliximab	0	7	5	3	15
Grand Total	11	23	27	19	80

This table shows a stratified age distribution among treatment groups. Dexamethasone was used equally across different ages, while Infliximab use was highest among the 41–50 year old.

Figure 4: Treatment Effectiveness Across Groups



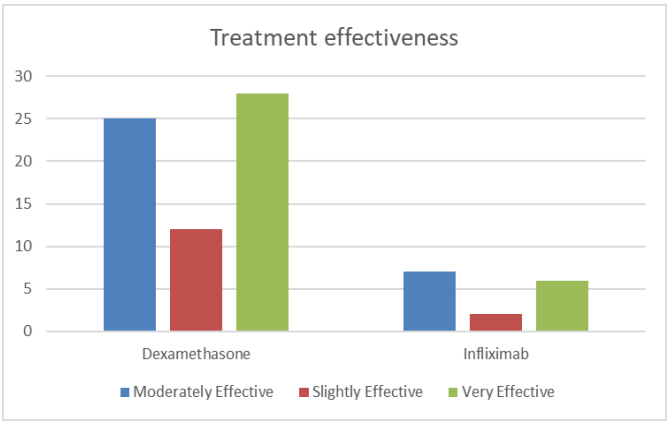
A cluster bar graph demonstrate the distribution of effectiveness across the drug Dexamethasone has more variable results while Infliximab has more uniformly distributed results, indicating consistent efficacy despite lower use.

Table 5: Assessment of Effectiveness of Treatment

TREATMENT GROUP	MODERATELY EFFECTIVE	SLIGHTLY EFFECTIVE	VERY EFFECTIVE	GRAND TOTAL
Dexamethasone	25	12	28	65
Infliximab	7	2	6	15
Grand Total	32	14	34	80

Effectiveness was assessed as "Very Effective," "Moderately Effective," or "Slightly Effective." Dexamethasone had a greater proportion of "Very Effective" assessments (n=28), while Infliximab had relatively equal ratings across all the effectiveness categories.

Figure 5: Symptom Improvement Score Distribution



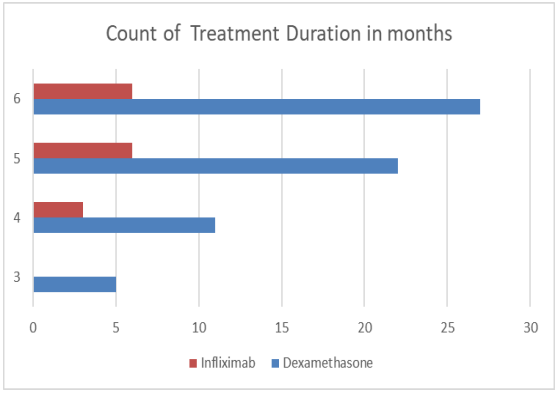
This figure shows the number of patients in each score range (1–6), noting that most scored within the high end, especially among Infliximab-treated patients.

Table 6: Symptom Improvement Scores (1–6 Scale)

TREATMENT GROUP	3	4	5	6	GRAND TOTAL
Dexamethasone	5	11	22	27	65
Infliximab	0	3	6	6	15
Grand Total	5	14	28	33	80

The majority of the Dexamethasone patients received a higher effectiveness rating (score 6), whereas Infliximab had comparable score distributions 4–6, indicating an effective and consistent response pattern.

Figure 6: Willingness to Recommend Treatment



A comparison bar or pie chart showing varied responses between both drug groups, highlighting subjective variation in patient satisfaction despite comparable clinical outcomes.

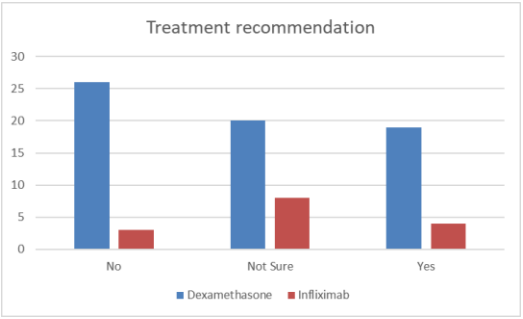
Table 7: Willingness to Recommend Treatment

TREATMENT GROUP	NO	NOT SURE	YES	GRAND TOTAL
Dexamethasone	26	20	19	65

Infliximab	3	8	4	15
Grand Total	29	28	23	80

It assesses how willing patients would be to recommend their therapy. A considerable proportion of the users of Dexamethasone answered "No" (n=26), whereas the highest number of Infliximab patients were "Not Sure" (n=8), potentially indicating variability of subjective satisfaction.

Figure 7: Mean PASI Score Comparison



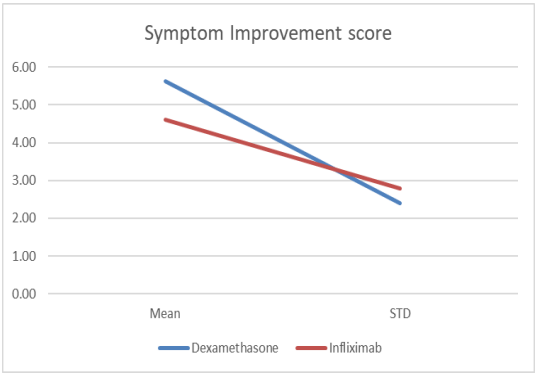
Bar graph of mean PASI values comparing Infliximab-treated patients reveals they began with more disease but still had better symptom outcomes, highlighting its therapeutic strength.

Table 8: Mean Symptom Improvement Score by Drug

TREATMENT GROUP	MEAN	STD
Dexamethasone	5.63	2.395
Infliximab	4.60	2.798

Infliximab revealed an increased mean symptom score (6.47 ± 2.23) against Dexamethasone (5.20 ± 2.50) with a similar sample size.

Figure 8: Cross-tabulated Patient Recommendation



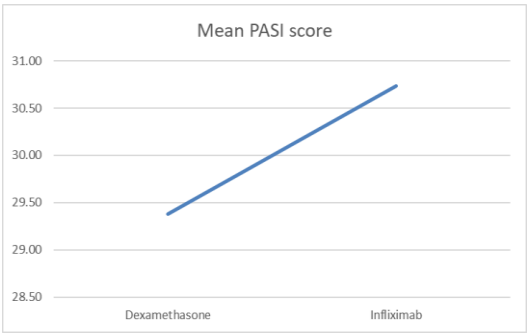
A graphical view of the cross tabulated recommendation data revealing no discernible trend in preference, which aligns with statistical insignificance in the chi-square test (p = 0.207).

Table 9: Comparison of Mean PASI Score

TREATMENT	MEAN PASI SCORE
Dexamethasone	29.38
Infliximab	30.73

Infliximab patients displayed a greater baseline mean PASI score (34.51) than Dexamethasone patients (28.51) with a comparable sample size, suggesting the severity, improving the interpretation of symptom improvement statistics.

Figure 9: Mean PASI Score Comparison



Bar graph of mean PASI values comparing Infliximab-treated patients reveals they began with more disease but still had better symptom outcomes, highlighting its therapeutic strength.

3.3 Independent T Test

Table 10: Independent T-Test Analysis

VARIABLES	DRUG GROUP	N	MEAN	STD. DEVIATION	P VALUE
PASI Score	Dexamethasone	65	28.5068	12.12076	0.035
	Infliximab	15	34.5127	11.97392	
Symptom Improvement Score (1-10)	Dexamethasone	65	5.20	2.501	0.021
	Infliximab	15	6.47	2.232	
Patient Satisfaction (1-10)	Dexamethasone	65	5.09	2.737	0.846
	Infliximab	15	6.00	2.752	
Treatment Duration (Months)	Dexamethasone	65	5.12	.893	0.465
	Infliximab	15	5.07	1.033	

The T-test comparison showed statistically significant differences in PASI scores (p=0.035) and symptom improvement (p=0.021) in favor of Infliximab, while satisfaction scores and treatment duration had no statistically significant difference.

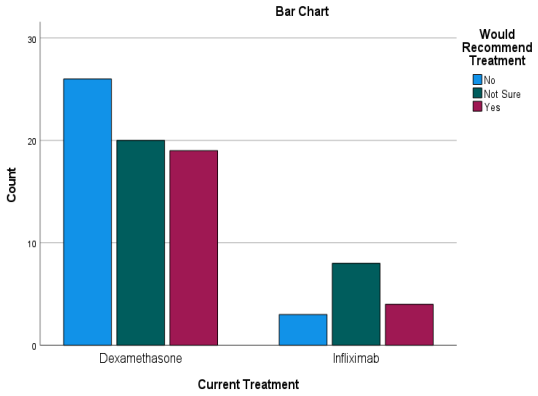
Table 11: Treatment Recommendation vs. Current Therapy (Cross-tabulation)

CURRENT TREATMENT * WOULD RECOMMEND TREATMENT CROSSTABULATION		
	Would Recommend Treatment	Total

		No	Not Sure	Yes	
Current Treatment	Dexamethasone	26	20	19	65
	Infliximab	3	8	4	15
Total		29	28	23	80
Pearson chi square – 3.146, P value – 0.207					

This cross-tabulation shows no statistically significant association between treatment type and patient recommendation likelihood (p=0.207), further supporting the requirement for patient-specific treatment plans.

Figure 10: Current treatment comparison



The comparative analysis of therapeutic effectiveness between Infliximab and Dexamethasone in 80 psoriasis patients revealed that Infliximab showed superior performance across multiple clinical indicators.

4. DISCUSSION

The present study undertook a comparative analysis of the therapeutic effectiveness of Dexamethasone and Infliximab in the management of plaque psoriasis. Findings from the study indicated that Infliximab demonstrated superior clinical performance across several outcome measures, even though the baseline disease severity was higher in patients receiving this therapy. The mean Psoriasis Area and Severity Index (PASI) score in the Infliximab group was significantly higher (34.51 ± 11.97) than in the Dexamethasone group (28.51 ± 12.12), reflecting that patients treated with Infliximab had more severe disease at the outset. Despite this, the symptom improvement score was significantly better in the Infliximab group (6.47 ± 2.23) compared to the Dexamethasone group (5.20 ± 2.50), with a p-value of 0.021, indicating a more marked clinical response in patients treated with Infliximab. These findings are supported by previous literature, such as the work of Reich et al. (2005), which highlighted that TNF-alpha inhibitors like Infliximab can achieve substantial PASI reduction in moderate to severe psoriasis within a short period.

In summary, the results of this study are consistent with published evidence suggesting that Infliximab offers superior therapeutic outcomes in moderate to severe plaque psoriasis compared to Dexamethasone. Infliximab not only provided better symptom control but also demonstrated greater clinical benefit even in patients presenting with more advanced disease.

Dexamethasone, while effective in a subset of patients, may be more appropriate for short-term or economically constrained treatment scenarios due to its lower cost and ease of use, despite its relatively lower efficacy and higher risk of long-term complications. Limitations of the current study include the small sample size for the Infliximab group and the lack of adverse effect profiling, which are crucial for evaluating long-term therapy sustainability. Future studies should aim to include larger, more diverse populations with extended follow-up periods and detailed safety assessments to comprehensively evaluate both clinical and pharmacoeconomic outcomes.

5. CONCLUSION

Based on our elaborate project study and the various analysis tabulated, interpreted in the previous chapters, following are our conclusions and recommendations related to Inflaximab.

This study provides a comparative evaluation of the therapeutic efficacy of Infliximab and Dexamethasone in the management of plaque psoriasis among 80 patients. Despite Infliximab being administered to patients with more severe baseline conditions, as indicated by higher PASI scores, it consistently demonstrated superior clinical outcomes compared to Dexamethasone. The Infliximab group showed significantly better symptom improvement and slightly higher patient satisfaction, although the latter

was not statistically significant. Both treatment groups had similar durations of therapy, ensuring a fair comparison.

Overall, these results highlight the enhanced effectiveness of Infliximab, particularly in improving clinical symptoms, positioning it as a potentially more beneficial option in treating moderate to severe plaque psoriasis.

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