

Psychometric Testing of the Patient-Reported Impact of Dermatological Diseases (PRIDD) measure

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INTRODUCTION

Existing dermatology-specific patient-reported outcome measures (PROMs) do not fully capture the substantial physical, psychological, and social impact on patients' lives and are not recommended for use according to the Consensus-based Standards for the Selection of Health Measurement Instruments (COSMIN) criteria. Most were developed with insufficient patient involvement and relied on classical psychometric methods. **We developed the Patient-Reported Impact of Dermatological Diseases (PRIDD) measure in close partnership with patients.**

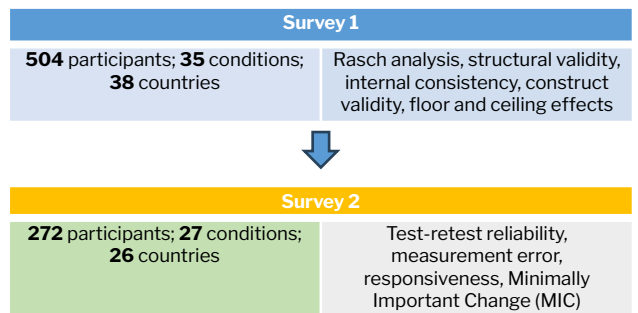


AIMS AND OBJECTIVES

This study tested PRIDD's **measurement properties** using both classic and modern psychometric methods and evaluated these against the Consensus-based Standards for selection of health Measurement Instruments COSMIN criteria.

MATERIALS AND METHODS

- A worldwide longitudinal study consisting of two online surveys administered 2-4 weeks apart.
- Adults (≥ 18 years) living with a dermatological condition were recruited through GlobalSkin's (International Alliance of Dermatology Patient Organization) global membership network.
- Participants completed PRIDD, a demographics questionnaire, and other related measures (e.g. Dermatology Life Quality Index).



RESULTS

987 patients with 60 dermatological conditions from 55 countries participated. A four-factor model showed best fit. PRIDD fit the Rasch model ($\chi^2 = 37.26, p = 0.11$), showed no local dependency or Differential Item Functioning (DIF) at the test level, and was well-targeted. A summary of PRIDD's measurement properties and interpretability information evaluated against the COSMIN quality criteria is provided:

	Requirement	Rating	Results
Structural validity	Unidimensionality - No violation of unidimensionality - No violation of local independence - Adequate model fit: $\chi^2 > 0.01$ CFI or TLI or comparable measure > 0.95 OR RMSEA < 0.06 OR SRMR < 0.08	+	PRIDD and all subscales unidimensional with no local dependency. $\chi^2 = 0.11$
	Structural validity	+	CFI = 0.96; TLI = 0.97; RMSEA = 0.09; SRMR = 0.03
Internal consistency	Person Separation Index ≥ 0.7	+	Person Separation Index = 0.89
Hypothesis testing for construct validity	75% of hypotheses met	+	76% of hypotheses met
Test-retest reliability	ICC or weighted Kappa ≥ 0.70	+	ICC = 0.93
Measurement error	SDC or LoA < MIC	+	LoA (1.3) < MIC (4.14)
			Unable to determine anchor-based MIC
Responsiveness	The result is in accordance with the hypothesis OR AUC ≥ 0.70	-	0 hypotheses met
Floor & ceiling effects	Considered present when > 15% of the patients achieved the minimum or maximum possible score	+	< 0.9% with minimum or maximum score
MIC	N/A		Unable to determine anchor-based MIC

"+" = sufficient, "-" = insufficient, "?" = indeterminate

CFI: Comparative Fit Index; TLI; Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardised Root Mean Square; ICC: Intraclass Correlation Coefficient; SDC: Smallest Detectable Change; LoA: Limits of Agreement; MIC: Minimally Important Change

CONCLUSION

PRIDD is a valid and reliable tool to help clinicians provide better care and stakeholders to understand the global burden of dermatological disease. It is the first theory-led dermatology-specific PROM of life impact tested across all seven COSMIN measurement properties. The results indicate that **PRIDD is the only dermatology-specific PROM of life impact to meet the COSMIN criteria to be recommended for use.** Our findings confirm the value of developing and validating PROMs with a patient-centred approach and using modern psychometric methods. The next steps include further testing of measurement error and responsiveness, cross-cultural and linguistic validation, and completing analysis of the global data on the life impact of dermatological conditions

