

COMPARATIVE PSYCHOMETRIC ANALYSIS OF EQ-5D-5L-FORMAT BOLT-ONS AND EQ-HWB BOLT-ON ITEMS IN PATIENTS WITH BREAST CANCER

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OBJECTIVES

To evaluate the psychometric performance of existing EQ-5D-5L-format bolt-ons and potential EQ-HWB items as bolt-ons, and directly compare them in breast cancer patients.

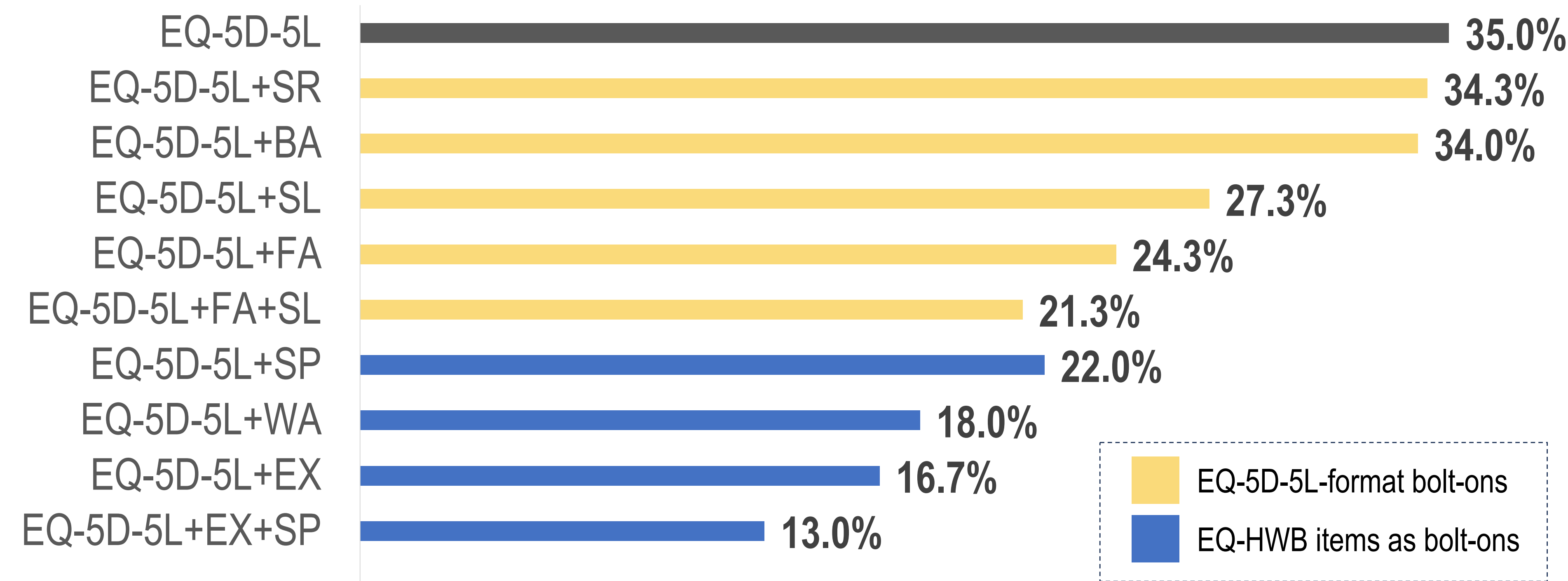
METHODS

- Secondary analysis* of 300 female breast cancer patients in Indonesia aged 51±10, which included the following outcome measures: EQ-5D-5L, four EQ-5D-5L-format bolt-ons (i.e., bodily appearance [BA], social relationships [SR], sleep [SL], and fatigue [FA]), and 25-item EQ-HWB.
- Fourteen EQ-HWB items, potentially relevant to breast cancer, were tested as bolt-ons: sleep (SP), exhaustion (EX), loneliness (LO), unsupported (UN), memory (ME), cognition (CO), unsafe (US), frustration (FR), look forward (LF), no control (NC), coping (CP), accepted (AC), feel good (FG), and wanted to (WA).
- SP and EX compared directly to EQ-5D-5L-format SL and FA.

RESULTS

Bolt-ons that performed well in each psychometric analysis are presented.

CEILING REDUCTION



EXPLANATORY POWER

Combinations of bolt-ons were used to predict the explained variance of EQ VAS, FACT-G, and WEMWBS:

	Adjusted R-squared		
	EQ VAS	FACT-G	WEMWBS
EQ-5D-5L	28.4%	33.8%	6.1%
EQ-5D-5L format bolt-ons			
EQ-5D-5L+SL	28.5%	37.7%	7.5%
EQ-5D-5L+FA	30.1%	37.5%	7.2%
EQ-5D-5L+FA+SL	30.0%	40.6%	8.3%
EQ-HWB items as bolt-ons			
EQ-5D-5L+SP	27.7%	39.8%	8.7%
EQ-5D-5L+EX	33.2%	40.5%	9.7%
EQ-5D-5L+EX+SP	31.2%	44.0%	11.4%

CONVERGENT/DIVERGENT VALIDITY

No bolt-ons showed strong correlations with the core EQ-5D-5L dimensions (Spearman's $r = 0$ to $|0.44|$). Meanwhile, SL correlated with SP ($r=0.70$) and FA moderately with EX ($r=0.49$).

RESPONSIVENESS

Performed on subsets of patients with (un)changed health statuses, the standardized response mean of EQ-5D-5L was highest in those with worsened health (0.69) and only improved with the addition of EQ-HWB item **WA** (0.72).

KNOWN-GROUP VALIDITY

Relative efficiency >1 showed EQ-5D-5L+bolt-on(s) was more efficient than EQ-5D-5L at discriminating across known groups, with (†) indicating a statistically significant difference:

	Number of symptoms	Self-perceived health	EQ VAS	WEMWBS
EQ-5D-5L-format bolt-ons:				
EQ-5D-5L+FA	1.19†	1.11	1.19†	1.06
EQ-5D-5L+SL	1.22†	1.23†	1.01	1.23
EQ-5D-5L+FA+SL	1.39†	1.31†	1.17	1.31†
EQ-HWB items as bolt-ons:				
EQ-5D-5L+EX	1.87†	1.32†	1.25†	1.42†
EQ-5D-5L+SP	1.65†	1.24	0.98	1.38†
EQ-5D-5L+EX+SP	2.44†	1.46†	1.16	1.69†

Using EQ-5D-5L-format bolt-on(s) as the reference, EX was more efficient than FA across all known groups, while SP was equally or more efficient in all groups except the EQ VAS.

TEST-RETEST RELIABILITY

Performed on patients with self-reported unchanged health status ($n=32$), the intraclass correlation coefficient of EQ-5D-5L (0.89) was very slightly improved by adding:

EQ-5D-5L-format bolt-ons	EQ-HWB items as bolt-ons
• EQ-5D-5L+SL: 0.94	• EQ-5D-5L+CO: 0.92
• EQ-5D-5L+BA: 0.91	• EQ-5D-5L+NC: 0.91
	• EQ-5D-5L+LF: 0.90

The addition of SP, EX, or WA did not improve the test-retest reliability of EQ-5D-5L.

CONCLUSIONS

- The first study to adopt EQ-HWB items as bolt-ons and assess the psychometric performance of bolt-ons in a cancer population.
- EQ-HWB items demonstrate better psychometric performance compared to existing EQ-5D-5L-format bolt-ons.
- Future studies may focus on refining the framework for adopting EQ-HWB items as bolt-ons, including aspects like recall period and format.

*Pangestu, S., Purba, F., et al. "The psychometric properties of the EQ-HWB and EQ-HWB-S in patients with breast cancer: a comparative analysis with EQ-5D-5L, FACT-8D, and SWEMWBS." Value in Health, published online 27 December 2024. <https://doi.org/10.1016/j.jval.2024.12.003>

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