

Psychometric validation of PROQOL-HIV: A contemporaneous and cross-cultural Health-Related Quality-of-Life (HRQL) Questionnaire specific to HIV

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1. Background

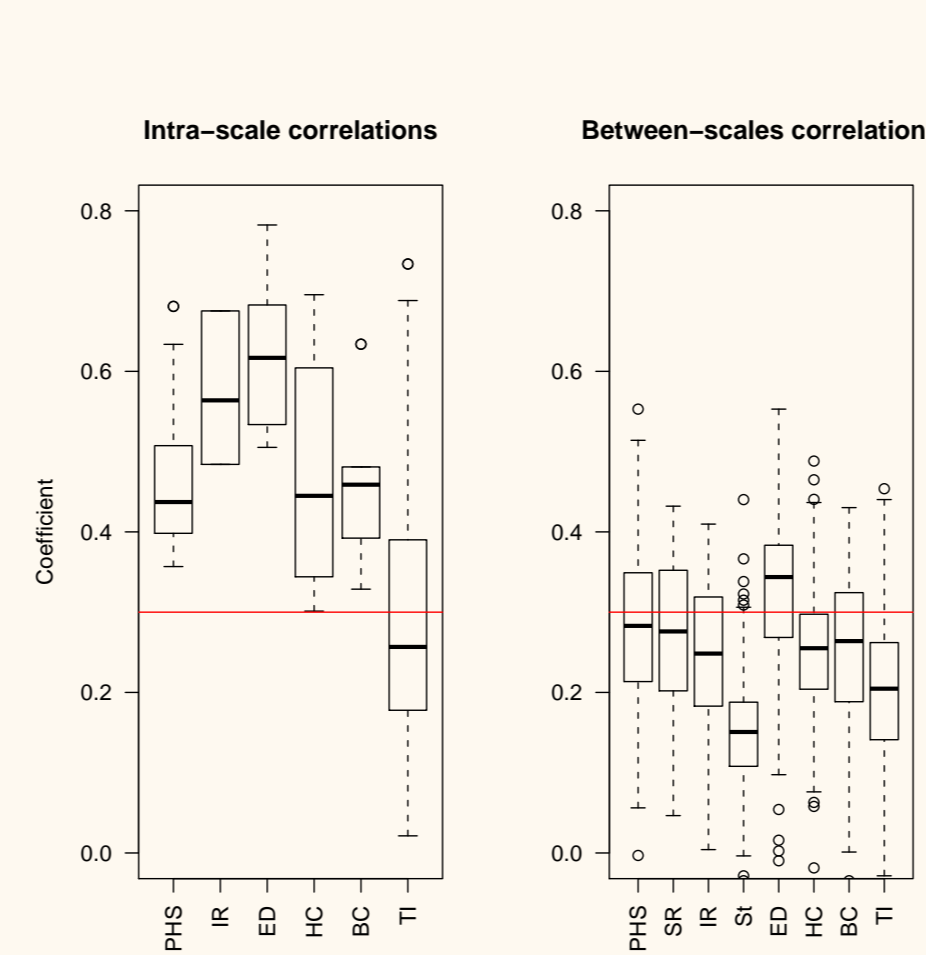
Instruments measuring health-related quality-of-life (HRQL) in PLWHA were developed before HAART [1,2], and lacked relevant domains such as stigma, treatment perception and impact of side effects particularly lipodystrophy [3–5]. This study evaluated the psychometric properties of the PROQOL-HIV, a new specific instrument to measure the HRQL of PLWHA from different cultures and language groups.

2. Methods

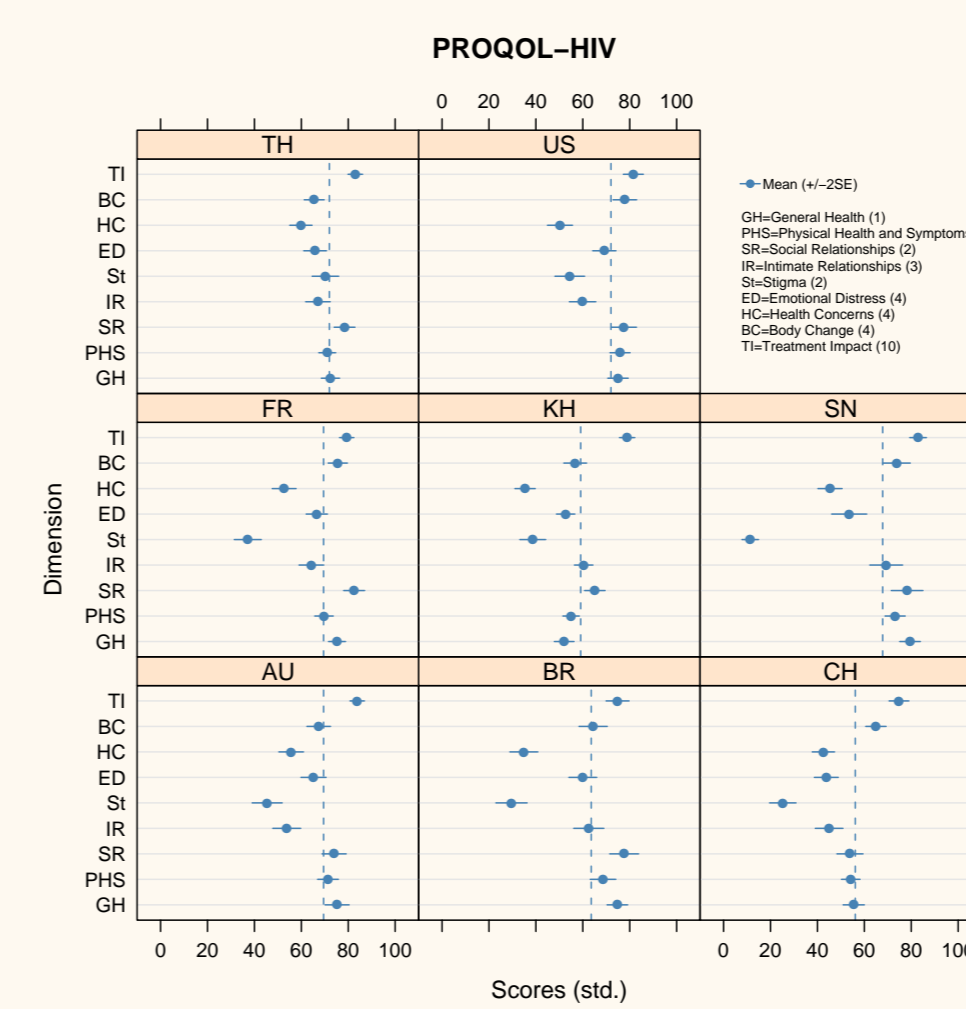
830 patients were included in a cross-sectional survey in **8** countries: Australia (AU), Brazil (BR), Cambodia (KH), China (CH), France (FR), Senegal (SN), Thailand (TH) and the USA (US). Item reduction was based on content, distribution of responses and factorial analysis. Reliability (Cronbach's alpha), convergent validity (correlations with the EQ-5D, MOS-HIV scores, and multi-trait scaling analysis), and clinical validity (with biological markers and socio-demographic data) were assessed. Test-retest reliability was evaluated.

	h^2	1	2	3	4	5	6	7	8
eigenvalue		11.82	2.64	2.36	1.68	1.34	1.27	1.12	1.10
% variance		30.32	6.77	6.06	4.31	3.42	3.25	2.86	2.76
% var. cum		30.32	37.09	43.14	47.45	50.88	54.13	56.99	59.75
pqol1	0.573	0.686							
pqol5	0.584							0.579	
pqol6	0.620							0.628	
pqol7	0.602							0.653	
pqol8	0.752							0.796	
pqol9	0.783							0.835	
pqol12	0.634								0.764
pqol14	0.569			0.330					0.611
pqol18	0.734		0.696						
pqol19	0.727		0.698						
pqol20	0.578	0.391		0.545					
pqol21	0.731			0.709					
pqol22	0.603	0.586							
pqol27	0.458	0.487							
pqol29	0.642	0.585							
pqol30	0.612	0.651		0.410					
pqol31	0.622	0.685							
pqol33	0.560	0.638							
pqol35	0.482			0.502					
pqol38	0.598			0.713					
pqol39	0.742			0.754					
pqol41	0.696			0.732					
pqol44	0.558	0.632							
pqol45	0.567	0.601		0.354					
pqol46	0.561			0.629					
pqol47	0.401	0.467							
pqol49	0.442	0.397			0.469				
pqol50	0.740				0.788				
pqol51	0.722				0.781				
pqol56	0.579	0.629							
pqol58	0.258					0.359			
pqol59	0.542	0.406	0.458						
pqol61	0.653	0.775							
pqol62	0.755	0.838							
pqol63	0.718	0.807							
pqol64	0.644							0.736	
pqol66	0.390	0.499							
pqol68	0.588	0.307						0.550	
pqol70	0.285	0.324						0.396	

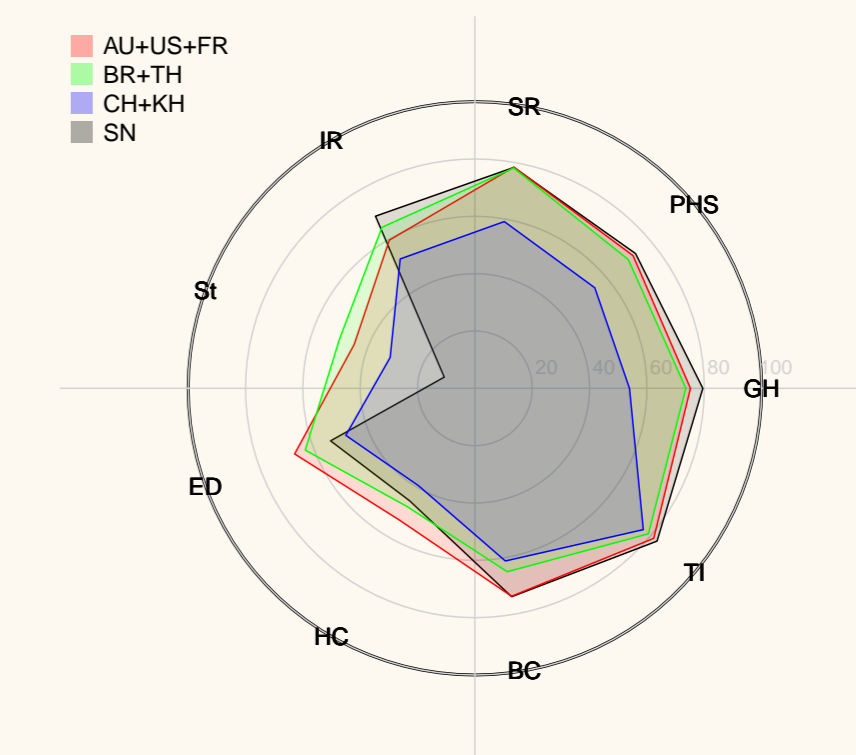
(a) PC Factor Analysis with VARIMAX rotation (h^2 = communalities).



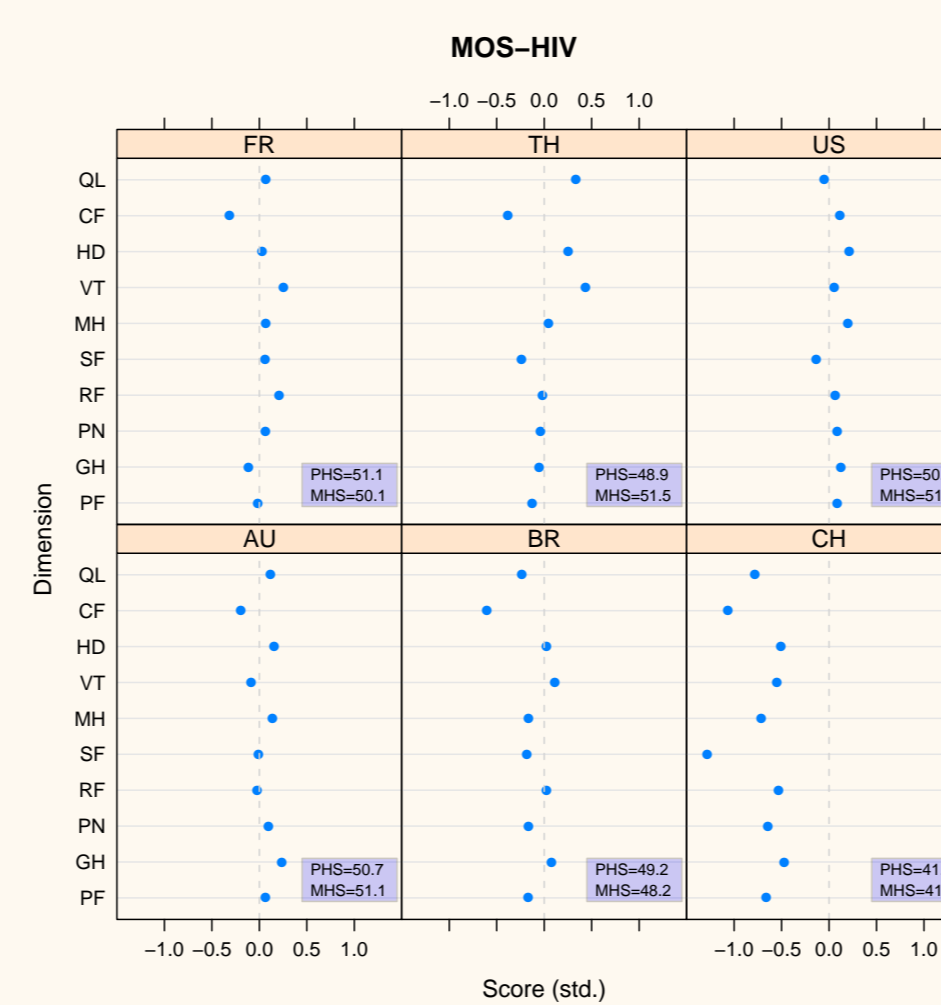
(b) Multi-trait scaling



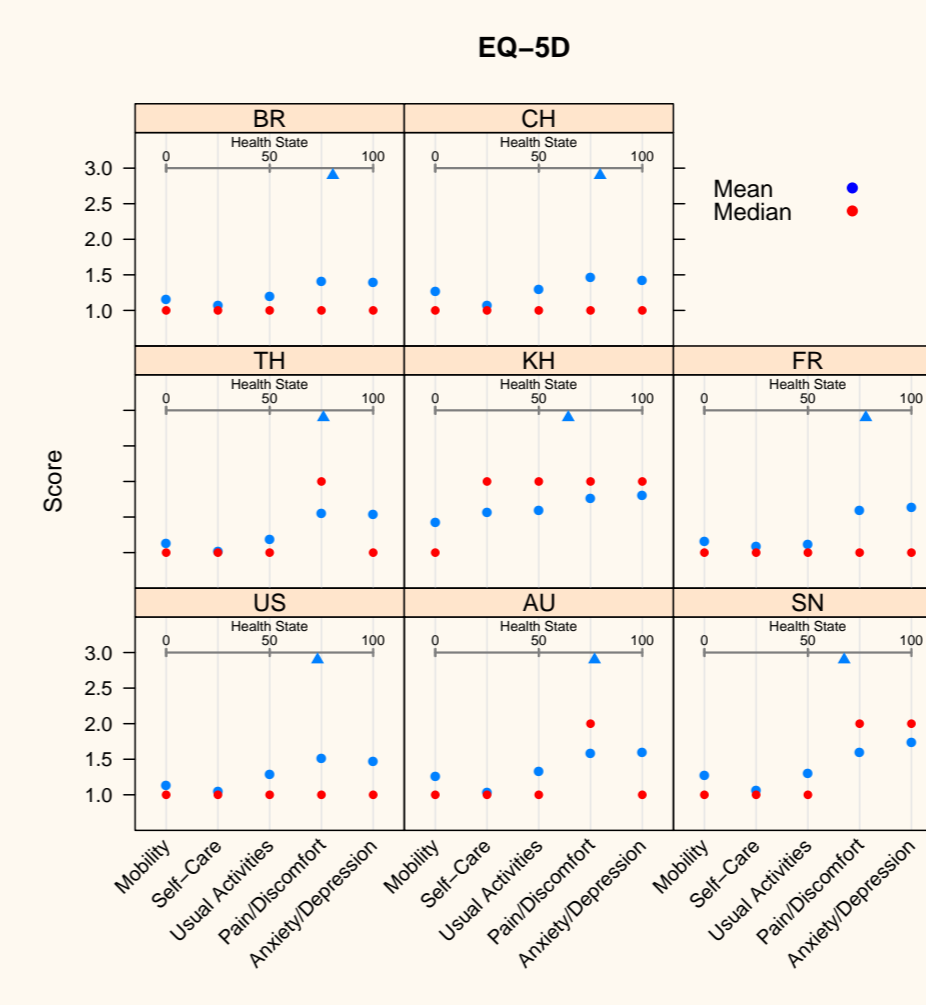
(c) Subscores for each subscale



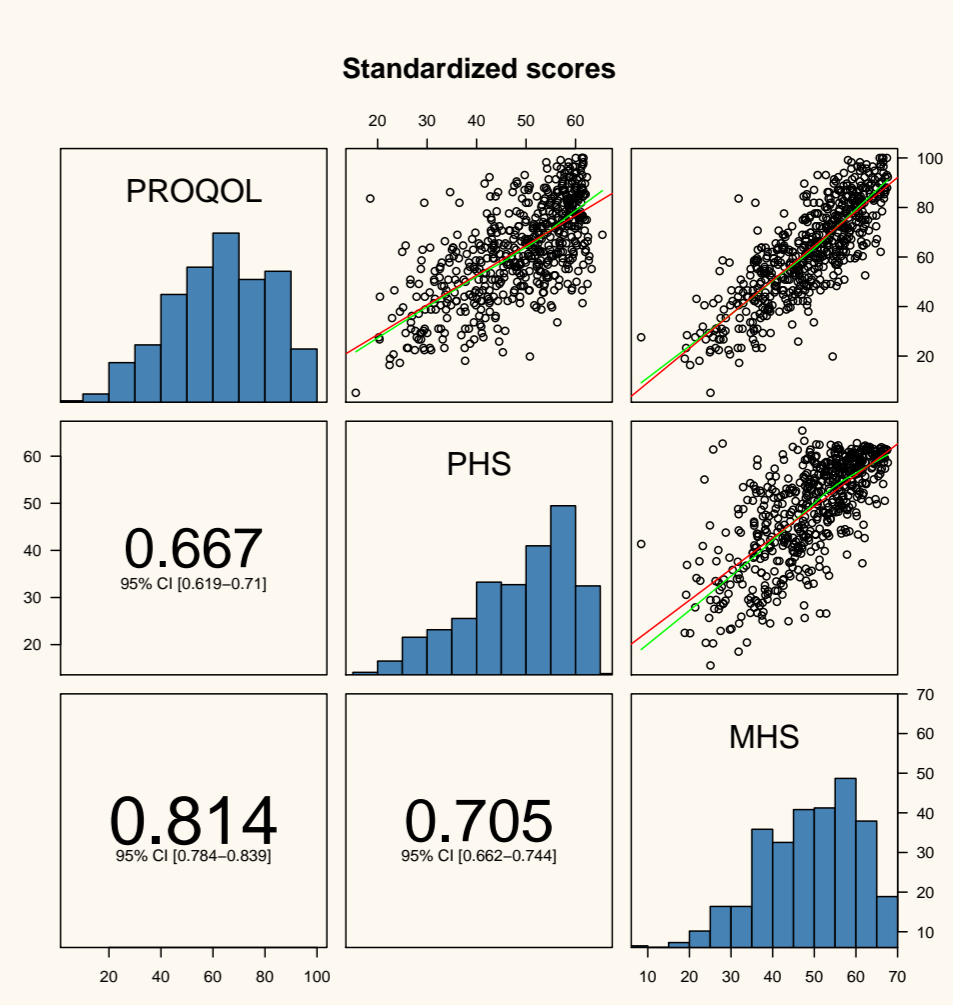
(d) Subscores and group of countries



(e) MOS-HIV scores



(f) EQ-5D items scores and VAS



(g) Total score vs. MOS-HIV

3. Results

Mean age was 41 ± 10 years, (37% women, 86% treated). CD4 mean number was 428 ± 267 cells/mm³, 75% had undetectable viral load. The PROQOL-HIV questionnaire was reduced from 70 items to a 39-item HRQL core questionnaire (a) and 4 individual items (including Care Satisfaction and Financial Impact). Cronbach's alpha of the 8 scales ranged from **0.60** to **0.89**. Total score and subscale correlations (**0.47** – **0.72**) were acceptable.

Factor analysis identified 8 factors accounting for **60%** of the total variance. Intrascale correlations ranged from **0.30** to **0.77** (b) whereas items from different scales were poorly correlated (*discriminant validity*). Test-retest reliability (intra-class correlation) was **0.859** (95% CI, [0.701; 0.960]).

From 8 factors, 9 dimensions were defined: General Health (GH), Physical Health and Symptoms (PHS), Treatment Impact (TI), Health Concerns (HC), Intimate Relationship (IR), Emotional Distress (ED), Body Change (BC), Stigma (St) and Social Relationships (SR). The PROQOL-HIV correlated significantly with the MOS-HIV and the EQ-5D (*concurrent validity*, $p < 0.001$) (e,f,g). Significant differences in HRQL were shown according to sex, CD4, CDC stage, number of daily tablets, co-infections and comorbidities (*criterion validity*, all $p < 0.01$) (h). PROQOL-HIV showed consistent results across culture and language, although significant differences were found in mean HRQL between Western countries and Asian countries (c,d).

A condensed 4-factor solution, composed of {GH+PHS}, TI, {HC+ED} and {IR+SR}, will be used for the scoring procedure.

(h) Linear model relating HRQL and bio-sociodemographic data

Factor	Classes	N	diff. means or reg. coef.	P-value	95% CI (adj. *)
Sex	F vs. M	286 vs. 502	59.4 ± 18.6 vs. 63.0 ± 18.9	0.006	[0.5; 6.0]
CD4	3 classes	138 – 342	56.2 ± 18.8 – 64.0 ± 18.1	0.001	[3.4; 12.3] (< 200 vs. > 500)
CDC	C vs. non-C	239 vs. 533	58.8 ± 19.1 vs. 63.0 ± 18.6	0.002	[-3.5; 2.4]
No. daily tablets	4 classes	118 – 292	58.3 ± 17.5 – 69.5 ± 17.0	< 0.001	[2.6; 11.0] (< 3 vs. > 4)
Hepatitis B/C	yes/no	119 vs. 600	57.1 ± 19.1 vs. 62.6 ± 18.9	0.002	[-1.4; 6.2]
Psy. Disorder	yes/no	47 vs. 701	51.4 ± 15.8 vs. 61.9 ± 19.0	< 0.001	[2.4; 13.5]§
Depression	yes/no	91 vs. 652	49.2 ± 17.2 vs. 62.8 ± 18.6	< 0.001	[12.8; 20.5]

4. Conclusions

The PROQOL-HIV consisting of 39 items and 9 dimensions is a valid and reliable questionnaire to evaluate the HRQL of PLWHA from different linguistic backgrounds and cultures.

References

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