

Cost-utility, cost-effectiveness, and budget impact of Internet-based cognitive behavioral therapy for breast cancer survivors with treatment-induced menopausal symptoms

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BACKGROUND

- Adjuvant treatments for breast cancer (BC) can lead to treatment-induced menopausal symptoms that negatively affect health-related quality of life and cause some women to discontinue their endocrine treatments.
- Medications to reduce menopausal symptoms are either contra-indicated or have bothersome side effects. In contrast, cognitive behavioral therapy (CBT) programs are without side effects, are effective, and are favored by BC survivors.
- Internet-based cognitive behavioral therapy (iCBT), with and without therapist support, is effective in reducing treatment-induced menopausal symptoms and perceived impact of hot flashes and night sweats (HF/NS) in breast cancer survivors as assessed in a recent trial [1].

OBJECTIVES

The aim of the current study was to evaluate the cost-utility, cost-effectiveness, and budget impact of both iCBT formats compared to a waiting list control group from a Dutch healthcare perspective.

METHODS

- A Markov model was developed with the following health states: (1) experience of menopausal symptoms (based on inclusion criteria of the RCT); (2) reduction in menopausal symptoms; (3) cancer recurrence (local, regional or distant); and (4) death.
- Incremental cost-utility ratios were calculated with formula:

$$ICUR = \frac{\text{Cost intervention group} - \text{Cost waitlist control group}}{\text{QALYs intervention group} - \text{QALYs waitlist control group}}$$

- We also performed a cost-effectiveness analysis using the principles of number needed to treat (NNT).
- The budget impact was calculated using the target population in the Netherlands (600).
- We used probabilistic sensitivity analysis (PSA) to estimate the uncertainty of the input parameters of the model. Uncertainty surrounding the ICURs was explored by plotting bootstrapped incremental cost-utility pairs on cost-effectiveness planes (CE-planes).

RESULTS

Results 1: Deterministic incremental cost-utility results and budget impact

	Cost	QALY	Incremental costs	Incremental QALYs	ICER	BIA
Healthcare perspective						
Guided iCBT	€5,315,55	4.119	€321.65	0.0138	€23,330.50	€192,990
Self-managed iCBT	€5,118,22	4.117	€124.32	0.01102	€11,277.63	€74,592
Waitlist control group	€4,993,90	4.106	n/a	n/a	n/a	n/a
Scenario analysis: Intervention perspective						
Guided iCBT	€226,09	4.119	€226.09	0.0138	€16,399.45	€135,654
Self-managed iCBT	€47,92	4.117	€47.92	0.01102	€4,346.58	€28,752
Waitlist control group	€0.00	4.106	n/a	n/a	n/a	n/a

REFERENCES & CONTACT INFORMATION

References

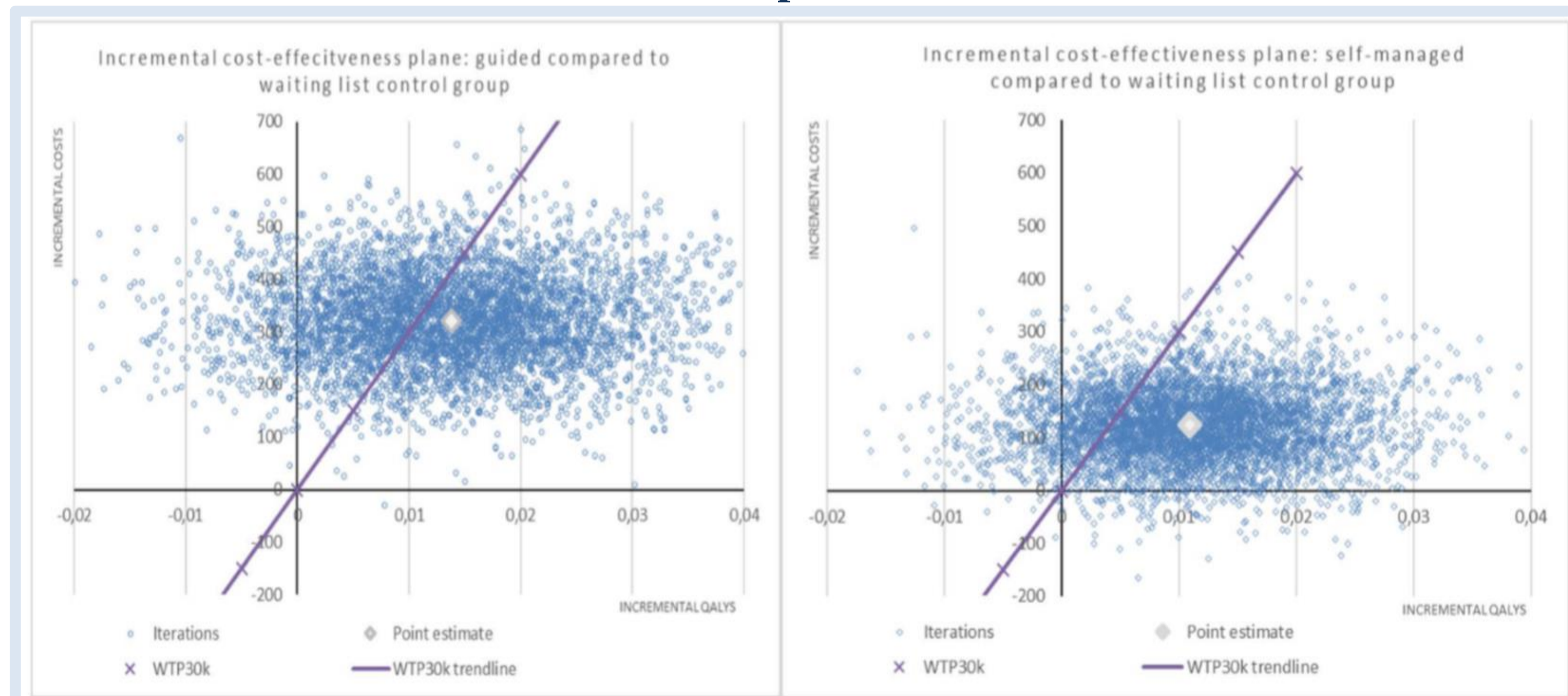
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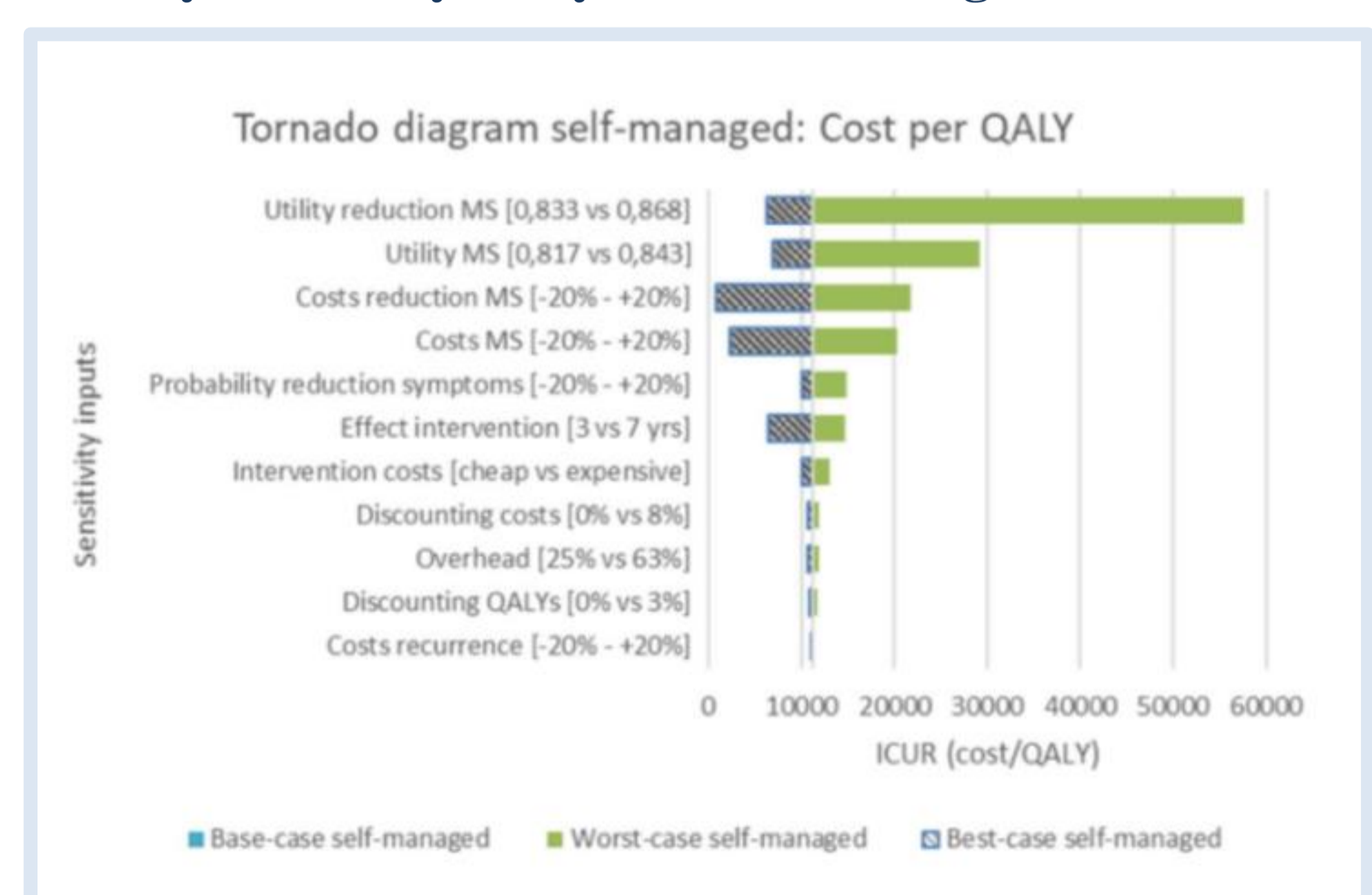
Results 2: Incremental cost-effectiveness planes



Key Results

- Guided and self-managed formats of iCBT are both associated with a small gain in QALYs and increase in costs over a 5-year time horizon.
- ICURs for both formats are below the proposed international WTP threshold of €30,000/QALY.
- To accomplish a significant reduction in overall levels of menopausal symptoms or perceived impact of HF/NS, an investment between €1026 and €1525 for the guided and €193–€753 for the self-managed iCBT format would be necessary.
- The annual Dutch budget impact (i.e., treating 600 patients) of implementing this program is estimated to be between €74,592 and €192,990 for the guided and between €28,752 and €74,592 for the self-managed iCBT.
- Self-managed iCBT remains cost-effective for all variations in input parameters and assumptions, except when utility decreases to its lower extreme value.

Results 3: One-way sensitivity analysis of self-managed iCBT



CONCLUSION

- (1) The cost per QALY was well below frequently used thresholds.
- (2) The cost to obtain a clinically relevant reduction of menopausal symptoms and/or perceived impact of HF/NS is modest for both formats.
- (3) The budget impact of both programs is negligible.
- (4) The self-managed format was associated with lower costs and more stable results.

KEY MESSAGE

Ideally a stepped care approach would be implemented in which the self-managed version of the iCBT program is the default option, with the guided version being reserved for those situations where women have a strong preference for such support.

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