Meta-analysis of psychological interventions for chronic low back pain

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CRD summary
This review concluded that psychological interventions have positive effects in patients with noncancerous chronic low back pain. The authors’ conclusions appear to be supported by the data, but without further details of the quality of the individual studies the reliability of the findings is unclear.

Authors’ objectives
To evaluate the efficacy of psychological interventions for adults with chronic noncancerous low back pain (CLBP).

Searching
MEDLINE, PsycINFO, EMBASE, the Cochrane CENTRAL Register and CINAHL were searched from inception to October 2004. Some details of the search strategy were reported, with full details available on request. In addition, reference lists were checked, unpublished studies were sought via relevant health psychology Listservs, and attempts were made to locate dissertations. Only studies reported in the English language were included. The authors were unable to obtain 12 potentially relevant articles.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) and quasi-RCTs were eligible for inclusion in the review.

Specific interventions included in the review
Studies that compared psychological interventions with a control group (e.g. waiting list, usual treatment) were eligible for inclusion. The review considered interventions to be psychological if they were reported as such by the authors or were based on behavioural, cognitive-behavioural, self-regulatory or supportive counselling approaches, or were ‘psychologically informed’. The review evaluated cognitive-behavioural therapy (CBT), self-regulatory therapy (SRT), behavioural therapy, combinations of supportive/mixed therapy and multidisciplinary therapy. The control treatments included wait-list, physiotherapy, attention control and treatment as usual.

Participants included in the review
Studies of adults (aged 18 years or older) with nonmalignant CLBP, experiencing chronic pain for 3 months or recurrent pain that lasted for most of a 3-month time period, were eligible for inclusion. Patients could have CLBP of known or unknown aetiology. Where reported in the included studies, 42% of the patients were male (range: 8 to 69%), the mean age was 43 years (range: 35 to 50) and the mean duration of pain was 91 months (range: 4 to 155).

Outcomes assessed in the review
Studies that assessed a pain-related outcome based on recommendations from the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) were eligible for inclusion. Relevant data had to be extractable. The review assessed all outcomes combined, pain intensity, health-related quality of life (HRQOL), pain interference, depression, pain intensity, disability in terms of work, home care visits and medications. The outcomes were measured over all time periods, at post-treatment, at follow-up and at long-term follow-up.

How were decisions on the relevance of primary studies made?
Two reviewers selected potentially relevant studies from abstracts. One reviewer then assessed identified studies for eligibility using a checklist. The eligibility of a sample of the studies (13%) was discussed among reviewers and consensus reached; some studies (21%) were double-reviewed.

Assessment of study quality
Validity was assessed using criteria adapted from 4 published studies (references reported). Study quality was scored from 0 to 1 by dividing the number of items met by the total number of possible items. However, the actual criteria used were not reported. The authors did not state how the validity assessment was performed.
Data extraction
Two reviewers independently coded and extracted the data. Any disagreements were resolved through consensus, with the aid of a third reviewer where required. Study authors were contacted for further information where necessary. For each study, Cohen's effect size (ES, d) was calculated for each comparison. If more than one relevant ES was obtained from an individual study, a mean ES was calculated. Outcomes reported as percentages were converted into odds ratios.

Methods of synthesis
How were the studies combined?
Pooled ES with 95% confidence intervals were calculated using an inverse variance random-effect model for any comparison for which at least three ES were available. For each analysis, the fail-safe N (the number of unpublished studies required for the overall ES to be no longer statistically significant) was calculated.

How were differences between studies investigated?
Statistical heterogeneity was assessed using the I-squared statistic. Outcomes were evaluated for different time periods, different control treatments (any, wait-list and active), type of intervention (psychological or multidisciplinary) and type of psychological treatment (CBT and SRT). Regression analysis was used to examine the influence of potential moderating variables (percentage male, sample size, study quality items and age).

Results of the review
Twenty-two studies (n=1,747) were included. These studies provided 205 ES. The sample size ranged from 20 to 293.

The scores for quality ranged from 0.17 and 0.64 out of 1. The review stated that details of the scores for individual studies are available from the authors.

For all treatments, overall time periods, all outcomes and all control treatments, psychological interventions were significantly superior to control (d=0.16, p=0.02; 21 studies).

The number of comparisons used in the subgroup analyses ranged from 3 to 11.

Psychological plus multidisciplinary treatments.
Significant positive effects of psychological/multidisciplinary interventions compared with any control were found for pain intensity (d=0.27, p=0.01), HRQOL (d=0.41, p=0.05) and pain interference (d=0.23, p=0.01), but not depression. Significant positive effects for psychological/multidisciplinary interventions compared with wait-list control were found for pain intensity (d=0.50, p=0.00) and HRQOL (d=0.42, p=0.05), but not pain interference or depression. There were no significant differences between psychological/multidisciplinary interventions and active controls for pain intensity or pain interference.

At follow-up, significant positive effects were found for the effects of psychological/multidisciplinary interventions compared with active control on disability (working: d=0.36, p=0.02), but there were no significant differences between treatments for pain intensity, pain interference, home care visits or medications.

At long term follow-up, significant positive effects of psychological/multidisciplinary interventions compared with active control were found for disability (working: d=0.53, p=0.03).

Psychological or multidisciplinary treatments.
Significant positive effects post-treatment were found for any psychological treatment compared with wait-list for pain intensity (d=0.52, p=0.00), but not HRQOL or depression. Significant positive effects post-treatment were also found for multidisciplinary interventions compared with active control for pain interference (d=0.20, p=0.03), but not pain intensity. Significant positive effects were found for multidisciplinary interventions compared with active control for disability (working) at follow-up (d=0.36, p=0.02) and long-term follow-up (d=0.53, p=0.03), but not pain interference or pain intensity at follow-up.

Individual psychological treatments.
Significant positive effects post-treatment were found for CBT compared with wait-list control for pain intensity (d=0.62, p=0.00), but not HRQOL. There were no significant differences between CBT and SRT for pain intensity or depression post-treatment, or pain intensity at follow-up. Significant positive effects post-treatment were found for SRT compared with wait-list control for pain intensity (d=0.75, p=0.00) and depression (d=0.81, p=0.02).

Analyses generally showed mild to moderate heterogeneity. The fail-safe N values ranged from 0.33 to 8.74.

Authors' conclusions
Psychological interventions have positive effects in patients with CLBP.

CRD commentary
The review addressed a clear question that was broadly defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched and attempts were made to minimise publication bias; publication bias was assessed using the fail-safe N statistic. However, language bias may exist due to the inclusion of only English language studies. Methods were used to minimise reviewer error and bias in the selection of studies and extraction of data, but it is unclear whether similar steps were taken in the assessment of validity. Validity was assessed, but the criteria were not described and only overall scores were reported. This makes it difficult to adequately assess the quality of the included studies and, hence, the evidence underlying the analyses. There was very little information about the participants, so it is not possible to judge the generalisability of the results. The studies were generally appropriately pooled using meta-analyses of various subgroups of studies and statistical heterogeneity was assessed. The authors’ conclusions appear to be supported by the data, but without further details of the quality of the individual studies the reliability of the findings is unclear.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors encourage further evaluation of stepped models of care that highlight early intervention in patients with CLBP and a self-management approach.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.