

A Reliability Generalisation of the EORTC QLQ-BR23



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Background and Objectives

The collection of patient-reported outcome (PRO) data is becoming more routine in oncology clinical trials and in clinical practice. The European Organisation for Research and Treatment of Cancer (EORTC) has developed and validated a number of PRO instruments, including the QLQ-BR23, a breast cancer specific measure¹. The objective of this study was to evaluate the internal reliability of the EORTC QLQ-BR23 through reliability generalisation, a meta-analytic technique for pooling Cronbach's alpha coefficients.

Methods

A systematic literature review was undertaken of articles reporting the internal reliability of the EORTC QLQ-BR23 to identify potential studies for inclusion. Internal reliability was assessed for each of the five domains of the EORTC QLQ-BR23: Body Image (BI), Sexual Functioning (SF), Arm Symptoms (AS), Breast Symptoms (BS) and Systemic Therapy Side Effects (ST). Reliability generalisation was undertaken using fixed and random effects models for each domain. A value for Cronbach's alpha coefficient above 0.70 was considered to indicate reliability.

Results

A total of 15 studies were found resulting in 18 datasets. Of the 3,102 patients who had been recruited into studies 2,888 had completed the BR-23 (93%). Almost half the studies had used European language versions of the instrument (7/15, 47%). The unweighted average (fixed effects) Cronbach's alpha coefficient ranged from 0.69 (breast symptoms) to 0.86 (sexual functioning) (Table 1). There was statistically significant heterogeneity present across the 5 domains under the fixed effects model justifying the use of random effects (Table 1). The random effects model accounted for the variance for the Body Image and Sexual Functioning domains, however, significant heterogeneity remained for the Arm and Breast Symptom domains, as well as the Systemic Therapy Side Effects domain.

All Cronbach's alpha > 0.7 under the random effects model (Table 2, Figure 1), e.g. BI: 0.84 (95%CI: 0.80-0.87), SF: 0.87 (95%CI: 0.84-0.89), AS: 0.71 (95%CI: 0.66-0.76), BS: 0.70 (95%CI: 0.65-0.74) and ST: 0.71 (95%CI: 0.66-0.75).

Conclusions

The results suggest that the 5 domains of the EORTC QLQ-B23 are reliable and may be used in clinical trials and practice to capture PRO data to help inform trial, as well as individual clinical decision-making processes.

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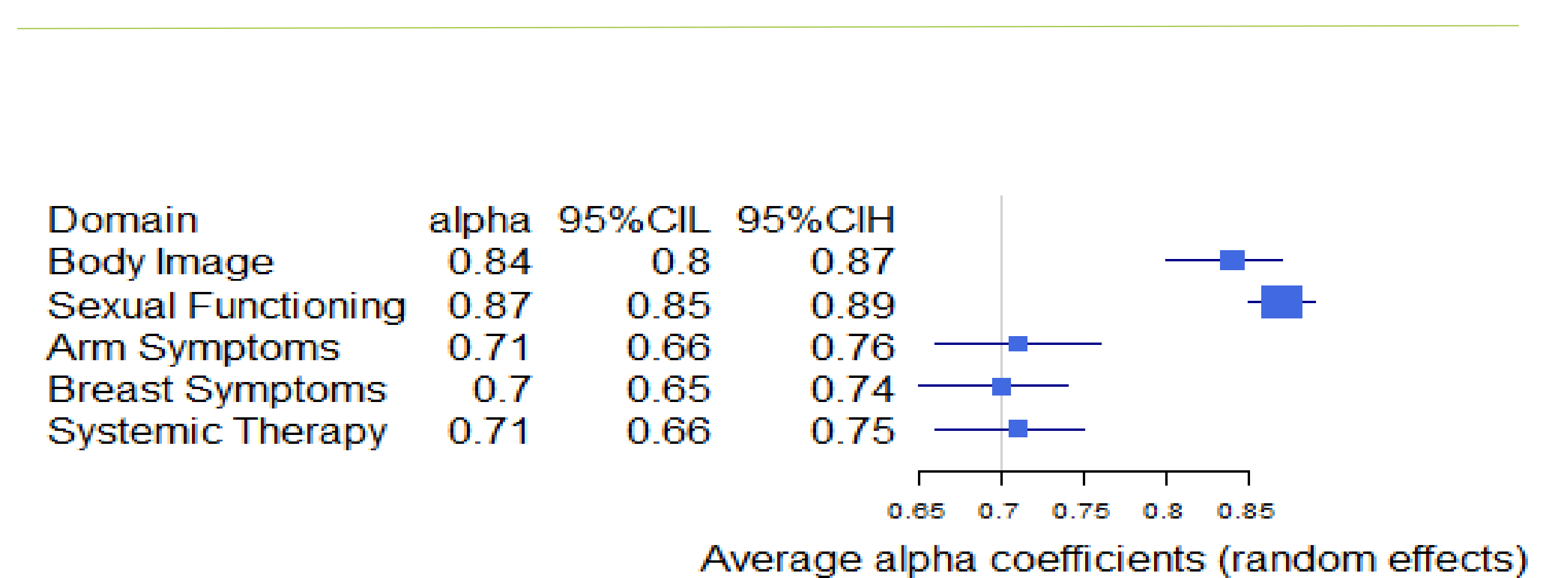
Table 1: Homogeneity tests by domain for the EORTC QLQ-BR25

Domain	Q fixed effects	df	p	Q random effects	p
Body Image	92.90	18	0.001	11.51	0.87
Sexual Functioning	142.90	16	0.001	20.59	0.19
Arm Symptoms	101.90	18	0.001	53.92	0.001
Breast Symptoms	176.02	18	0.001	64.70	0.001
Systemic Therapy	52.62	18	0.001	47.34	0.001

Table 2: Cronbach's alpha by domain for the EORTC QLQ-BR23

Domain	Mean alpha (95%CI)	Alpha fixed effects (95%CI)	Alpha random effects (95%CI)
Body Image	0.83 (0.80-0.86)	0.85 (0.84-0.86)	0.84 (0.80-0.87)
Sexual Functioning	0.86 (0.82-0.89)	0.89 (0.88-0.90)	0.87 (0.85-0.89)
Arm Symptoms	0.70 (0.66-0.74)	0.74 (0.72-0.75)	0.71 (0.66-0.76)
Breast Symptoms	0.68 (0.63-0.73)	0.75 (0.73-0.76)	0.70 (0.65-0.74)
Systemic Therapy	0.70 (0.68-0.73)	0.72 (0.70-0.73)	0.71 (0.66-0.75)

Figure 1: Forest plot for reliability coefficients (random effects)



References

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