Modular Patient-Reported Outcome Measurement Approach Supported by EORTC QLQ-C30 Domain and Summary Score Correlation Analyses in Breast Cancer Patients

De Waal, G.M., Everhart, A., Kott, A., Byrom, B., & Wang, X.

Signant Health

SUMMARY

There is an absence of patient-reported outcome measure (PROM) endpoints in anti-cancer therapy labeling.[1] To help standardize and improve the quality of PROM data collected in cancer clinical trials, the US Food and Drug Administration (FDA) recommends using a core set of PROMs, which may ultimately lead to an increase of PROM data included in labeling.[2]

The goal of our research was to understand the correlation between the individual domain scores of the European Organization for Research and Treatment of Cancer (EORTC) Core Quality of Life Questionnaire (QLQ-C30) – specifically the physical function and role function domains (part of the FDA-recommended core set of PROMs) – and the summary score, aiming to add further support to the modular PRO measurement approach in cancer trials.

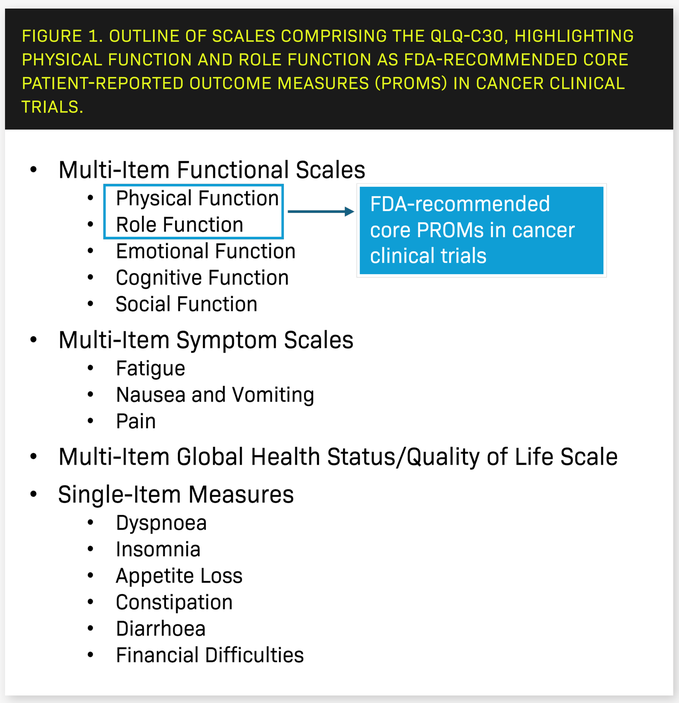
Our results showed that the physical function and role function domain scores were highly correlated with the summary score at baseline (BL) and end of treatment (EOT), as well as over time. Our findings contribute to the supporting evidence of the independent administration of PROM subscales in cancer trials.

INTRODUCTION

Utilizing PROMs in cancer trials holds significant value, as it provides insight into treatment effects and disease impact, thereby informing benefit/risk assessments and facilitating patient-centered cancer research. The latest FDA draft guidance relating to PROMs in cancer trials recommends using PROMs to measure a core set of targeted domains, enabling greater measurement precision and facilitating the collection of high-quality data.[2] The independent administration of specific domains or subscales from existing instruments is an approach that may allow for greater relevance and specificity, and reduced completion burden.

The QLQ-C30 is a widely used PROM in oncology, assessing the impact of the disease and treatment on cancer patients. This PROM is structured into five multi-item functional scales/domains, three multi-item symptom scales, a global health status/quality of life scale, and six single-item measures.[3] It includes physical function and role function domains, which can be administered as independent item lists, and are two of the five core measures recommended by the FDA (refer to Figure 1). Here, we investigated the correlation between the individual domain scores and the summary score of the QLQ-C30, aiming to add further support to the application of this modular approach in cancer trials.

FIGURE 1. OUTLINE OF SCALES COMPRISING THE QLQ-C30, HIGHLIGHTING PHYSICAL FUNCTION AND ROLE FUNCTION AS FDA-RECOMMENDED CORE PATIENT-REPORTED OUTCOME MEASURES (PROMS) IN CANCER CLINICAL TRIALS.



METHODS

QLQ-C30 BL and EOT data were examined from 996 patients enrolled in 5 global breast cancer studies. Pearson correlations between the QLQ-C30 domain scores and the summary score (reflecting the full measure) were investigated at BL and EOT as well as the change from BL to EOT in the domain and summary scores. Linear transformed scores were used for the analyses.[4]

RESULTS

There was a high correlation (0,70 to 0,90/-0,70 to -0,90) between the summary score and the physical function, role function, social function, fatigue, pain, and global health status domain scores at BL and EOT (see Table 1). Generally, these correlations became stronger over time when comparing BL and EOT correlations. In addition, the change in the physical function, role function, social function, fatigue, and pain domain scores from BL to EOT showed high correlations with the change in the summary score (see Table 1).

TABLE 1. HEATMAP OF BASELINE (BL), END OF TREATMENT (EOT), AND CHANGE (BL-EOT) IN QLQ-C30 DOMAIN AND SUMMARY SCORE (SS) PEARSON CORRELATIONS. ALL CORRELATION COEFFICIENTS ARE SIGNIFICANT WITH P<0,001. HIGHER POSITIVE CORRELATIONS ARE REPRESENTED BY THE BLUE SPECTRUM, WHILE HIGHER NEGATIVE CORRELATIONS ARE REPRESENTED BY THE RED SPECTRUM.

		PF	**RF**	EF	CF	SF	FA	NV	PA	DY	SL	AP	CO	DI	FI	QL
BL		0.77	0.78	0.64	0.61	0.71	-0.87	-0.56	-0.78	-0.56	-0.63	-0.64	-0.50	-0.37	-0.32	0.72
EOT	SS	0.83	0.85	0.70	0.69	0.77	-0.89	-0.57	-0.77	-0.61	-0.67	-0.68	-0.47	-0.33	-0.41	0.74
BL–EOT		0.75	0.76	0.62	0.59	0.70	-0.80	-0.48	-0.70	-0.47	-0.58	-0.60	-0.38	-0.26	-0.32	0.63

BL = baseline, EOT = end of treatment, SS = summary score, PF = physical function, RF = role function, EF = emotional function, CF = cognitive function, SF = social function, FA = fatigue, NV = nausea and vomiting, PA = pain, DY = dyspnoea, SL = insomnia, AP = appetite loss, CO = constipation, DI = diarrhoea, FI = financial difficulties, QL = global health status/quality of life

DISCUSSION

Optimizing and customizing PROMs used in cancer trials is becoming increasingly important, to ensure that such measures are appropriate and relevant for their context of and intended use.[2,5] Correlation analyses showed that the QLQ-C30 physical function and role function domain scores are highly correlated with the summary score, suggesting that these FDA-recommended core PROMs mimic the entire instrument.

However, our analysis was unable to evaluate whether the context of subscales (e.g., standalone versus within the full measure) may affect the measurement properties of the subscales. While context effects may theoretically be mitigated by the physical function and role function questions being presented first in the full QLQ-C30 instrument, it will still be important to fully evaluate this potential context effect. In conclusion, our findings add further support to the suitability of independent use of the QLQ-C30 subscales in line with the FDA's recommended modular approach in cancer trials, but more research on possible context effects is needed.

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