

The EQ-5D-5L instrument demonstrates a marginally better measurement performance compared with the EQ-5D-3L in psoriatic patients

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Introduction

- The new version of the EQ-5D has expanded the range of responses from three (EQ-5D-3L) to five (EQ-5D-5L) levels in each health-related quality of life (HRQoL) dimension evaluated, to improve the psychometric properties of the instrument.
- Several studies have compared the measurement properties of the two EQ-5D systems in various general and patient groups. The majority of these studies confirmed the marginal superiority of the new version in terms of increased informativity, discriminative performance and decreased ceiling effects [1-2].

Objective

- The aim of this study was to evaluate the psychometric properties of the 5-level (EQ-5D-5L) in comparison with the standard 3-level (EQ-5D-3L) versions of the EQ-5D in a sample of psoriatic patients in Greece.

Methods

Study design

- In a prospective, non-interventional, epidemiological study, 396 patients with psoriasis vulgaris from 16 private dermatological practices were enrolled from various geographical areas of Greece.

Data

- Data were collected on socio-demographics, and clinical characteristics. Additionally subjects self-completed the two EQ-5D instruments. Each EQ-5D dimension is measured across a 3 or 5-level-of-problems scale. A single utility score can be obtained, with higher scores representing better overall HRQoL. The VAS records the respondent's self-rated health on a 0-100 visual analogue scale.

Statistical analysis

- The two versions were evaluated in terms of agreement, ceiling effects, informativity and known-groups validity. To evaluate the level of agreement between the two EQ-5D instruments, intra-class correlations coefficient (ICC) and a Bland-Altman plot were employed. The ceiling of the questionnaires was measured by the proportion of patients reporting no problems. Shannon indices captured the informativity of the two EQ-5D systems; the higher the Shannon-Weaver (H') and Shannon's Evenness (J') indices are, the more absolute and relative information is captured by the specific questionnaire. The relative precision of the EQ-5D versions was examined with the relative efficiency (RE) statistic. RE is defined as the ratio of standard ANOVA F-statistics. A value greater than 1 indicates that the EQ-5D-5L version has greater discriminating power than the EQ-5D-3L measure and vice versa.
- Statistical significance level was set at $\alpha=0.05$.

Results

- Mean generic HRQoL value was estimated at 0.73 and 0.74, by the EQ-5D-3L and EQ-5D-5L respectively, and patients had a mean health state of 74.7 in the VAS scale.
- The agreement between the two versions was very high (ICC=0.94), and the largest discrepancies were observed for subjects with moderate health status (Figure 1).
- Ceiling effects decreased in the EQ-5D-5L system by 14.08% ($p<0.05$), with "anxiety/depression" showing the highest relative reduction (-10.31%; $p<0.05$) (Table 1).
- Absolute informativity improved by 56.42% in the EQ-5D-5L, while relative informativity declined by 9.24%, with only "anxiety/depression" demonstrating a small increase (6.77%) (Table 2).
- Both instruments demonstrated good known-groups validity, with a slightly better discriminatory performance for the EQ-5D-5L (Table 3).

Results

Figure 1. Bland-Altman plot of the EQ-5D-3L and EQ-5D-5L index values

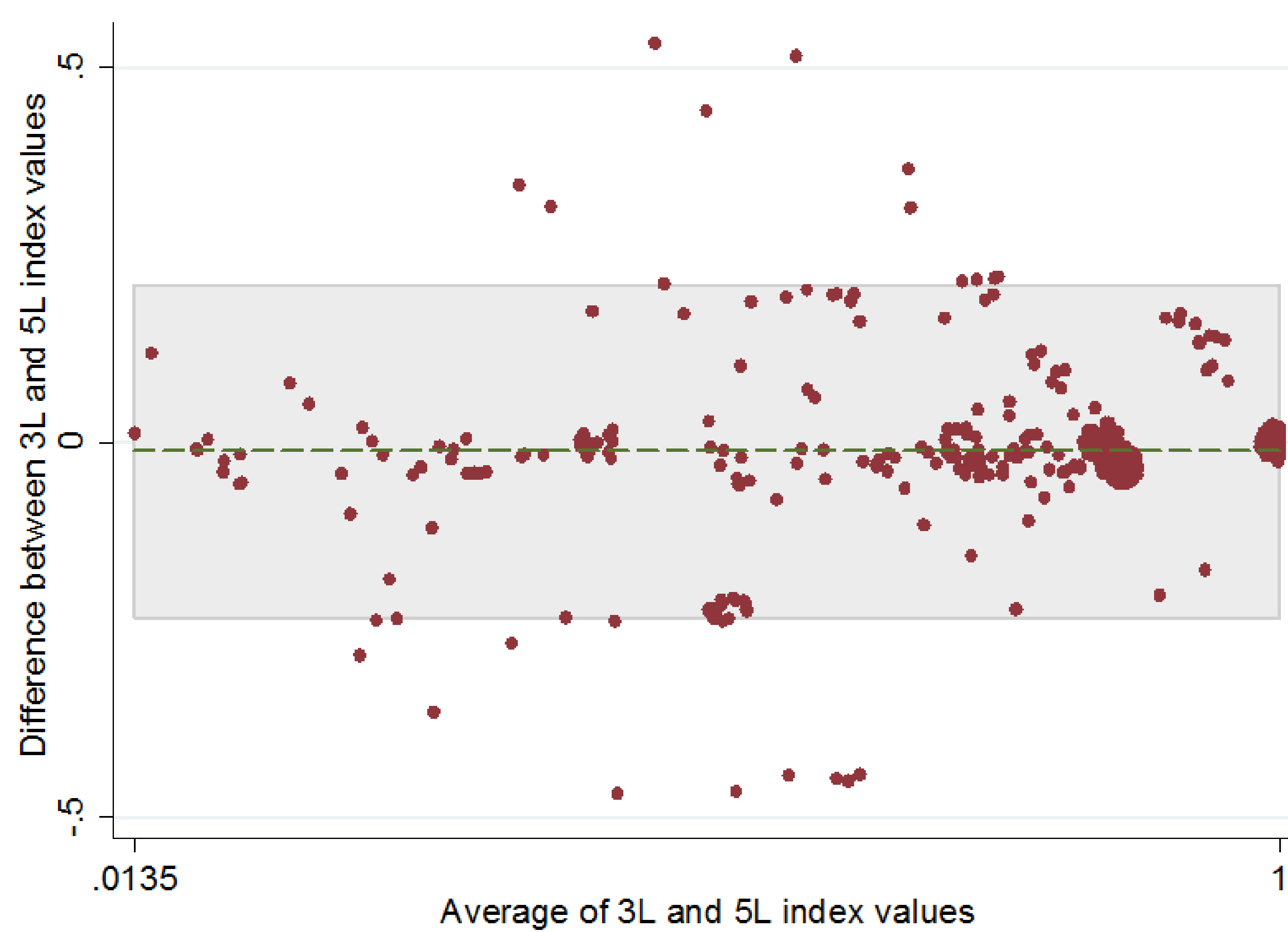


Table 1. Proportion of "no problems" responses and ceiling effects change

Dimensions	3L n(%)	5L n (%)	Ceiling effect change (%)	
			Absolute	Relative
Mobility	322 (81.3)	323 (81.6)	0.25	0.31
Self-care	359 (90.7)	357 (90.2)	-0.51	-0.56
Usual activities	339 (85.6)	334 (84.3)	-1.26	-1.47
Pain/discomfort	271 (68.4)	263 (66.4)	-2.02	-2.95
Anxiety/depression*	97 (24.5)	87 (22.0)	-2.52	-10.31
Full health (11111)*	71 (17.9)	61 (15.4)	-2.52	-14.08

* $p<0.05$ for the difference of "no problems" responses, based on McNemar test

Table 2. Informativity of the EQ-5D systems

Dimensions	EQ-5D-3L		EQ-5D-5L		% change from 3L to 5L	
	H'	J'	H'	J'	H'	J'
Mobility	0.714	0.451	0.941	0.405	31.81%	-10.02%
Self-care	0.448	0.283	0.586	0.253	30.89%	-10.65%
Usual activities	0.602	0.380	0.805	0.347	33.77%	-8.69%
Pain/discomfort	0.951	0.600	1.379	0.595	44.95%	-1.06%
Anxiety/depression	1.409	0.889	2.203	0.949	56.42%	6.77%
Overall system	3.369	0.425	4.480	0.386	32.96%	-9.24%

Table 3. Known-groups validity and relative efficiency (RE)

Known-groups	n 3L 5L	3L			5L			RE ^b
		mean	SD	p-value ^a	mean	SD	p-value ^a	
Severity level								
Mild	137 137	0.82	0.17		0.81	0.17		
Moderate	207 207	0.71	0.26		0.73	0.23		
High	50 49	0.57	0.28	<0.001	0.57	0.28	<0.001	1.04
Age								
18-24	13 13	0.96	0.07		0.97	0.06		
25-34	62 62	0.80	0.17		0.83	0.14		
35-44	70 71	0.76	0.24		0.75	0.23		
45-54	59 60	0.71	0.25		0.73	0.24		
55-64	75 75	0.75	0.24		0.75	0.23		
65+	115 114	0.64	0.27	<0.001	0.66	0.25	<0.001	1.03
BMI								
Underweight-to-normal	131 131	0.79	0.22		0.80	0.19		
Overweight	146 147	0.74	0.22		0.76	0.21		
Obese	81 81	0.66	0.28	<0.001	0.66	0.26	<0.001	1.40
Smoker								
No	263 263	0.75	0.23		0.77	0.21		
Yes	131 132	0.68	0.27	0.010	0.68	0.26	0.004	1.53
Cardiovascular disease								
No	282 284	0.75	0.24		0.76	0.22		
Present	112 111	0.68	0.25	<0.001	0.70	0.25	0.009	1.12
Respiratory disease								
No	369 371	0.74	0.24		0.75	0.22		
Present	25 24	0.58	0.28	<0.001	0.54	0.29	0.001	2.06

^a Based on Jonckheere Trend or Mann-Whitney test; ^b RE: relative efficiency of one-way Anova F-statistics

Conclusions

- Both versions demonstrated consistency and good construct validity. The EQ-5D-5L exhibited a marginally better performance in terms of reduced ceiling effects, increased informativity, and improved known-groups validity efficiency, particularly in the domain of "anxiety/depression".

References

- [1] Herdman, M., Gudex, C., Lloyd, A., Janssen, M. F., Kind, P., Parkin, D., et al. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Quality of Life Research*, 20(10), 1727-1736, doi:10.1007/s11136-011-9903-x.
- [2] Rabin, R., Oemar, M., Oppe, M., Janssen, B., & Herdman, M. (2011). EQ-5D-5L User Guide: Basic information on how to use the EQ-5D-5L instrument. Version 1.0. EuroQol Group.

Disclosure of conflict of interest

Please insert accordingly