Psychosocial outcomes of breast-conserving surgery versus mastectomy: a meta-analytic review
Moyer A

Authors' objectives
To compare the psychosocial effects of breast-conserving surgical treatment versus mastectomy.

Searching
CINAHL, MEDLINE and PsycINFO (which indexes dissertations and conference proceedings as well as published articles) were searched using keywords. No language exclusions were specified. Reference sections of articles were also reviewed. Published and unpublished investigations from 1980 to October 1995 were retrieved.

Study selection
Study designs of evaluations included in the review
Controlled trials.

Specific interventions included in the review
Breast-conserving treatment (known by various terms, including: local excision, wide excision, lumpectomy, partial mastectomy, tumorectoy, tylectomy and breast conservation); modified radical mastectomy (with or without expander prosthesis or breast reconstruction); radical mastectomy; total mastectomy; or simple mastectomy. Surgical treatment was with or without adjuvant radiotherapy and/or Chemotherapy treatment.

Participants included in the review
Women with breast cancer.

Outcomes assessed in the review
Six psychosocial outcomes, which included psychological adjustment, marital-sexual adjustment, body/self image, cancer-related fears and concerns, global adjustment and social adjustment (divided according to Meyerowitz's description, see Other Publications of Related Interest).

How were decisions on the relevance of primary studies made?
The author does not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The author does not state that they assessed validity. However, sensitivity analyses were conducted to assess whether particular study features influenced the resulting combined effect sizes. These study features included the method of treatment assignment (randomised versus non randomised), length of time since surgery (less than 12 months versus 12 months or more), the year the study was published, and the presence or absence of adjuvant treatment.

Data extraction
The Kappa value, adjusted for chance agreement, for 2 independent raters using this classification scheme to code study outcomes was 0.95, thus it was deemed acceptable to use the primary rater's judgement. The effect size (ES) estimate was calculated for each study. When the group mean and standard deviation were not available, summary statistics such as F, t, or p were used (see Other Publications of Related Interest). When only proportions were reported, Cohen's conservative estimate of ES was used. In a small number of instances, non significant or significant findings were reported in the text of the article. In the first case, an ES of zero was assigned, and in the second case, the convention p<0.05 was assumed, and the corresponding ES was calculated. Fail safe N was calculated, where possible.
Methods of synthesis

How were the studies combined?
Mean effect size (ES) and mean weighted (ES) were calculated. Efforts were made to ensure that the ESs included in the meta-analysis were independent, so that a single investigation would not disproportionately influence the results (e.g. where reports were of follow-up studies to previously published studies, only the ES was used).

How were differences between studies investigated?
A statistical test for homogeneity was conducted. As mentioned previously, sensitivity analyses were carried out to assess whether particular study features (randomisation, length of time since surgery and year of publication) influenced the results.

Results of the review
Forty controlled studies (from 42 references). N=4461

The weighted ESs for psychological (Mean=0.118, SD=0.039, p<0.01), marital-sexual (Mean=0.093, SD=0.048, p<0.05) and social adjustment (Mean=0.181, SD=0.073, p<0.01), body/self image (M=0.400, SD=0.043, P<0.00001) and cancer-related fears and concerns (M=0.161, SD=0.063, P<0.0001) were significantly different from zero and favoured breast-conserving surgery over mastectomy. Many of the psychosocial outcomes had significant tests for heterogeneity (psychological adjustment, Q=107.97, p<0.00001; social adjustment, Q=21.10, p<0.05; body/self-image, Q=82.08, p<0.00001; cancer-related fears and concerns, Q=28.10, p<0.05), indicating that variations in the effects represents systematic differences among the studies in addition to sampling error.

The mean weighted ES (benefit for breast-conserving surgery) for psychological functioning was significantly higher for samples that were not randomised to treatment than for the samples that were randomised (p<0.001). Conversely, the mean weighted ES (benefit for breast-conserving surgery) for social functioning was significantly higher for samples that were randomly assigned to treatment (p<0.05). The mean weighted ESs (benefit for breast-conserving surgery) for psychological (p<0.00001), marital-sexual adjustment (p<0.01) and cancer related fears and concerns (p<0.05) were significantly higher for assessments made 12 months or more after surgical treatment than for assessments less than 12 months after surgical treatment. None of the correlations between the year that an individual study was published and its ES for each of the six psychological outcomes were significant. Fail-safe N was only meaningful for psychological adjustment and body/self image, values being 2 and 41, respectively.

Authors’ conclusions
To the extent that the ESs observed in the present meta-analysis are small but solid, there is optimism for the benefits of breast-conserving surgery compared with mastectomy, particularly for body image but also for psychological adjustment, marital-sexual adjustment, social adjustment, and cancer-related fears and concerns, where the literature had been ambiguous. To the extent that the differences between the two types of surgery are not enormous, rather than advocating one particular treatment over another, strategies such as actively matching patients to optimal treatment could be helpful.

CRD commentary
The author conducted an extensive literature search, however, this did not include the Cancerlit database, which may have provided some useful data, and there was no specific information given on how the various databases were searched. In addition, there were no clear inclusion criteria or validity assessment. As the authors note there was significant heterogeneity between the included studies, which means that the appropriateness of conducting a meta-analysis is questionable. The results should therefore be interpreted with caution. The author’s conclusions appear to follow from the results presented.

Implications of the review for practice and research
Practice: See Author's Conclusions for practice.
Research: The author did not state any further implications for further research.

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