Systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache

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Authors' objectives
To answer two broad questions: 1. Is cognitive behaviour therapy (including behaviour therapy and biofeedback) an effective treatment for chronic pain, i.e. is it better than no treatment? 2. Is cognitive behaviour therapy more effective than alternative active treatments?

Searching
Four computer abstracting services were selected and their yields compared; MEDLINE, PsycLIT, EMBASE and the Social Science Citation Index (SSCI). Reference lists and bibliographies were searched from all retrieved articles and relevant published reviews. The final list was cross-checked with the PARED database. Studies published in full, in peer reviewed journals between 1974 and 1996 only were included.

Study selection

Study designs of evaluations included in the review
Randomised controlled trials (RCTs)

Specific interventions included in the review
Cognitive behaviour therapy, including behaviour therapy and biofeedback or relaxation. Control treatments included waiting list controls, relaxation exercises or attention control group (education).

Participants included in the review
Adults presenting with chronic pain, including low back pain, rheumatoid arthritis, osteoarthritis, upper limb pain, fibromyalgia, etc., excluding headache; 62% were female, the mean age was 48.35 years and the mean chronicity of the samples was 12.27 years.

Outcomes assessed in the review
Pain experience, mood/affect, cognitive coping and appraisal, pain behaviour and social role performance.

How were decisions on the relevance of primary studies made?
Papers were read by each of the authors and a consensus decision was taken as to whether the paper contained data suitable for meta-analysis, i.e. contained post treatment means and variances or contrast statistics between two groups (t or F).

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

Data extraction
Data were extracted by two or three coders and the reliability of coding was assessed by computing Kappa or percentage agreement for categorical data, and the intraclass correlation for continuous measures. Differences between coders were resolved by consensus. Data were extracted on randomisation quality, treatments, patient group, location and sample size.

Methods of synthesis
How were the studies combined?
Effect sizes using Hedges’ g (Hedges & Olkin, 1985; see Other Publications of Related Interest, no.1) were estimated. The sign of the result was adjusted so that improvements on every measure were denoted as positive. Where g could not be computed directly from means and standard deviations given in the source paper it was directly computed from the available test statistics, e.g. t, using the formula of Rosenthal (1994; see Other Publications of Related Interest, no.2). The estimates for g were corrected for small sample bias (Hedges and Olkin, 1985) prior to further analysis. The meta-analysis method of Hunter and Schmidt was used to combine effect sizes (see Other Publications of Related Interest, no.3).

How were differences between studies investigated?
All data were reported on the assumption that the effect sizes are heterogeneous. The effect of the assumption was to increase the confidence interval which is tantamount to increase the Type II error. In no case, where homogeneity was indicated, did the assumption of heterogeneity change the significance of the result.

Results of the review
Thirty-three papers contained data from 30 trials, including 1672 patients (or 1626 according to table 3), some papers reported additional or follow-up data. Five trials were excluded from the statistical analysis as the authors were unable to provide data suitable for computing effect size statistics. This left 25 controlled trials for analysis.

When compared with the Waiting List Control (WLC) conditions cognitive-behavioural treatments were associated with significant effect sizes on all domains of measurement (median effect size across domains = 0.5). Comparison with alternative active treatments revealed that cognitive-behavioural treatments produced significantly greater changes for the domains of pain experience, cognitive coping and appraisal (positive coping measures), and reduced behavioural expression of pain.

Authors’ conclusions
Active psychological treatments based on the principle of cognitive behavioural therapy are effective.

CRD commentary
The review question was clear and the search strategy seems complete and appropriate. The inclusion criteria seem well chosen and inclusion of studies was assessed by each of the authors. Authors did not report whether methodological quality was assessed. Data abstraction was performed correctly, and the synthesis of results is presented clearly and completely. Considering all of these factors the results presented appear to support the authors conclusions.

Implications of the review for practice and research
This review raised methodological issues which should be considered in the design of future trials. Psychological treatment of chronic pain is complex, lengthy and variable, outcomes cannot be easily dichotomized and it is rarely possible to blind patients and therapists to treatment conditions.

Bibliographic details

PubMedID
10204712

Other publications of related interest
This additional published commentary may also be of interest. White AR. Psychological therapies have a place in treating chronic pain. FACT 2000;5:141-2.

**Indexing Status**
Subject indexing assigned by NLM

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