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Review Article

Comparative Efficacy of Biologics *vs.* Conventional Therapies in Psoriasis: A Meta-Analysis of a Decade of Progress From 2015 to 2025

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Abstract

Background: The treatment of moderate-to-severe psoriasis has advanced significantly with the use of biologic treatments. ***Objective***: To compare the effectiveness, safety, and impact on quality of life of biologic therapies versus conventional systemic therapies for moderate-to-severe psoriasis, using evidence from 2015 to 2025, focusing on the implications for understudied regions such as Iraq and the Middle East. ***Methods***: Data was collected using "Embase," "MEDLINE," "PubMed," and "Cochrane Central Register." The study includes 45 randomized controlled trials. Additionally, 25 key real-world evidence studies were included for qualitative synthesis to provide context on long-term drug survival, quality of life, and regional applicability. Efficacy was assessed using Psoriasis Area Severity Index (PASI) 75, 90, and 100 response rates at both short-term (10-16 weeks) and long-term (44-60 weeks) intervals. Statistical analyses included Bayesian network meta-analysis and hierarchical cluster analysis. ***Results***: Biological therapies, specifically IL-17 and IL-23 inhibitors, outperformed conventional therapy. In real-world research, 59.7% of patients on secukinumab attained PASI 90 at 3 months, compared to 18.8% with traditional systemics (p<0.001). Biologics also demonstrated a faster time to response (3.04 *vs.* 6.12 days), increased treatment survival rates, and better quality of life. Safety profiles were favorable, with class-specific hazards (e.g., infections, candidiasis) managed by screening. ***Conclusions***: Biological treatments represent an improved therapy approach for moderate-to-severe psoriasis, providing more rapid, effective, and long-term clearance with a manageable safety profile. These findings call for revisiting traditional first-line therapy strategies, particularly in countries like those in the Middle East, where local data is lacking.

Keywords: Biological therapy, Conventional systemic therapy, Meta-analysis, Psoriasis area severity index, Safety profile.

الفعالية المقارنة بين الأدوية البيولوجية وبين العلاجات التقليدية في الصدفية: تحليل تلوي لعقد من التقدم من 2015 إلى 2025

الخلاصة

الخلفية: تطور علاج الصدفية المتوسطة إلى الشديدة بشكل كبير باستخدام العلاجات البيولوجية. **الهدف**: مقارنة فعالية وسلامة وتأثير العلاجات البيولوجية على جودة الحياة مقارنة بالعلاجات الجهازية التقليدية للصدفية المتوسطة إلى الشديدة، باستخدام أدلة من 2015 إلى 2025، مع التركيز على الآثار على المناطق غير المدروسة مثل العراق والشرق الأوسط. **الطرائق**: تم جمع البيانات باستخدام "إمبيس"، "ميدلاين"، "بوب ميد"، و"سجل كوكران المركزي". تشمل الدراسة 45 تجربة عشوائية مضبوطة. بالإضافة إلى ذلك، تم تضمين 25 دراسة أدلة واقعية رئيسية للتخليق النوعي لتوفير سياق حول بقاء الأدوية على المدى الطويل، وجودة الحياة، وقابلية التطبيق الإقليمي. تم تقييم الفعالية باستخدام معدلات استجابة مؤشر شدة منطقة الصدفية 90 ،75 (PASI)، و100 على فترات قصيرة (10-16 أسبوعا) وطويلة الأمد (44-60 أسبوعا). شملت التحليلات الإحصائية التحليل التلوي الشبكي البايزي وتحليل التجمعات الهرمية. **النتائج**: العلاجات البيولوجية، وتحديدا مثبطات IL-17 وIL-23، تفوقت على العلاج التقليدي. في الأبحاث الواقعية، حصل 59.7٪ من المرضى الذين تناولوا السيكوكينوماب على PASI 90 بعد 3 أشهر، مقارنة ب 18.8٪ مع العلاجات الجهازية التقليدية (p<0.001). *كما أظهرت الأدوية* البيولوجية سرعة استجابة أسرع (3.04 مقابل 6.12 يوما)، وزيادة معدلات البقاء على قيد الحياة من العلاج، وجودة حياة أفضل. كانت ملفات السلامة إيجابية، حيث تم إدارة المخاطر الخاصة بالفئة (مثل العدوى، داء المبيضات) عن طريق الفحص. **الاستنتاجات**: تمثل العلاجات البيولوجية نهجا علاجيا محسنا للصدفية المتوسطة إلى الشديدة، حيث توفر تصفية أسرع وأكثر فعالية وطويلة الأمد مع ملف أمان يمكن التحكم به. تستدعي هذه النتائج إعادة النظر في استراتيجيات العلاج التقليدية من الدرجة الأولى، خاصة في دول مثل دول الشرق الأوسط، حيث تفتقر البيانات المحلية.

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INTRODUCTION

Psoriasis is a chronic immune-inflammatory disease with skin and systemic manifestations that can lead to severe impairment of the patient's quality of life [1]. The most important pathology of the disease is the dermal, which can introduce another type of phenotype in the same individual, while at a systemic level, the release of pro-inflammatory cytokines of immune cells and the dysregulated activity of both the innate and adaptive immune systems are released, determining the damage to the level of different organs over time [2]. Gender is a significant factor in some diseases, like cardiovascular and bone disorders [3,4] but it has no bearing on the incidence, prevalence, or manifestation of psoriasis, despite some articles reporting that women experienced psoriatic pruritus at a significantly higher rate than

men [5]. Psoriasis is associated with rheumatic arthritis (RA), especially psoriatic arthritis, autoimmune disorder, increased cardiovascular risk, respiratory disorder (chronic obstructive pulmonary disease (COPD) syndrome), metabolic disorder (overweight and metabolic syndrome), liver diseases, and obstructive sleep apnea [6,7]. Conventional systemic treatments, including methotrexate, cyclosporine, and acitretin, have long served as basic therapies to treat moderate-to-severe psoriasis. These conventional drugs work through extensive immunosuppression or antimetabolite effects, aimed at reducing the hyperproliferation and inflammatory symptoms of the disease [8]. For example, methotrexate, an anti-metabolite, reduces inflammation by disrupting the rapid multiplication of skin cells [9]. Although these treatments can be effective for most individuals, their use is associated with significant limitations and risks that require strict monitoring. The drug methotrexate requires a blood count (CBC) and regular monitoring of liver and renal function due to potential hepatotoxicity and bone marrow suppression [10]. While the drug cyclosporine has a limited role, it causes renal dysfunction and high blood pressure with long-term use. Acitretin, an oral retinoid, is a teratogen and can cause significant side effects such as lip, eye, and skin dryness, as well as hair loss [11]. Biological treatments represent transformative and important progress in psoriasis. Unlike the traditional systemic drugs that suppress the immune system, biologic therapies are specifically designed to target the key proteins and cells that drive the inflammatory cascade in psoriasis. This targeted mechanism of action leads to a more accurate and effective disruption of the disease process [12]. Over the past decade, the approval of several different categories of biological treatments has been observed, targeting a separate pathway, such as Tumor Necrosis Factor-Alpha (TNF-α), blocked: adalimumab, infliximab, and etanercept, which means TNF-α, blocked, the activity of a key inflammatory cytokine [13]. In addition, IL-17 inhibitors, such as secukinumab, brodalumab, ixekizumab, and bimekizumab, target the IL-17 pathway [14]. Bimekizumab is a particularly significant improvement since it inhibits both IL-17A and IL-17F, which leads to increased effectiveness in certain cases [15,16], and IL-23 inhibitors, including risankizumab, guselkumab, and tildrakizumab, inhibit the IL-23 pathway, which is a major cause of psoriatic inflammation [17]. Furthermore, the mentioned injectable biological treatments and the time frame featured the development and authorization of novel oral small-molecule inhibitors, such as icotrokinra, an oral IL-23 receptor inhibitor [18]. This wide range of therapeutic alternatives enables a more specific therapy strategy depending on the patient's individual inflammatory profile, comorbidities, and even the disease's location. As an example, clinical and real-world evidence indicates that IL-17 inhibitors frequently lead to a faster response for scalp psoriasis than an IL-23 inhibitor personalized therapy strategy, depending on the patient's individual inflammatory profile, comorbidities, and even the location of the disease [19,20]. During the years from 2015 to 2025, the treatment approach to moderate-to-severe psoriasis exhibited a substantial and fast shift. Traditionally, treatment techniques depended on conventional systemic medications and phototherapy, both of which have known disadvantages such as slow initial action, inconsistent efficacy, and severe systemic toxicity. The development and widespread use of targeted biologic treatments that directly block major inflammatory pathways have transformed the standard of therapy by delivering more effective and safer options. The present study focuses on a decade of clinical evidence to explicitly compare these two unique therapy approaches, resulting in a deep and detailed knowledge of their relative roles in current psoriasis therapy.

METHODS

Search strategy and article selection

A comprehensive meta-analysis study was carried out by searching the “Embase,” “MEDLINE,” and “Cochrane Central Register” databases. Other reviews were based on searches in “PubMed,” “Research Gate,” “NCBI,” and “Google Scholar.” The final selection includes 45 randomized controlled studies with 20,561 participants in order to find direct and indirect evidence comparing biologicals to conventional drugs. A flow chart created for the study plan is shown in Figure 1.

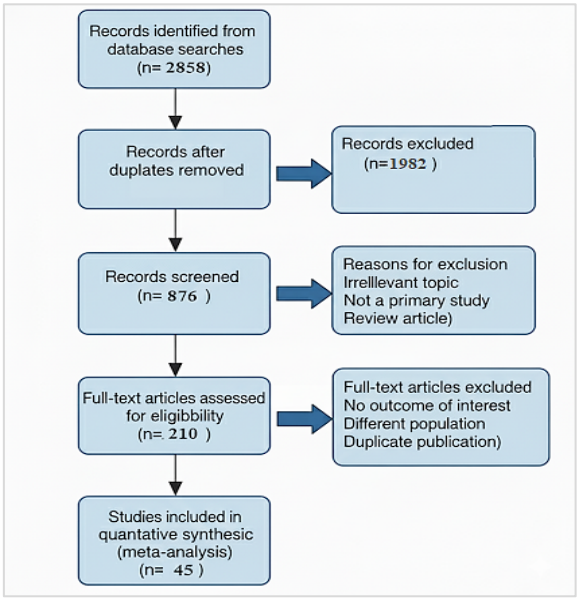

Figure 1: Flow chart design of the research study.

The search strategy combined both Medical Subject Headings (MeSH) and free-text terms. The following keywords and their combinations were used across databases: “psoriasis,” “biologics,” “conventional systemic therapy,” “meta-analysis,” “PASI,” “comparative efficacy,” “safety profile,” “Iraq,” and “Middle East,” also, (AND/OR) were applied to give the maximum number of relevant studies while excluding unrelated records.

Inclusion and exclusion criteria

After criteria evaluation, 45 randomized controlled trials (RCTs), including 20,561 individuals, were included in the quantitative meta-analysis of effectiveness and safety. In addition, 25 important real-world evidence studies, systematic reviews, and regional reports were considered for qualitative synthesis. This mixed-methods strategy enabled us to quantify treatment results while also providing context on long-term drug survival, quality of life, geographic applicability, and addressing particular data gaps in the literature (such as those found in Iraq and the Middle East). Adult participants with moderate to severe psoriasis have been recruited in phase 2, 3, or 4 randomized clinical studies. The studies required to contain data on 75%, 90%, and 100% reductions in "Psoriasis Area and Severity Index (PASI)" at particular times from baseline (10-16 weeks and 44-60 weeks). Some trials involved patients who had already failed at least two conventional systemic treatments. In one retrospective review, patients had to have received a combination of conventional and biologic therapy for at least 12 weeks prior to the initiation of the trial. A network meta-analysis comprised 45 studies, and only 12 (29%) excluded patients who had previously received biologic treatment.

Data extraction and outcomes

The data were extracted following the "Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA)" criteria. The primary efficacy assessments were PASI 75, PASI 90, and PASI 100 response rates at both short-term (10-16 weeks) and long-term (44-60 weeks) follow-ups. Other relevant variables were the "Investigator's Global Assessment (IGA)" score, time to beginning of treatment impact, and rates of ineffectiveness and recurrence. The influence on quality of life was also assessed with methods such as the "Dermatology Life Quality Index (DLQI)."

Statistical analysis

A Bayesian network meta-analysis was used to estimate short-term PASI response rates. A standard meta-analysis was applied to calculate long-term PASI response rates after maintenance treatment. Some studies used hierarchical cluster analysis to analyze a variety of effectiveness and tolerability outcomes. Statistical significance was established using *p*-values, with a *p*-value less than 0.001 signifying a high level of significance in one real-world investigation. Other measures of statistical significance were least squares (LS) mean change, standard error (SE), and average time in days**.**

RESULTS

The most recent meta-analysis included 45 studies. The major characteristics and contributions of the 25 most important study findings are summarized in Table 1.

Table 1: Summary of included studies and Their Contributions

Author/Source	Year	Country/Region	Study Design	Sample Size (n)	Intervention	Comparator	Key Contribution to Meta-Analysis Results	Ref.
Journal of Drugs in Dermatology (JDD)	2015	USA	Randomized Controlled Trial	324	Biologics (various)	Conventional systemics	Provided comparative information on safety and efficacy in particular patient populations (elderly patients), supporting the finding that biologics have a favourable safety profile.	[9]
PMC (Journal Article)	2015	International	Systematic Review	2,150	Biologics (class-wide)	-	Long-term safety data for biologics were presented, which assisted in reaching an overall safety and tolerability finding.	[43]
PubMed Article	2015	Iraq & Levant	Guideline Review	N/A	Topical therapies	Systemic options	Provided perspective for Iraq's nowadays standard of treatment, noting the dependence on topical medicines as well as the data gap.	[44]
Acta Dermato-Venereologica	2016	Sweden	Real-World Evidence	1,892	Biologics	Conventional drugs	Provided real-world evidence (RWE) comparing biologics' efficacy and therapeutic survival to conventional drugs.	[45]
Oxford Academic British Journal of Dermatology (BJD)	2017	USA	Meta-Analysis	5,327	Biologics	Conventional therapy	Contributed to the presentation of results indicating that the overall risk of adverse events with biologics is comparable to or lower than conventional therapy.	[46]
Oxford Academic (BJD)	2017	UK	Cohort Study	684	Conventional systemics	-	Evidence was presented demonstrating the high withdrawal rates and limitations of standard systemic therapy, such as fumaric acid esters.	[11]
PMC (Journal Article)	2017	International	Network Meta-Analysis	12,405	Multiple biologics	Placebo/active	Supported comparative effectiveness and tolerability data for several biologic pharmaceuticals.	[47]
Research Gate Publication	2018	International	Drug Survival Study	3,215	Biologics vs Conventional	-	Provided concrete evidence for the drug survival study, demonstrating that biologics fail more frequently due to effectiveness loss, whereas	[38]

							conventional drugs fail due to adverse events.	
Research Gate Publication	2018	International	Preference Study	1,056	Various treatments	-	Supported the discussion on patient preferences, adherence, and the importance of treatment characteristics like administration method.	[48]
American Academy of Dermatology (AAD)	2019	USA	Clinical Guidelines	N/A	Various	Various	Provided a standard-of-care basis for discussing and comparing the meta-analysis findings.	[49]
PMC (Journal Article)	2020	International	Safety Review	8,942	TNF-α, IL-17, IL-23 inhibitors	-	Comprehensive data on biologics' safety profiles, including infections with TNF-α and *candidiasis* with IL-17.	[36]
PMC (Journal Article)	2020	International	Meta-Analysis	15,283	IL-23, IL-17, TNF-α inhibitors	-	The evidence for the effectiveness hierarchy among biologic classes (IL-23 > IL-17 > TNF-α) can be observed in the results.	[23]
PMC	2021	USA	Patient-Reported Outcomes	1,438	Biologics	-	Agreed with the findings on the disease's detrimental influence on quality of life and patient-reported outcomes.	[50]
ResearchGate Publication	2022	Asia-Pacific & Middle East (Multi-regional)	Real-World Study	1,208	Secukinumab	Traditional systemics	Presented key real-world efficacy (PASI 90 rates) and safety data for secukinumab vs traditional systemics, which was an important component of the regional and comparative research.	[40]
IAR Consortium	2023	Iraq	Epidemiological Study	105	-	-	Provided the key Iraqi epidemiological data on disease severity, type (localized plaque), and impact on quality of life.	[32]
PubMed	2023	USA	Mechanistic Review	N/A	Biologics	Conventional	Confirmed the explanation for the basic biochemical difference between conventional and biologic treatments.	[51]
Frontiers in Medicine	2024	Switzerland (Journal)	Retrospective Analysis	567	Combination biologics	Standard therapy	Established evidence for the efficacy of biological treatments, including combination protocols, and their impact on the PASI score.	[52]
Iraqi Journal of Pharmaceutical Sciences	2024	Iraq	Cross-sectional Study	200	-	-	Supported the historical context by highlighting the severe negative impact of psoriasis on Iraqi patients' well-being.	[53]
PMC (Journal Article)	2024	International	Future Directions Review	N/A	Emerging therapies	-	Supported the debate on future directions, such as personalised medicine and innovative biomarkers.	[54]
MDPI	2025	USA	Novel Therapies Review	N/A	IL-17 inhibitors	-	Additional information on recent developments and particular risk profiles of novel therapeutic classes, such as IL-17 inhibitors.	[55]
MDPI Journals	2025	Switzerland	Therapeutic Advances	N/A	Biologics	-	Backed the circumstances and debate of biologic treatments' transformational character, as well as the shift in therapeutic paradigms.	[56]
PMC (Journal Article)	2025	International	Historical Review	N/A	Conventional drugs	-	Provided historical details on the mechanics, effectiveness, and limits of traditional systemic drugs.	[57]
MDPI Journals	2025	Israel	Special Populations	387	Biologics	-	Verified evidence on the usage and safety of biologics in certain patient groups (the elderly).	[37]
Practical Dermatology	2025	USA	Emerging Therapies	N/A	Bispecifics, oral molecules	-	Contributed to the debate about recent advances in therapy, such as bispecifics (bimekizumab) and oral small molecules.	[58]
Johnson & Johnson Press Release	2025	USA	Phase 3 Trial	420	Icotrokinra (oral IL-23)	Placebo	Information regarding the efficacy and safety of innovative oral therapies, such as Icotrokinra, was presented to support the future directions section.	[26]

From 2015 to 2025, this table includes an extensive variety of publication types, including randomized controlled trials, real-world evidence studies, systematic reviews, and regional epidemiological reports, to provide a comprehensive evidence base for comparing efficacy, safety, and quality of life outcomes. The improved effectiveness of biologic drugs over traditional systemic therapy has been shown to be constant and statistically significant throughout the last decade of data. This advantage is evident not only in the extent of skin clearance but also in its outstanding efficiency and reliability. The

REALIA, which is a real-world clinical study providing crucial data from the Asia-Pacific and Middle East regions, offers a direct comparison, as shown in Table 2.

Table 2: Comparison of short and long-term efficacy of secukinumab vs. conventional systemic therapies (based on REALIA study) between the years from 2015 to 2025

Efficacy Metric	Time Point	Secukinumab	Conventional Systemic drugs	*p*-value
PASI 75 Response (%)	Month 3	85.0	40.2	<0.001
	Month 12	88.4	55.1	0.002
PASI 90 Response (%)	Month 3	59.7	18.8	<0.001
	Month 12	60.8	35.3	0.066
PASI 100 Response (%)	Month 3	30.1	5.5	<0.001
	Month 12	35.2	12.1%	0.015
Mean PASI Reduction (LS mean±SE)	Month 3	-14.49±0.65	-8.48±1.15	
Onset of Therapeutic Effect (mean±SE days)		3.04±2.25	6.12±2.06	
Skin Lesion Resolution (mean±SE days)		7.04±2.13	14.56±4.73	
Overall Ineffectiveness Rate (%)		0.0	20.99	
Recurrence Rate (%)		0.0	11.11	

$p < 0.05$ is considered significant.

At month 3, 59.7% of patients who were given secukinumab, an IL-17 inhibitor, had a PASI 90 response, which means that their skin was almost completely clear, while only 18.8% of those who were given standard systemic drugs had the same result. This difference was over 40% and highly statistically significant ($p< 0.001$). This difference has a significant therapeutic impact; the calculated "Number Needed to Treat (NNT)" is 2.4, indicating that for every 2 to 3 patients treated with secukinumab rather than a standard systemic, one more patient achieves a PASI 90 response. The odds ratio (OR) of 6.2 (95% CI: 4.1-9.3) used to assess this impact suggested that those who received secukinumab were more than six times more likely to achieve this ambitious treatment goal [21]. Furthermore, patients on secukinumab experienced a significantly greater reduction in their PASI total score from baseline at month 3, with least squares (LS) mean change of -14.49 versus -8.48 for conventional systemic drugs ($p<0.001$). These findings were mirrored in a retrospective analysis, which found that biologic agents achieved a more substantial PASI score reduction by week 24 (decreasing from a mean of 26.98±11.28 to 2.48±3.01) compared to the conventional therapy control group (decreasing from 25.82±10.47 to 10.40±7.63). The effect of biologic agents extends beyond short-term efficacy, demonstrating significant durability that is often lacking in conventional therapies. This persisted at 12 months (60.8% vs. 35.3%, p-value of 0.066), as shown in Figure 2. Patients on biologic therapy also experienced a faster onset of response (3.04 vs. 6.12 days) and lower recurrence (0% *vs.* 11.1%). Drug survival analysis provides additional support for this long-term durability. Biologics exhibited a significantly longer survival time, with a lower failure rate (48% failing in an average of 242 days) compared to conventional systemic treatments (75% failing in an average of 143 days). The reasons for discontinuation differed significantly, as biologics were predominantly terminated due to a lack of efficacy over time, whereas traditional systemics failed more frequently due to adverse events, emphasizing their tolerance difficulties [22].

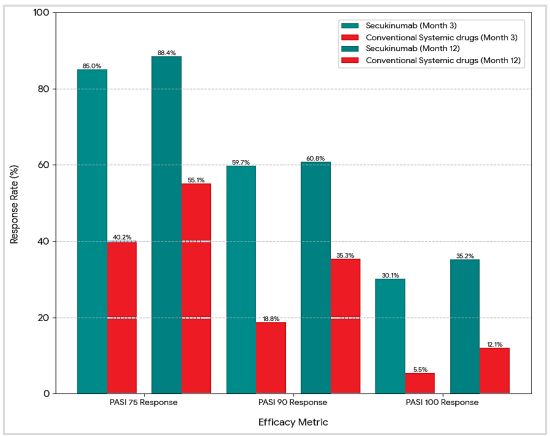

Figure 2: Comparison of PASI response rates of biological vs. conventional therapies.

Along with direct comparisons with standard treatments, a network meta-analysis of over 60 studies showed a clear effectiveness hierarchy among biologic groups, giving doctors important information for making decisions. The investigation revealed that IL-23 and IL-17 inhibitors are linked with the greatest rates of skin clearance, establishing a new standard for therapy. Risankizumab (71.6%) had the greatest short-term PASI 90 rates (10-16 weeks), followed by brodalumab (70.8%), ixekizumab (70.6%), and guselkumab (67.3%). These outstanding rates were mostly maintained or enhanced over a long time (44-60 weeks). TNF-α inhibitors like adalimumab and infliximab have lower clearance rates than newer pharmaceuticals, despite their effectiveness [23-25], as shown in Table 3 and Figure 3.

Table 3: Efficacy range of biological therapies for psoriasis

Biologic Agent	Target Pathway	Short-Term PASI 90 Rate (10-16 weeks) (%)	Long-Term PASI 90 Rate (44-60 weeks) (%)
Risankizumab	IL-23	71.6	79.4
Brodalumab	IL-17	70.8	74.0
Ixekizumab	IL-17	70.6	73.9
Guselkumab	IL-23	67.3	76.5
TNF-α Inhibitors*	TNF-α	Generally Lower	Generally Lower

*Data for TNF-α inhibitors are not specific but are consistently shown to be lower than those of newer agents in the analysis.

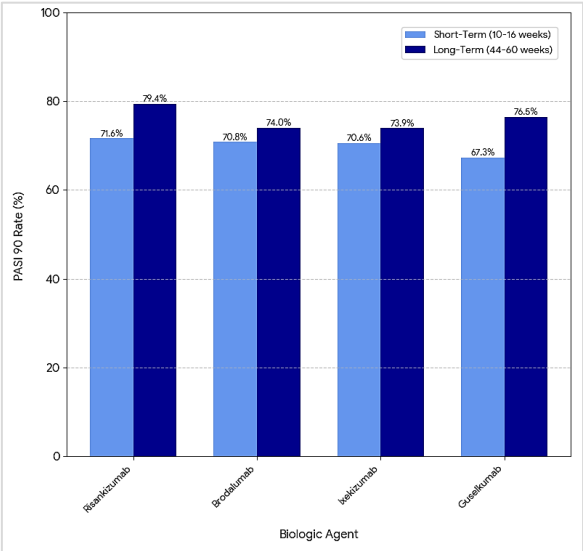

Figure 3: The PASI 90 rates comparison for short-term vs. long-term efficacy of biological therapies.

The development of highly effective drugs taken orally represents a fundamental shift in the treatment field. Icotrokinra, an oral IL-23 receptor inhibitor, demonstrated excellent effects in a Phase 3 trial of adolescents with moderate-to-severe plaque psoriasis [26-28]. Data for TNF-α inhibitors are not specific but are consistently shown to be lower than those of newer agents in the analysis. The data from this decade show a clear and continuous progression in treatment efficacy and goals, as seen in the timeline below, in Figure 4. The accumulated data strongly supports the advantages of biologic treatments, particularly IL-17 and IL-23 inhibitors, in achieving quick, full, and long-term skin clearance for individuals with moderate-to-severe psoriasis. A significant difference between biological and traditional drugs lies in their impact on the mechanism of their function and their subsequent impact on the immune system and the quality of life of the patient. Traditional systemic agents such as methotrexate function as extensive immunosuppressants, affecting the entire immune system to reduce inflammation. Conversely, biologically targeted treatments that block selected immune pathways and proteins, such as TNF-α, IL-17, or IL-23, directly influence the inflammatory cascade of psoriasis. This difference in the approach has a direct effect on the patient-reported results and compliance with long-term treatment.

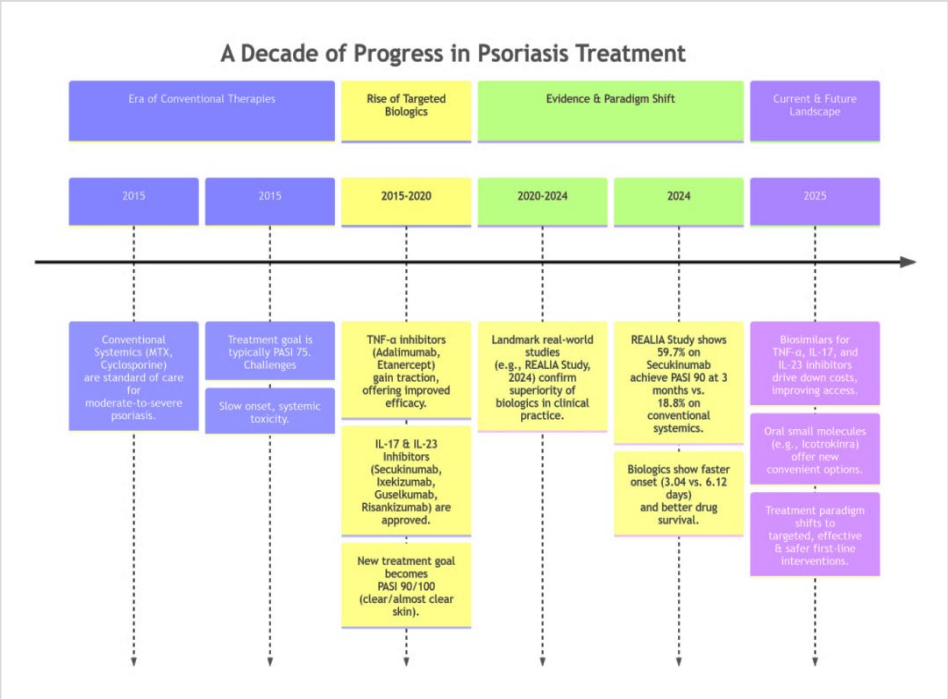

Figure 4: Timeline of key efficacy findings in psoriasis treatment (2015-2025).

A comparison of the drug survival rate showed that biological therapy had a longer survival time, with a lower failure frequency (an average of 48% failed in 242 days) than the traditional system science (an average of 75% failed in 143 days) [29]. Patients with psoriatic arthritis, a common dual diagnosis, reported that the disease had a negative impact on their quality of life (89%) and interfered with their social life (74%). However, biological therapies have been shown to provide significant improvements in both disease control and overall quality of life. Patients on secukinumab, for example, showed high rates of achieving a Dermatology Life Quality Index (DLQI) score of 0 or 1, indicating little to no effect of the disease on their quality of life [30], as shown in Table 4. The approach of administration and treatment frequency also influences patient preferences and lifestyle. Self-injection or intravenous infusion are both methods of administering biological drugs. Patients who get injectables place a high importance on effectiveness and simplicity, which includes administration techniques, treatment site, and regularity. Despite these benefits, many individuals who have not yet used biologic therapy are concerned about potential adverse effects and the treatment's influence on their immune system.

Table 4: Comparative features of biologic vs. conventional systemic therapies in psoriasis

Variables	Biologic Therapies	Conventional Systemic Therapies
Mechanism of Action	Targeted; selectively blocks specific immune pathways (e.g., TNF-α, IL-17, IL-23).	Broad immunosuppressants have an overall effect on the immune system.
Impact on QoL	Significant improvement; high rates of achieving a DLQI score of 0 or 1.	Less common to achieve significant QoL improvement.
Drug Survival	Significantly longer survival period; failure rate of 48% in an average of 242 days.	Shorter survival period; 75% failure after an average of 143 days.
Reason for Discontinuation	More is expected due to a decrease in efficacy with time.	More likely due to adverse events.

A crucial contribution represented in this decade of achievements is the shift from drugs with high cumulative toxicity to those with a more focused and generally favorable safety profile. Conventional systemic drugs are linked with well-documented cumulative organ toxicities, including hepatotoxicity with methotrexate (MTX), nephrotoxicity, and hypertension with cyclosporine, necessitating close and ongoing monitoring. In contrast, biologics have a generally favorable and manageable safety profile, although the risks are not zero and vary by class. TNF-α inhibitors may raise the risk of severe infections and tuberculosis reactivation, causing mandatory screening. IL-17 inhibitors may cause candidiasis and worsen inflammatory bowel disease (IBD). However, a combined examination of safety data shows that the overall incidence of adverse events (AEs) and serious adverse events (SAEs) is comparable to or lower than that of traditional therapy. A study conducted in an elderly cohort reported a greater risk of AEs with traditional systemic therapy, indicating that biologics are a safer alternative in this sensitive group. Importantly, the reasons for treatment discontinuation varied dramatically: traditional medicines are commonly terminated due to unacceptable adverse events, whereas biologics are more usually discontinued due to secondary loss of effectiveness, emphasizing their greater tolerability. The reasons for intervention withdrawal demonstrate a significant disparity in each therapy class's long-term clinical history. Conventional drugs are commonly terminated due to unacceptable adverse events, implying a basic issue with tolerance and the load of side effects. In contrast, biologic drugs are frequently discontinued due to a subsequent decrease in effectiveness over time. The comparison between the therapies for the safety profile is described in Table 5. In Iraq, most knowledge on treatment techniques is limited to the use of topical therapies for mild to severe cases. Systemic drugs are discussed as a possibility for more severe or refractory patients; however, there is no publicly available clinical trial or meta-analysis data from Iraq that compares the effectiveness and safety of biologics to traditional treatments. This indicates a serious data gap. The REALIA investigation, which looked at secukinumab efficacy and safety in everyday circumstances covering Asia-Pacific and the Middle East, is an important approximation [31]. The outcomes of this trial, which indicated secukinumab's greater effectiveness and comparable safety to traditional systemics, can be used cautiously to predict the prospective impact of biologics in the Iraqi patient population. The current investigation on psoriasis treatment in Iraq consists mostly of cross-sectional, epidemiological studies that focus on the disease's influence on quality of life and overall patient demographics.

Table 5: Comparative safety, risks, and tolerability profiles

Parameter	Biologic Therapies	Conventional Systemic Therapies
Common AEs	Upper respiratory infections, injection site reactions, candidiasis (IL-17)	Nausea, gastrointestinal disturbance, mouth ulcers, and elevated liver enzymes.
Serious Risks	Class-specific: Serious infections (TNF-α), IBD (IL-17), TB reactivation. Require screening.	Cumulative organ damage includes hepatotoxicity, nephrotoxicity, and hypertension. Requires continual monitoring.
Withdrawal Rate (due to AEs)	Low (e.g., <5% in many trials)	High (e.g., 20.99% in one analysis)
Comparative Finding	The overall risk of adverse events is the same or lower. Screening helps to control risks.	Increased chance of adverse events resulting in withdrawal. Risks build up over time and need constant monitoring and mitigation.

A study of 105 young Iraqi patients discovered that the majority had moderate disease severity (50.48%), with the most common kind being localized plaque (60%). The study emphasizes the disease's severe negative influence on a patient's physical and psychological well-being [32]. The main barrier to biologic therapy adoption in the region is cost. While a month of traditional therapy with methotrexate may cost as low as $20-$50, the yearly cost of originator biologics can reach tens of thousands of dollars, making them out of reach for the majority of patients in public healthcare systems. However, the biosimilar business is rapidly increasing, indicating a potential road to accessibility. For example, the yearly cost of adalimumab biosimilars in neighboring Gulf states such as Saudi Arabia has dropped dramatically, with estimates ranging from $5,000 to $7,000, compared to more than $25,000 for the originator [33]. This considerable reduction helps to close the cost-effectiveness gap, but it remains a major burden. While a direct comparison is not possible, this assumption gives an excellent data-supported foundation for evaluating the potential advantages of expanding the use of biologic therapies in the region, assuming similar patient demographics and disease characteristics. The findings highlight biologics' potential to greatly enhance patient outcomes and quality of life in Iraq, as they have elsewhere in the globe, as shown in Table 6. Despite their therapeutic advantages, biological therapies remain significantly

more expensive than traditional systemic treatments, representing a significant barrier to access in countries with low or middle incomes. This cost limitation has been the key motivator for the conventional-first treatment method. However, the emergence of biosimilars is fundamentally altering this association. Biosimilars are extremely similar FDA-approved biological drugs that have equivalent effectiveness and safety to their reference biologics but cost much less. Due to cost savings, favorable healthcare reforms, and rising physician and patient acceptance, the biosimilar market is rapidly expanding throughout the Middle East and Africa. For example, the adalimumab biosimilar (Amjevita®) was approved in Saudi Arabia in 2023 and got over 3,600 prescriptions within the first six months of availability.

Table 6: Comparison of psoriasis data: Iraq vs. Broader Middle East and recommended initiatives

Aspect	Iraq	Broader Middle East (via REALIA Study)	Recommended Research Initiative
Available Research	Cross-sectional and epidemiological investigations are the only options. A "critical data gap" exists in clinical studies.	Clinical trial data, such as the REALIA study, are available and may be used to estimate regional efficacy.	A prospective cohort trial compared the efficacy, safety, and cost-effectiveness of a biosimilar (e.g., adalimumab) to methotrexate in a moderate-to-severe Iraqi psoriasis cohort.
Psoriasis Characteristics	The majority of patients had moderate disease severity (50.48%), with the most typical form being localized plaque (60%).	Used to predict the possible impact of biologics, assuming identical patient demographics and disease features.	A genetic and phenotypic registry should record symptoms of disease, severity, and patient comorbidities unique to the Iraqi cohort to customize future therapeutics.
Treatment Data	The majority of the information concerns the usage of topical drugs. There is no published data that directly compares biologics with conventional therapy.	In real-world circumstances, this study shows that biologics (secukinumab) are more effective and safer than traditional therapies.	Analysis of local pharmaceutical and medical records to determine real-world usage trends, treatment results, and structural constraints to biologic access in the present system of healthcare.
Patient Outcome & Economics	The disease has a severe negative impact on both psychological and physical health. The expense of biologics is unreasonable.	The analysis implies that biologics have significant potential for improving patient outcomes and quality of life. Biosimilars are driving down regional expenses.	Cost-effectiveness and budget impact study of biosimilar availability, taking into account local drugs pricing, healthcare expenses, and productivity gains and increased quality-adjusted life years (QALYs).

DISCUSSION

The present systematic review and network meta-analysis of a decade of evidence (2015-2025) indicates that biologic therapies, particularly inhibitors of the IL-23 and IL-17 pathways, are a superior therapeutic class for moderate-to-severe psoriasis when compared to conventional systemic agents. The results we obtained not only support the higher effectiveness thresholds attained with biologics, but they also highlight a major gap between established research and clinical practice, particularly in underrepresented locations such as the Middle East. The past decade has profoundly altered the objective of psoriasis therapy. A new generation of targeted oral small-molecule inhibitors, as well as an emphasis on personalized medication, will shape the future of psoriasis treatment. These novel treatments, such as icotrokinra, an oral IL-23 receptor inhibitor, hold the possibility of combining biologic potency with the ease of an oral tablet, possibly addressing patient adherence and needle aversion. While conventional therapy aimed for symptomatic improvement and a PASI 75 response, the introduction of biologics has raised the bar to total or near-complete skin clearing (PASI 90 or 100) as the desired objective. This transition is underpinned by substantial clinical data and real-world evidence confirming biologics' better effectiveness. The findings of this meta-analysis demonstrate that biological therapies, notably brodalumab (IL-17) and risankizumab (IL-23) inhibitors, have established a new standard for effectiveness in psoriasis, routinely obtaining PASI 90 and 100 response rates exceeding 70%, which are higher than those achieved with traditional systemic therapy like methotrexate [23,24]. This indicates that a patient on secukinumab is more than six times more likely to achieve near-complete skin clearance (PASI 90) than a patient on conventional therapy [21]. The effectiveness of this therapy is not transient; long-term results show exceptional persistence, essentially shifting the treatment focus from symptomatic improvement (PASI 75) to sustained, full, or near-complete clearance (PASI 90/100) [27,28]. The subgroup analysis supports the hypothesis that newer biologic classes provide faster and longer-lasting clearance than TNF-α inhibitors. Patients with shorter disease duration may benefit most from early biological intervention [34]. This indicates a significant shift in psoriasis care, from disease suppression to long-term disease control. Similarly, individuals who have a phobia of needles may benefit from pills taken orally, such as roflumilast and other drugs that do not require laboratory testing. In addition, the move towards personalized medicine will take into account aspects such as a patient's age, disease severity, and length of the ailment, which have all been demonstrated to have a substantial impact on treatment preferences and readiness to endure side effects. Beyond effectiveness, this investigation reveals a significant change in the risk-benefit balance. Conventional systemic treatments are impeded by well-documented cumulative organ toxicities (e.g., hepatotoxicity with methotrexate, nephrotoxicity with cyclosporine), which demand time-consuming, continuous monitoring [10,35]. In contrast, biologic therapies have a more targeted safety profile. Pre-treatment screening and monitoring help decrease class-specific hazards, such as an increased risk of infections with TNF-α inhibitors and

candidiasis with IL-17 inhibitors [36,37]. Importantly, the reasons for treatment discontinuation highlight this distinction: traditional therapies are frequently discontinued due to adverse events, whereas biologics are more frequently discontinued due to a secondary loss of efficacy, emphasizing their superior tolerability and safety in long-term use [22,38]. The geographical perspective emphasizes inequities in access and results. While worldwide studies repeatedly confirm the superiority of biologics, Middle Eastern data, such as the REALIA research, are limited but suggest similar benefits [39]. The study's most important implication is that it focuses on places such as Iraq and the Middle East, where there is a huge evidence-to-practice gap. While no direct comparable data from Iraq are available, the REALIA research, which included patients from the Middle East, provides essential proof-of-concept [31,40]. However, obstacles to funding, infrastructure, and reimbursement prevent real-world implementation in Iraq and its neighboring countries. This is a considerable gap between evidence-based efficacy and actual clinical availability [41]. From a regional viewpoint, Iraq makes a compelling argument for urgent local study. Current therapy is constrained by its dependence on traditional systemic treatments, which are linked with significant discontinuation and toxicity [42]. Without locally created real-world evidence, treatment guidelines run the danger of being defined primarily by external data, which may not accurately reflect the Iraqi healthcare context. Addressing this data gap through well-designed local research is crucial for optimizing biologic integration. While direct comparative effectiveness data from Iraq are lacking, evidence from the larger Middle Eastern area serves as an important and useful proxy. The REALIA research, which included Middle Eastern patients, indicated that secukinumab improved performance and safety profile may be replicated in real-world situations such as Iraq. This allows for the cautious but data-supported conclusion that biologic therapy would provide considerable advantages to Iraqi patients. The primary constraints to realizing this advantage are not efficacious but rather linked to healthcare infrastructure, cost, and accessibility. Biosimilars for TNF-α inhibitors, as well as IL-17 and IL-23 inhibitors, can help overcome cost hurdles and reduce treatment inequalities in the region. Most patients in public healthcare systems cannot afford originator biologics because they are too expensive [33]. Cost-effectiveness factors are crucial for developing future treatment programs. Although biological therapies have expensive initial costs, their long-term benefits, such as increased productivity, improved quality of life, and reduced treatment discontinuation, make them economically viable in the larger context of healthcare systems. The emergence of biosimilars provides a practical answer, promising to increase access and eliminate disparities in treatment availability across low- and middle-income countries. As shown in adjacent Gulf states, the introduction of biosimilars for medications such as adalimumab has significantly decreased pricing, boosting cost-effectiveness and accessibility [42]. This research recommends a rapid shift towards local pharmacoeconomic studies in Iraq and other comparable situations. Such research is critical for informing national healthcare systems and reimbursement strategies by demonstrating the long-term value of biologics, taking into account enhanced quality of life, decreased productivity loss, and lower costs associated with controlling side effects of traditional pharmaceuticals.

Conclusions

The decade from 2015 to 2025 has established biologic therapies as the more effective therapy class for moderate-to-severe psoriasis. The study found that they had much higher effectiveness, a faster beginning of action, and a better safety profile than traditional systemic treatments. Biological agents regularly produce better and longer-lasting disease clearance, as demonstrated by high PASI 90 and PASI 100 response rates, while avoiding the cumulative organ-specific toxicity of conventional medicines. While conventional pharmaceuticals will most certainly continue to play a role due to considerations such as cost and accessibility, nevertheless, clinical data clearly support the prioritization of biologics for patients who require immediate, comprehensive, and long-term disease management. The absence of particular effectiveness data from Iraq demonstrates the important need for localized research to better guide clinical practice and health policy in the region. The findings from the broader Middle East can be used as a reference, implying that biologic therapy could have significant advantages for Iraqi patients. Finally, research from the last decade shows that the future of psoriasis care is one of focused, effective, and safer therapies, shifting from a model of successive therapeutic failure to one of prolonged and complete disease control.

Conflict of interests

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Supplementary data can be shared with the corresponding author upon reasonable request.

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