Effectiveness of behavioral techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors: a meta-analysis

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CRD summary
This review concluded that behavioural techniques were effective in improving fatigue, depression, anxiety and stress and physical exercise was effective in improving fatigue, depression, body-image and HRQoL in breast cancer patients and survivors. The authors' conclusions are over-optimistic given the limitations in review methodology and should be interpreted with caution as they may not be reliable.

Authors' objectives
To evaluate the effect of behavioural techniques and physical exercise on psychosocial functioning and health-related quality of life (HRQoL) in breast cancer patients and survivors.

Searching
Published trials were identified through a search of PubMed, EMBASE, The Cochrane Library, CINAHL, PsycINFO and SportDiscus. Searches were to March 2009. There were no language restrictions. Reference lists of included studies were searched and search terms were reported.

Study selection
Randomised controlled trials (RCTs) that investigated the effects of behavioural techniques or physical exercise in patients with breast cancer and survivors of breast cancer were eligible for inclusion. Outcomes included fatigue, depression, anxiety, body-image (self concept, body image, self esteem, self perception) stress and HRQoL.

Interventions included a wide variety of behavioural techniques and physical exercise as individual and/or group interventions (details reported). Intervention duration ranged from three to 57 sessions and included patients with all grades of breast cancer (0-IV).

The authors did not state how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Two independent reviewers extracted data into a standard data extraction form that included follow-up time, breast cancer stage, intervention details and outcome measures. Mean differences were derived from data in each study and standardised mean differences were calculated.

Methods of synthesis
Pooled standardised mean differences (SMD) and corresponding 95% confidence intervals (CIs) were calculated using a fixed-effect meta-analysis where there was no evidence of statistical heterogeneity and a random-effects model where statistically significant heterogeneity was observed. Statistical heterogeneity was assessed using Cochran's Q. Sensitivity analyses tested the influence of study location, follow-up time, stage of breast cancer, timing of intervention, individual or group intervention and frequency and duration of intervention. Publication bias was assessed using funnel plots.

Results of the review
Fifty-six trials (6,926 participants, range 22 to 558) were included in the review.

Behavioural techniques significantly reduced fatigue (SMD -0.158, 95% CI -0.233 to -0.082; 14 studies), depression (SMD -0.336, 95% CI -0.482 to -0.190; 23 studies), anxiety (SMD -0.346, 95% CI -0.538 to -0.154; 23 studies) and stress (effect size -0.159, 95% CI -0.310 to -0.009; 16 studies). Behavioural techniques did not improve body image
(three studies) and HRQoL (27 studies). Heterogeneity was observed for all outcome measures except fatigue. Sensitivity analysis did not alter outcomes. Publication bias was detected for the outcomes of depression and anxiety.

Physical exercise significantly reduced fatigue (SMD -0.315, 95% CI -0.532 to -0.098; 11 studies), depression (SMD 0.262, 95% CI -0.476 to -0.049; six studies), body image (SMD 0.280, 95% CI 0.077 to 0.482; seven studies) and HRQoL (SMD 0.298, 95% CI 0.117 to 0.479; 13 studies). Exercise did not reduce anxiety (four studies). Heterogeneity was observed for all outcome measures. Sensitivity analysis showed that heterogeneity was attributed to follow-up time, individual versus group sessions, timing and duration of interventions and exercise frequency for various outcomes. Publication bias was detected for the outcomes of fatigue and HRQoL.

Authors' conclusions
Behavioural techniques were effective in improving fatigue, depression, anxiety and stress in breast cancer patients and survivors. Physical exercise was an effective intervention to improve fatigue, depression, body image and HRQoL.

CRD commentary
This review addressed a clear question supported by appropriate inclusion criteria. Relevant databases were searched without language restrictions. Publication bias was identified for several outcomes in the report; the authors did not attempt to identify unpublished studies and this may have contributed to the publication bias. Suitable methods to minimise risk of reviewer error and bias were reported for data extraction, but not for study selection. The authors did not assess validity of the included studies. Results were pooled using meta-analysis and heterogeneity was assessed. The decision to pool included studies in a meta-analysis may not have been appropriate given the heterogeneity between studies.

The authors’ conclusions are over-optimistic given the limitations in the methodology. Publication bias, significant heterogeneity and a lack of validity assessment mean that the authors conclusions should be interpreted with caution as they may not be reliable.

Implications of the review for practice and research
Practice: The authors stated that the results indicated a range of behavioural techniques, which included behavioural therapy, cognitive therapy, education, relaxation, counselling and/or social support, can be used by breast cancer patients to effectively reduce fatigue, depression, anxiety and stress.

Research: The authors stated a need for research on the effect of physical exercise on stress and the effect of the combined intervention in breast cancer patients.

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