Comparing test-retest reliability and responsiveness of EQ-5D-5L with four bolt-ons, PROMIS-29 and Skindex-16 in psoriasis and atopic dermatitis patients

ISPOR 2026

PCR69

Sandra Naguib[1], Zhuxin Mao[2], Aureliano Finch[3], Maggie Abbassi[1], Samar Farid[1]

[1] Department of Clinical Pharmacy, Faculty of Pharmacy, Cairo University, Cairo, Egypt,
[2] University of Antwerp, Antwerpen, Belgium, [3] EuroQol Office, EuroQol Research Foundation, Rotterdam, The Netherlands

INTRODUCTION

- It has been found that EQ-5D-5L may sometimes miss disease-specific aspects that are relevant in dermatological conditions such as skin irritation, disturbance of sleep, and psychosocial dimensions.
- To address these limitations, the EuroQol Group developed the EQ-5D Bolt-ons Toolbox.
- To date , few existing studies have evaluated EQ bolt-ons in skin related conditions.
- To the best of our knowledge, this is one of the first longitudinal studies to evaluate EQ-5D-5L bolt-ons in dermatological conditions.

OBJECTIVES

This study evaluated the impact of adding four EQ bolt-ons (**Skin Irritation, Self-confidence, Social Relationships and Sleep**) on test-retest reliability and responsiveness of EQ-5D-5L in patients with Psoriasis (Ps) and Atopic Dermatitis (AD) and compared it to PROMIS-29 and Skindex-16.

METHODS

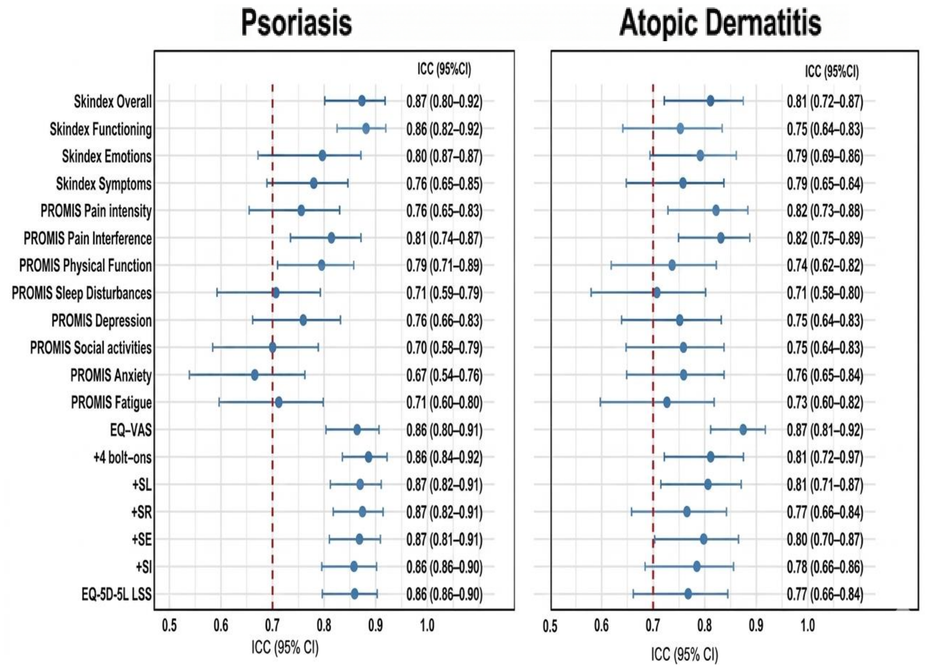
- This observational single-center longitudinal study collected patient-reported data during dermatology clinic visits at baseline (T_1), 3-7 days later (T_2) to assess test-retest reliability and after 12-weeks (T_3) to evaluate responsiveness.
- Level Sum Scores (**LSS**), standardized to a 5–25 scale for comparability, along with dimension-level scores, were used to assess the psychometric performance of the EQ-5D-5L with bolt-ons. PROMIS-29 T-scores and Skindex-16 linear summed scores were also calculated.
- Test–retest reliability was examined by Weighted Cohen's kappa (**Kw**) and Intraclass Correlation Coefficient (**ICC**).
- At week 12, patients were categorized as "stable," "improved," or "worsened" according to a combination of two external criteria, (Global Rating of Change and clinical endpoints).
- Responsiveness of each measure was examined by Effect sizes (**ES**), Standardized response mean (**SRM**), relative efficiency (**RE**) and area under the receiver operating characteristic curve (**AUROC**).

RESULTS

Out 236 patients at T1
180 remained stable at T_2
194 continued to T_3

Mean **Age** = **35.2** (SD 13.4)
Male = **109** (46.2%)
Low-to-medium education= 170 (72%)

Figure 1. Test-retest reliability of HRQoL measures



CI: confidence interval, SE: self-confidence, SI: skin irritation, SL: sleep, SR: social relationships.

Key findings

Sleep showed the most consistent reliability
κ_w = 0.754 in Ps
κ_w =0.745 in AD

Social Relationships showed the most disparity in reliability
κ_w = 0.721 in Ps
κ_w =0.529 in AD

In "improved" Ps
Skin Irritation increased ES of EQ-5D-5L from
medium (-0.7) to large (-0.81)

In "improved" AD
Skin Irritation increased ES of EQ-5D-5L from
-1 to -1.32

In **"worsened" groups**
EQ-5D-5L alone outperformed the bolt-on versions and Skindex-16.

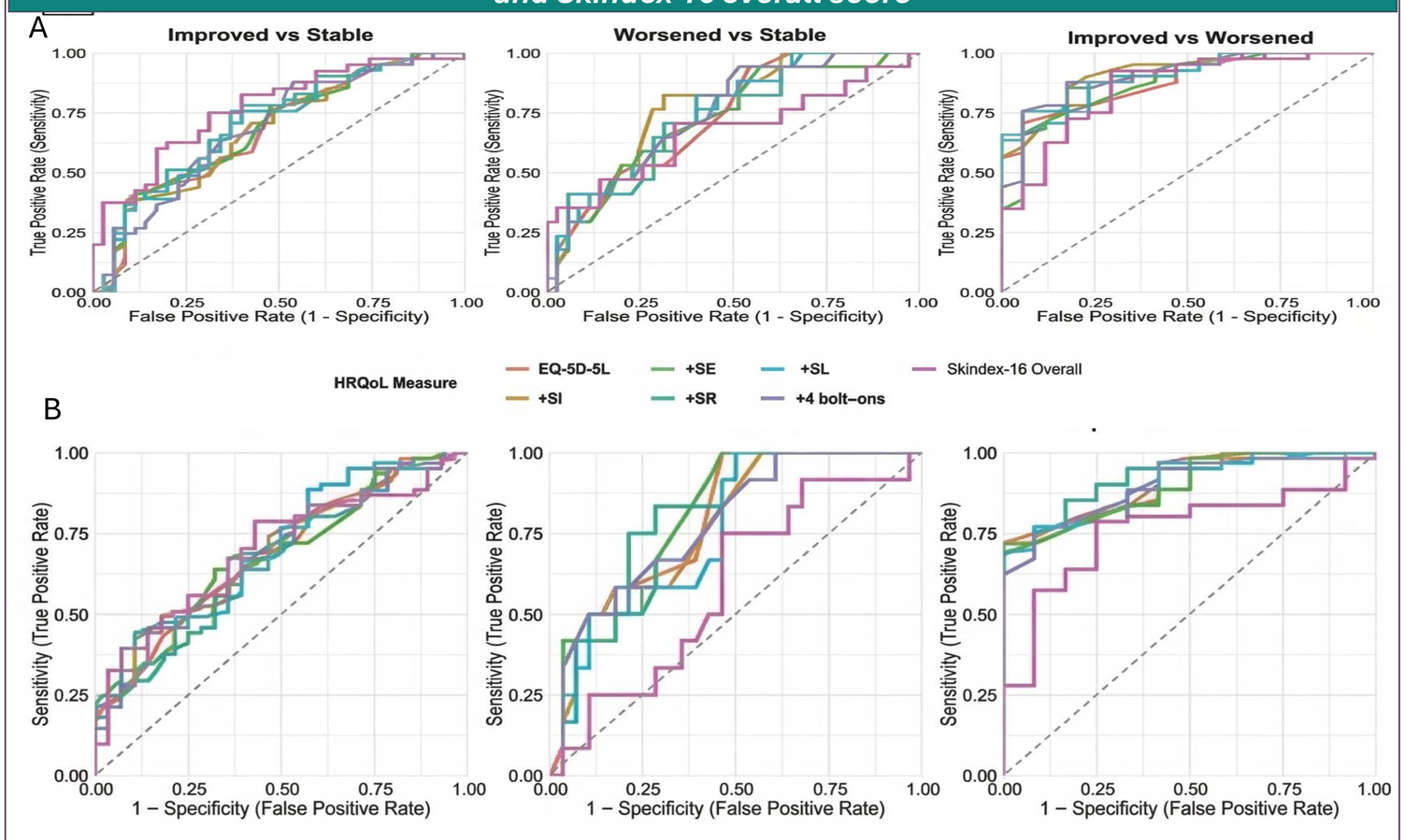
Table 1. Comparison of HRQoL measure change scores from baseline to Week 12 across predefined PASI and oSCORAD response categories

Psoriasis		
HRQoL Measure	**RE (95% CI)**	**Significant Comparisons**
EQ-5D-5L LSS	-	stable vs. PASI75*
+SI	**1.29** (0.40-18.04)	stable vs. PASI75*
+SE	**0.88** (0.27-12.26)	
+SR	**0.94** (0.29-13.10)	
+SL	**1.34** (0.41-18.72)	stable vs. PASI50*, stable vs. PASI75*
+4 Bolt-ons	**1.22** (0.37-16.99)	stable vs. PASI50*, stable vs. PASI75*
EQ-VAS	**1.12** (0.63-5.29)	stable vs. PASI50*
Skindex-16 overall	**1.57** (0.48-22)	stable vs. PASI50*, stable vs. PASI75**

Atopic Dermatitis		
HRQoL Measure	**RE (95% CI)**	**Significant Comparisons**
EQ-5D-5L LSS	-	stable vs. oSCORAD 50**
+SI	**1.21** (0.92-1.61)	stable vs. oSCORAD 50**
+SE	**1.04** (0.84-1.338)	stable vs. oSCORAD 50**
+SR	**1.39** (1.01-2.01)	stable vs. oSCORAD 50** oSCORAD 35 vs. oSCORAD 50**
+SL	**1.35** (0.97-1.91)	stable vs. oSCORAD 50**
+4 Bolt-ons	**1.34** (0.77-2.30)	stable vs. oSCORAD 50** oSCORAD 35 vs. oSCORAD 50**
VAS	**1.84** (0.62-5.78)	stable vs. oSCORAD 50*** oSCORAD 35 vs. oSCORAD 50***
Skindex-16 overall	**3.22** (1.22-8.50)	stable vs. oSCORAD 50*** stable vs. oSCORAD 75*** oSCORAD 35 vs. oSCORAD 50** oSCORAD 35 vs. oSCORAD 75**

*P < 0.05, **P < 0.01, ***P < 0.001
Relative efficiency (RE) was calculated using EQ-5D-5L LSS as the reference denominator.
Abbreviations: HRQoL: Health related quality of life; LSS: level sum score; oSCORAD: objective SCORing Atopic Dermatitis; PASI: Psoriasis Area and Severity Index; SE: self-confidence; SI: skin Inttation; SL: sleep; SR: social relationships; VAS: visual analogue scale

Figure 2. ROC curves for responsiveness of EQ-5D-5L LSS with and without bolt-ons inclusion and Skindex-16 overall score



(A) ROC analyses based on PASI anchor in patients with psoriasis and **(B)** ROC analyses based on oSCORAD anchor in patients with atopic dermatitis. The dotted diagonal line represents the line of no discrimination (AUC = 0.5), indicating random classification.

Conclusion

- Adding four bolt-ons **enhanced** EQ-5D-5L **responsiveness** to smaller health changes while maintaining **good test–retest reliability**.
- **Skin irritation** and **Sleep** were more responsive over short follow-up, whereas **Self-confidence** and **Social relationships** may require complete disease resolution.
- **Skindex-16** remained the most responsive instrument, and **PROMIS-29** showed limited sensitivity.

E-mail: samar.farid@pharma.cu.edu.eg