

The economic burden for the management of moderate-to-severe psoriasis in the Kingdom of Saudi Arabia (KSA)

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BACKGROUND

- Psoriasis is a chronic, immune-mediated disease of the skin and the joints characterized by erythematous plaques with white scales covering the scalp, knee, and elbow.⁽¹⁾
- In 2016, the prevalence of psoriasis was estimated to be 0.09%-11.4% globally.^(2,3,4) In the KSA, the incidence of psoriasis ranged from 1.5%-3.4%,^(5,6) and the prevalence ranged between 2-3% during 2004-2005.⁽⁷⁾
- The treatment of psoriasis has undergone a revolution with the advent of advanced biologic therapies.⁽⁸⁾ Globally, available biological therapy includes certolizumab pegol, etanercept, adalimumab, infliximab, golimumab, ustekinumab, secukinumab, ixekizumab, risankizumab, and guselkumab.⁽⁸⁾
- The relative improvement of the Psoriasis Area and Severity Index (PASI) with respect to the baseline is the benchmark to assess and compare the efficacy of psoriasis treatment.⁽⁹⁾ PASI75 is considered as an optimal response, and PASI90 is the maximum therapeutic response.⁽⁹⁾
- The economic burden of psoriasis is known to be significant and has increased with the introduction of biologics due to the high medications costs.⁽¹⁰⁻¹²⁾
- There is still a paucity of data about the economic burden of psoriasis in the KSA and in specific the relevant values associated with achieving PASI90 compared to PASI75.

OBJECTIVES

- To estimate the economic burden of managing moderate-to-severe psoriasis patients in the KSA who achieve a clinical outcome of PASI 75 using the current treatment sequence (anti-tumor necrosis factor (TNF) alpha (adalimumab), interleukin (IL) 12/23 inhibitor (ustekinumab), and IL-17A inhibitor (secukinumab) as 1st, 2nd and 3rd line respectively).
- To assess the cost-utility of achieving PASI90 using IL-23 inhibitor (risankizumab) as 1st line treatment option.

METHODS

- A decision-analytic Markov-model framework from healthcare payer's perspective was used to assess treatment response using the likelihood of achieving a predefined PASI response to separate the cohort into responders (PASI75-89 and PASI>90) and non-responders (PASI<50 and PASI 50-74).
- The model consisted of the following variables:
 - Model Inputs: The model considered drug acquisition, drug administration, medical resources use, adverse events management and travel costs.
 - Model Outputs: The model compared the current treatment sequence (adalimumab, ustekinumab and secukinumab as 1st, 2nd and 3rd line respectively) targeting PASI75 versus risankizumab (as 1st line treatment option) targeting PASI90.
- The base case settings of the model is outlined in Table 1.

Table 1. Base case settings for the CUA

Setting	Input/Source
Time horizon	40 years
Cycle length	12 weeks
Currency	USD
Perspective	Healthcare payer
Eligible patient population	Moderate and severe psoriasis population with PASI score >10
Population inputs	Demographic inputs: sourced from the statistical year book for 2017 Prevalence rates: sourced/calculated using published literature
Cost of drug acquisition	SFDA and calculations
Cost of drug administration, medical resource use and travel costs	KSA service costs and calculations
Cost of managing adverse events	Saudi MoH services' costing sheet
Discounting rate	3.5% sourced from NICE 2012 guidelines ⁽¹³⁾
Discontinuation rate	Maintenance phase: 0% TNF: 21.0% IL-23 inhibitors: 20.3% IL-17 inhibitors: 19.5% Sourced from Warren et al. 2015 ⁽¹⁴⁾ and AbbVie NMA report 2019 ⁽¹⁵⁾
Adverse event rates	Loos et al. 2018 NMA ⁽¹⁶⁾
Mortality rate	1.2% sourced from Gelfand et al. 2007 ⁽¹⁷⁾

CUA: Cost-utility analysis, IL: interleukins, KSA: Kingdom of Saudi Arabia, MoH: Ministry of Health, NICE: National Institute for Health and Care Excellence, NMA: Network meta-analysis, PASI: Psoriasis Area and Severity Index, SFDA: Saudi Food and Drug Authority, TNF: tumor necrosis factor, USD: US Dollars

RESULTS

Base Case: Total burden of managing psoriasis in KSA

- Using the current treatment sequence and targeting PASI75 as a clinical outcome, the overall estimated cost of moderate-to-severe psoriasis management in KSA was US Dollars (USD) 8.91 billion yielding 0.92 million quality-adjusted life year (QALYs) (Figure 1).
- The highest cost was incurred due to the high treatment cost (USD 7.78 billion, nearly 87.3% of the total costs), followed by indirect costs (USD 0.59 billion, nearly 6.6% of the total costs) and physician visit costs (USD 0.17 billion, nearly 1.9% of the total costs) (Figure 2).

Figure 1. Base case results: Total burden of managing psoriasis in KSA

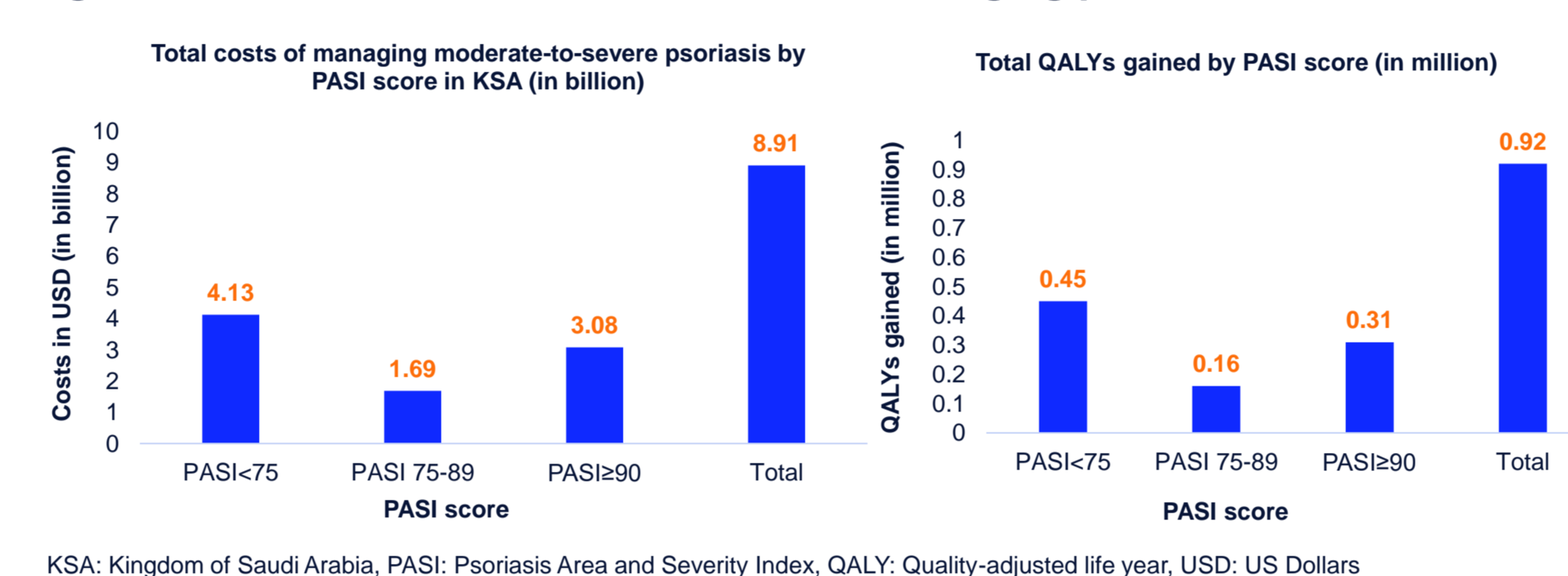
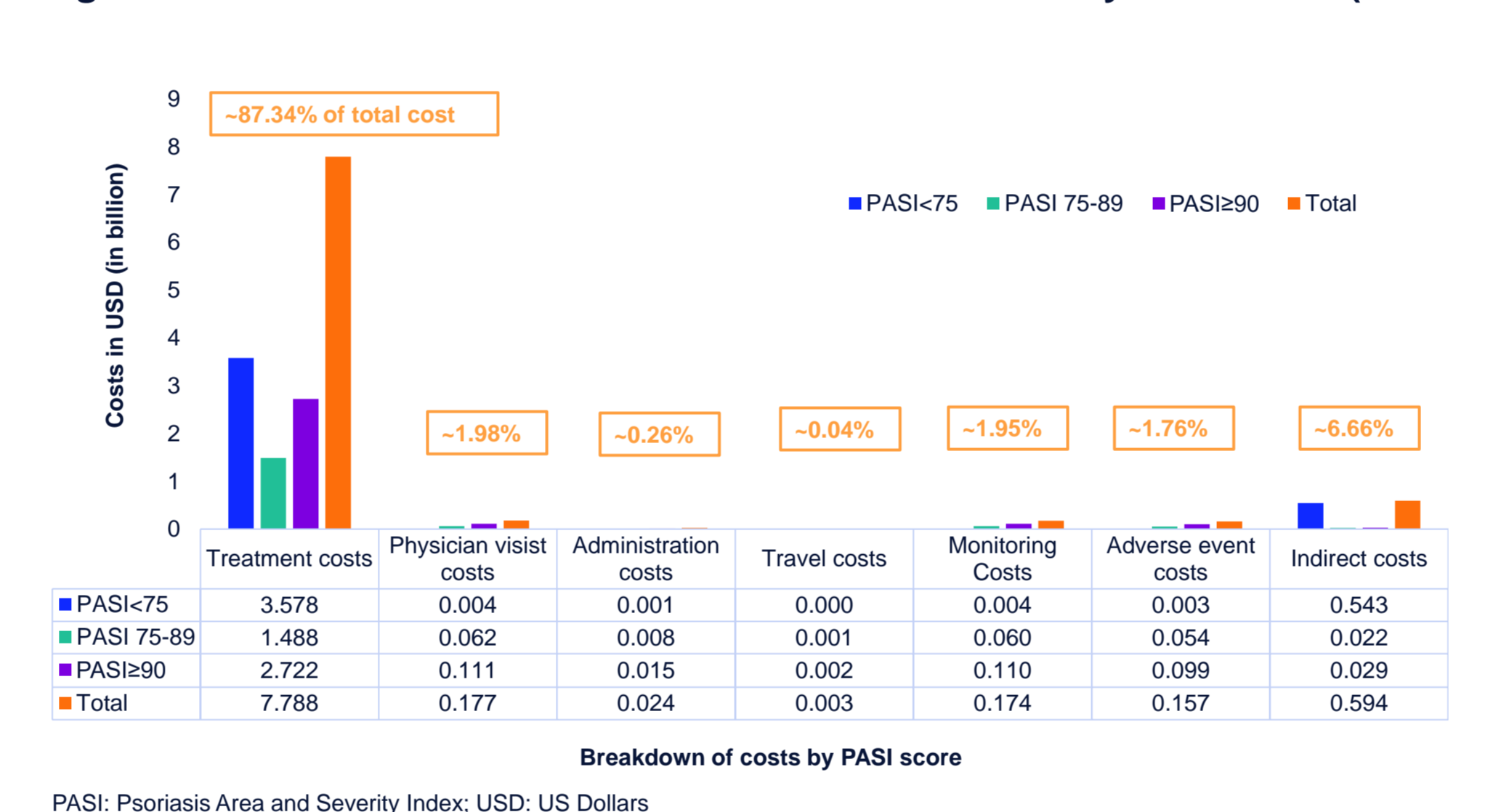


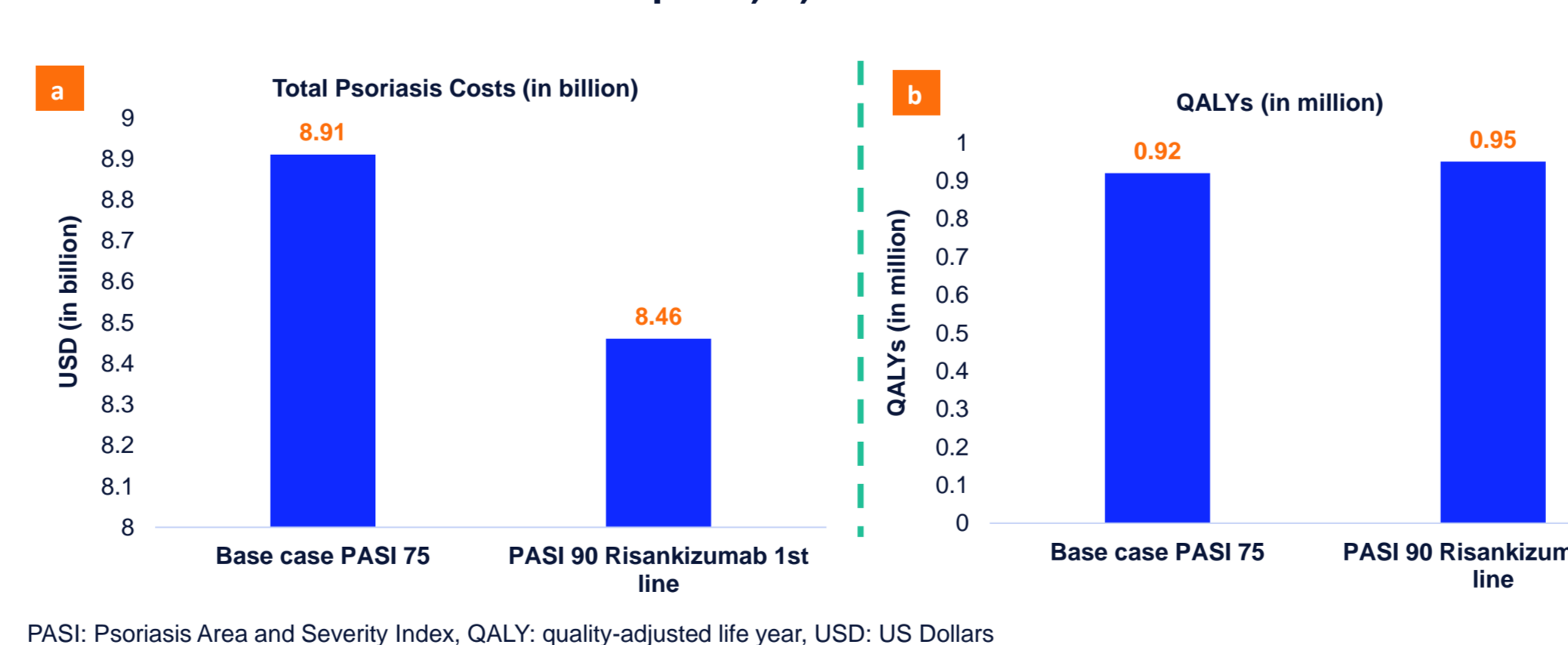
Figure 2. Base case results: Breakdown of overall costs by PASI score (in billion)



Cost-utility analysis

- Achieving PASI90 with risankizumab as 1st line option compared to achieving PASI75 with current treatment sequence was associated with higher QALYs (0.95 million vs. 0.92 million) and lower costs (USD 8.46 billion vs. USD 8.91 billion) (Figure 3).
- The cost-savings were due to lower healthcare resource utilization while using risankizumab. The increase in QALY gained was related to the increased probability of achieving PASI90 while using risankizumab (72.2%).

Figure 3: Cost utility analysis a) Overall cost in scenario 1 (achieving PASI 75 with current treatment sequence) versus scenario 2 (achieving PASI 90 with risankizumab as 1st line option) b) QALYs in scenario 1 versus scenario 2



PASI: Psoriasis Area and Severity Index, QALY: quality-adjusted life year, USD: US Dollars

CONCLUSIONS

- In KSA, targeting PASI90 using risankizumab as a 1st line treatment option for moderate-to-severe psoriasis patients was found to be dominant versus the current treatment scenario; yielding higher QALYs at lower costs.
- With use of risankizumab as 1st line of treatment, eventually the quality of life of patients with moderate-to-severe psoriasis will improve without any additional cost.

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