Meta-analysis of psychosocial interventions to reduce pain in patients with cancer

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CRD summary
This review concluded that psychosocial interventions had medium-size effects on pain severity and interference in cancer patients and this supported use of quality-controlled psychosocial interventions in a multimodal approach to pain management. Apart from a risk of language bias this was a well-conducted review. The conclusions seem reliable but pain severity was reported in only four studies.

Authors' objectives
To estimate the effect of psychosocial interventions on cancer-related pain, compare different types of intervention and explore the relationship between intervention design and patient characteristics and intervention effect.

Searching
MEDLINE, PsycINFO, EMBASE, CINAHL and The Cochrane Library were searched from inception to 2010 for studies published in English. Search terms were reported.

Study selection
Eligible studies were randomised trials in adults (18 years or older) who had a diagnosis of cancer or were undergoing procedures for diagnosis of cancer. Trials had to compare a psychosocial intervention to usual care or no treatment and assess pain. Psychosocial interventions were defined as any approach that involved cognitive-behavioural techniques, stress management, relaxation training, education, hypnosis or other experiential techniques. Studies that used alternative therapies such as massage or reiki as their primary treatment were excluded. Treatment could be provided in any form including individual, group, couple, telephone or internet-based modalities.

The included studies were conducted between 1983 and 2010. Two-thirds of the studies included patients with mixed cancer stages at baseline. Two-thirds of the participants were women, nearly three-quarters were white, more than half had received chemotherapy and nearly three-quarters were in an outpatient setting at baseline. Half of the interventions used skills training. Half of the studies provided education to the individual in most cases. The retention rate was 77%. The mean retention period was 6.4 weeks. The mean number of treatment sessions was 6.5. Most studies had usual care control groups.

Studies were selected by two reviewers independently. The final decision was made by the project leader.

Assessment of study quality
Study quality was assessed using a modified seven-item version of the Physiotherapy Evidence Database (PEDro) questionnaire. This included baseline comparability of groups, key outcome measure obtained for at least 85% of participants, intention-to-treat analysis, reporting of estimate and variance for one key outcome, loss to follow-up reported and presence of an adequate treatment fidelity protocol that included manualised treatment and monitoring of treatment implementation.

Studies were assessed by two independent reviewers. Discrepancies were resolved through consensus.

Data extraction
Means and standard deviations of pain-related outcomes were extracted and used to calculate Hedge's g effect sizes. Where a study reported more than one pain outcome they were chosen in the order: worst, average, current and least. The time closest to intervention completion was chosen for outcomes reported at more than one assessment.

Data were extracted by two independent reviewers, discrepancies were resolved through consensus. Authors were contacted for information where necessary.

Methods of synthesis
Results were pooled using random effects meta-analysis weighted by the inverse variance. Heterogeneity was assessed
Moderator analysis was used to explore the effect of baseline patient and study characteristics on outcomes. Only factors with at least three studies per group were included. Factors assessed were: cognitive-behavioural or skills-based interventions compared with educational approaches; whether pain was a primary or secondary study outcome; whether presence of pain was an eligibility criterion; proportions of participants who were women; proportions of participants who were from an ethnic minority; and the PEDro criteria. Categorical factors were assessed using mixed models and continuous factors using meta-regression.

Publication bias was assessed using funnel plots, trim-and-fill and the fail-safe N.

**Results of the review**

Thirty-seven studies (4,199 participants) were included. One study provided two sets of results so there were 38 comparisons in total. Rates of baseline group similarity and receipt of the allocated treatment (or analysis by intention-to-treat) were good (both 71%). Fewer than one in five studies concealed allocation or blinded assessors. Less than half of the studies reported that they monitored treatment implementation.

The mean effect size for pain severity was 0.34 (95% CI 0.23 to 0.46; 38 comparisons with substantial heterogeneity $I^2=60.1\%$). The mean effect size for pain interference was 0.40 (95% CI 0.21 to 0.60; four comparisons with no heterogeneity $I^2=0\%$). There was a statistical trend for the effect of the delivery setting on pain severity (effect size 0.25 for clinic only versus 0.43 for home, $p=0.08$). No associations were seen for any other intervention or patient-related factors.

For the seven PEDro criteria only adequate monitoring of treatment fidelity had a significant relationship with pain severity. Studies with adequate monitoring of treatment fidelity had a larger effect size (0.52 based on seven studies compared to 0.29 for the 31 studies where monitoring was classed as inadequate, $p=0.04$). There was no evidence of publication bias for pain severity.

**Authors’ conclusions**

Psychosocial interventions had medium-size effects on both pain severity and interference. These findings supported systematic implementation of quality-controlled psychosocial interventions as part of a multimodal approach to pain management in cancer patients.

**CRD commentary**

This review had clear inclusion criteria for study design, participants, interventions and outcomes. The search was restricted to studies published in English so the review was at risk of language bias. The authors assessed publication bias for the main outcome and found no evidence for it. Study selection, quality assessment and data extraction were performed in duplicate to reduce error and bias in the methods. An appropriate questionnaire was used to assess study quality but the results were not reported in full for each trial.

Results were pooled using random-effects meta-analysis. Sources of heterogeneity were explored using subgroup analysis. The conclusion about pain severity was based on four studies that showed substantial heterogeneity; the authors commented that pain was not the primary outcome in most studies and was measured inconsistently.

Apart from the possible risk of language bias the conduct of this review was good. The conclusions seem fairly reliable.

**Implications of the review for practice and research**

Practice: The authors stated that the review findings supported use of psychosocial interventions as part of a multimodal approach to the treatment of cancer-related pain and the inclusion of psychosocial care experts as members of a multidisciplinary treatment team.

Research: The authors stated that additional data in racial/ethnic-minority groups were needed to explore whether more targeted interventions could better manage pain across different subgroups of cancer patients and different settings.

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