THE ECOSYSTEM OF EVIDENCE

Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023

#EBHC2023

GIMBE EVIDENCE FOR HEALTH

Similar responsiveness of health-related quality of life outcomes in patients with breast cancer undergoing systemic therapy

Using network meta-analysis to develop hierarchies for data-extraction in systematic reviews

Professor Carsten Bogh Juhl
University of Southern Denmark
University Hospital of Copenhagen, Herley and Gentofte

Background

Extracting and combining data from different outcome measures is important in any meta-analysis.

Ideally, the most responsive outcome measure is the best choice considering it is a valid outcome measure.

Large impact on effect size of the choice of outcome for data-extraction.

In clinical trials including patients with breast cancer, multiple patients reported outcome measures (PROMs) has been used to assess health-related quality of life (HRQoL)

Andersen Crit Rev Oncol Hematol 2022, Juhl Arthritis 2012, Mokkink J Clin Epidemiol 2010

Aims

to compare the responsiveness of cancer specific, breast cancer specific and generic health related quality of life (HRQoL) used in randomised controlled trials (RCTs), evaluating exercise interventions in patients with breast cancer undergoing systemic therapy.

EORTC QLQ-BR45

EORTC QLQ-C30 (version 3)

SF-36
Survey of patient health

Methods

MEDLINE, EMBASE, CINAHL and CENTRAL were searched for RCTs evaluating exercise interventions in patients with breast cancer undergoing systemic therapy reporting at least two different HRQoL outcomes.

Network meta-analysis using a random effects model (REML) was performed on the standardised mean difference (SMD)

Inconsistency was evaluated based on the difference between direct and overall estimates of the three comparisons between the PROMs, breast cancer-specific, cancer-specific and generic outcomes of HRQoL.

Probability values were reported as the surface under the cumulative ranking (SUCRA). SUCRA = 1 if an outcome consistently ranks first (most responsive)

Chaimani PLoS One 2013, Salanti PLoS One 2014

Results

Twelve studies measured HRQoL with both a breast cancer-specific and cancer-specific outcome; two had both a cancer-specific outcome and a generic HRQoL outcome, and two reported HRQoL outcome in all three outcome groups.

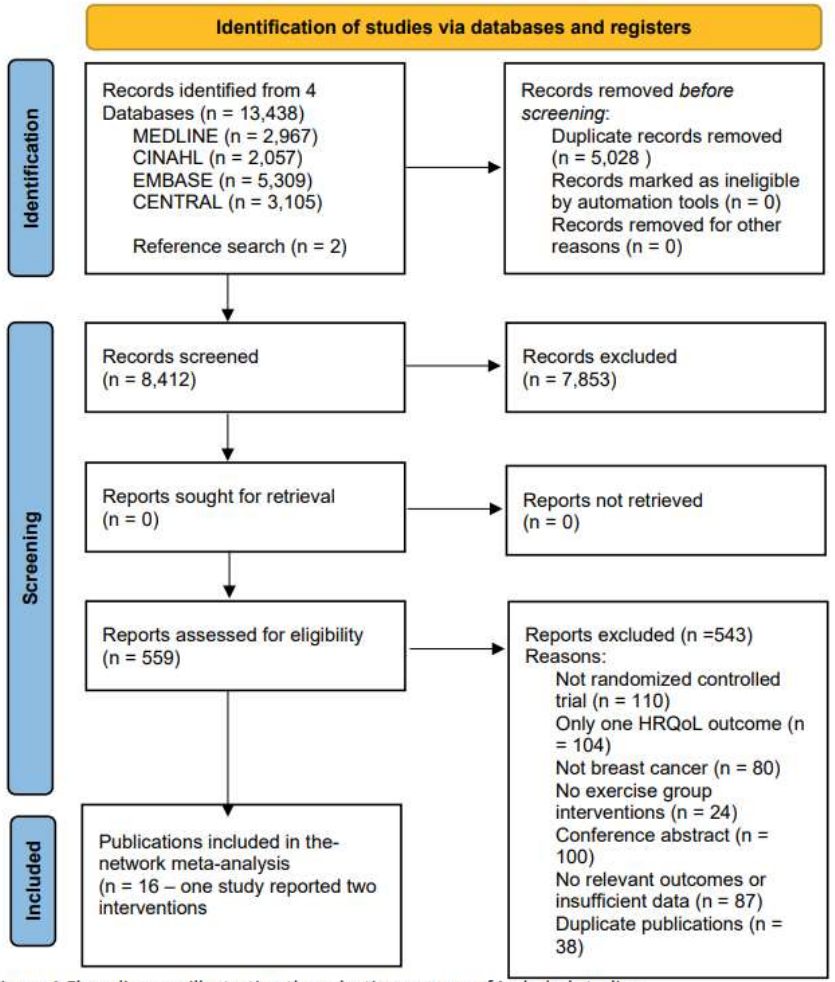
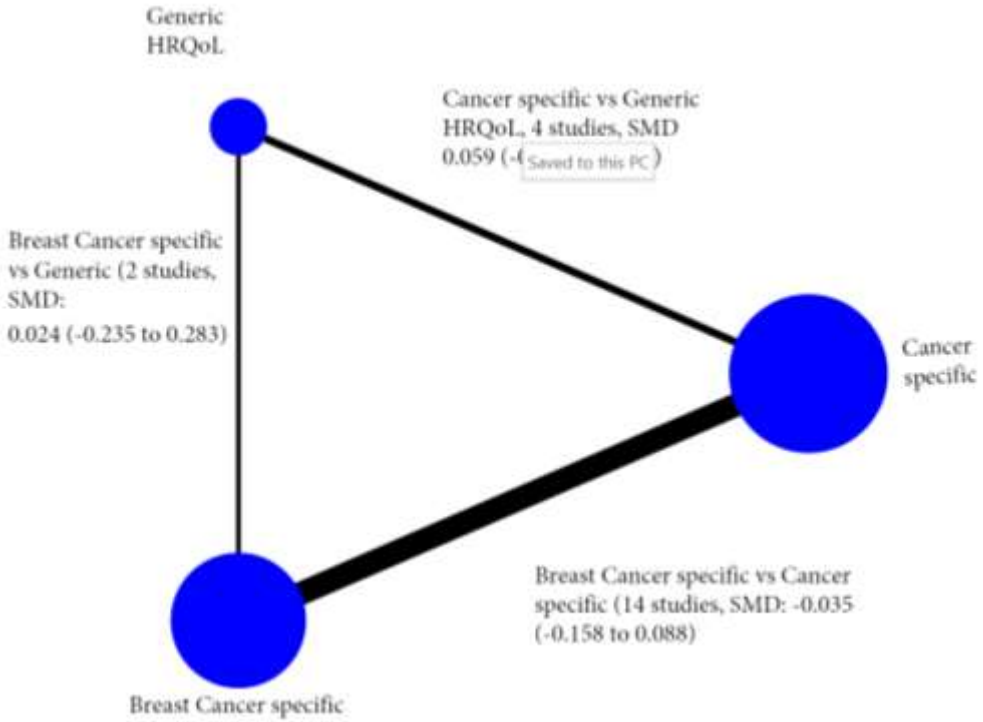


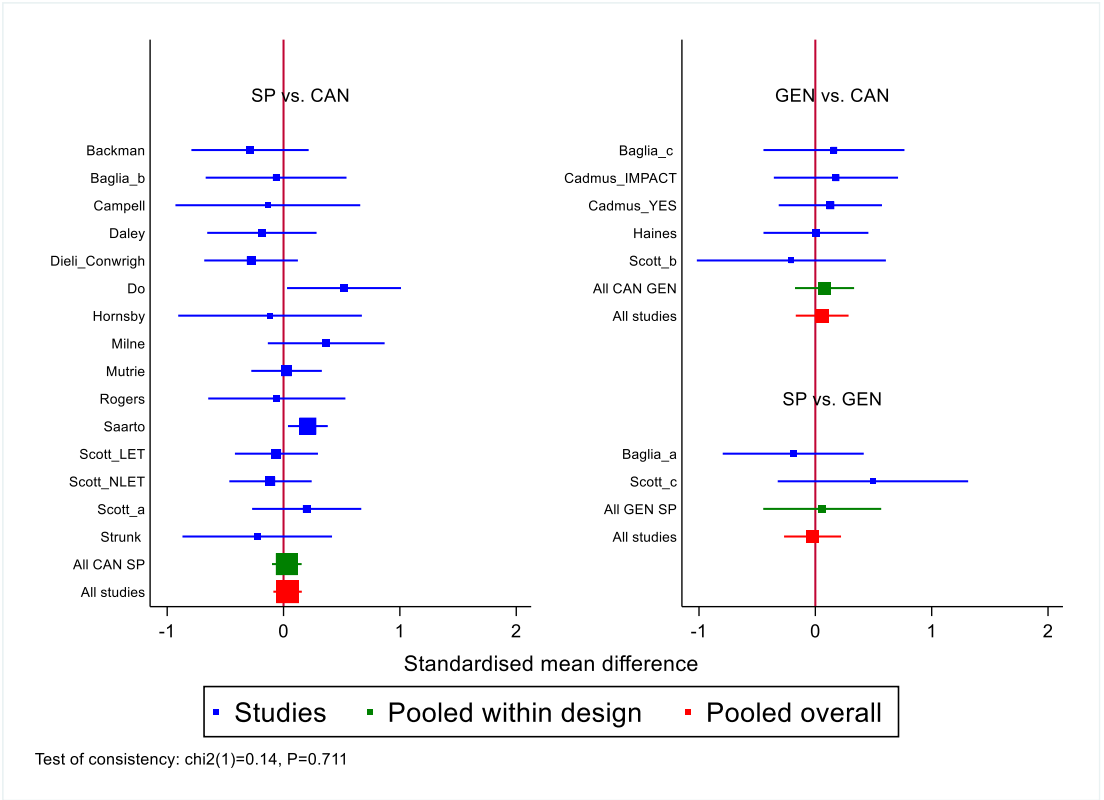
Figure 1 Flow diagram illustrating the selection process of included studies

Results

Network meta-analysis plot (size of bubble showed the number of studies)



Low inconsistency – difference between direct comparison (green) and all study (direct and indirect) comparison (red)



Results

The generic PROMs were the most responsive, with 53.9% confidence, followed by the breast cancer-specific with 36.4% confidence

TABLE 2: Relative ranking of individual treatments estimated from the network meta-analysis.

	Health related quality of life outcome		
	Breast Cancer specific	Cancer specific	Generic
Most responsive	36.4	9.7	53.9
Second responsive	41.4	39.7	18.9
Least responsive	22.2	50.6	27.2

Comparison	SMD (95% CI)	trials in direct comparison	SMD favours	Confidence
Breast Cancer specific vs Generic	0.024 (-0.235 to 0.283)	2	Breast Cancer specific HRQoL	Very low[abc]
Breast Cancer specific vs Cancer specific	-0.035 (-0.158 to 0.088)	14	Generic HRQoL	Low[ac]
Cancer specific vs Generic	0.059 (-0.168 to 0.286)	4	Generic HRQoL	Low[ac]

Confidence is based on the GRADE approach evaluating study limitation, inconsistency, indirecteness, imprecision and publication bias (i.e., small study bias)

Low to very low confidence for no difference in responsiveness between breast cancer-specific, cancer specific and generic HRQOL

Limits

Low number of included studies with two and more HRQoL measures.

Therefore, the PROMs were grouped as breast cancer-specific, cancer-specific and generic instead of performing the analysis on the individual PROMs.

Some variations of the exercise prescription components (frequency, intensity, and duration) and delivery mode (supervised, partly- or unsupervised).

However, due to the low number of included studies addressing these differences was not possible.

Conclusions

No clinically or statistically significant difference in responsiveness between the disease-specific and generic HRQoL PROMs in breast cancer patients undergoing systemic therapy.

The choice of PROMs may not impact the heterogeneity in the meta-analysis of HRQoL in patients with breast cancer undergoing systemic therapy.

Hierarchy of patient reported outcomes can be developed based on network meta-analysis.

Acknowledgement

- Thanx to my collaborators from the Center for Cancer Research, Department of Oncology, Copenhagen University Hospital, Herlev and Gentofte

- Cand Scient Høgni Hammersheib Andersen, PhD
- Cand Scient Kamilla Kastfelt
- Senior Researcher Anders Vinther, PhD
- Professor Dorte Nielsen, PhD
- Professor Julia Sidenius Johansen, PhD
- Associate Professor Cecilia Lund, PhD