Psychological interventions for rheumatoid arthritis: a meta-analysis of randomized controlled trials

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Authors' objectives
To assess the efficacy of psychological interventions in the treatment of rheumatoid arthritis (RA).

Searching
MEDLINE, PsycLIT, EMBASE, CAMPAIN, the Science Citation Index, the Cochrane Library and the Cochrane Controlled Trials Register were searched from their inception through June 2001. More than thirty terms related to psychological therapies (including meditation, relaxation, cognitive-behavioural, psychoeducational, counseling, biofeedback, and mind-body) were combined with eleven search terms related to arthritis. In addition, the authors' personal files, the reference lists of identified studies and review articles were searched. Eligible studies were restricted to articles published in English in peer-reviewed journals.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible. RCTs that included patients with conditions other than RA were included if they reported data separately for patients with RA. The follow-up periods ranged from 2 to 18 months (mean: 8.6).

Specific interventions included in the review
Comparisons of active treatment, which included some psychological or psychosocial component beyond simply providing information about the disease, with an appropriate control intervention (usual medical care, wait list, or attention placebo) were eligible. The following psychological interventions were used:

- multimodal, cognitive behavioural involving some component of relaxation, imagery, stress management, or the teaching of cognitive coping skills;
- multicomponent with a biofeedback element;
- traditional psychotherapeutic interventions, both group based and individual; and
- interventions involving patients writing or speaking about difficult emotions or stressful experiences.

The duration of the interventions ranged from 3 days to 9 months (mean: 9.8 weeks). One study used a refresher course following the actual intervention.

Participants included in the review
People with RA were eligible. The mean duration of the disease was 10.6 years.

Outcomes assessed in the review
The inclusion criteria were not defined in terms of the outcomes. The clinical outcomes that were assessed across a majority of the studies were:

- pain, mostly assessed using a standard visual analogue scale;
- functional disability, using the Health Assessment Questionnaire and Arthritis Impact Measurement Scales;
- psychological status (usually depression), using the Centre for Epidemiological Studies-Depression Scale and the Beck Depression Inventory;
coping, using measures of psychological or cognitive-emotional coping; self-efficacy, using the Arthritis Self-Efficacy Scale and Arthritis Helplessness Index; and tender joints.

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

Assessment of study quality
Validity was assessed and scored using the criteria of Jadad et al. (see Other Publications of Related Interest no.1) plus additional items. The quality criteria included: randomised study; adequate description of the control group; baseline differences reported (and controlled for statistically); drop-outs described (and compared statistically with completers or less than 10% drop-outs); outcome assessor blinded to the treatment allocation; patient blinded to the treatment or credibility of control group evaluated; method of randomisation described and proper; and proper method of allocation concealment. The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.

Data extraction
Two reviewers independently extracted the data, and any differences were resolved by consensus. The information tabulated in the review included: author and year of publication; trial design; sample size; intervention and control details; primary outcomes; and results including quality score. Where there were sufficient data, effect sizes were estimated for each outcome using Cohen's 'd' weighted by sample size (see Other Publications of Related Interest no.2). The effect sizes were calculated for the first time point post-intervention and for the latest time point assessed. The Hedges correction was applied to all effect sizes (see Other Publications of Related Interest no.3).

Methods of synthesis
How were the studies combined?
The data were pooled in a meta-analysis using a fixed-effect model. Publication bias was assessed by calculating the fail-safe N value for each outcome, and by examining a funnel plot. Reporting bias was assessed by calculating the adjusted effect sizes, based on an assumed value of zero where the effect sizes could not be calculated, and an assumed effect size, based on a P value of 0.05 for positive effect sizes that could not be calculated.

How were differences between studies investigated?
Statistical heterogeneity was assessed for all pooled effect sizes using the Cochran Q test for homogeneity. Where sufficient data were available, the effect sizes for the higher quality (quality score of at least 7 out of a maximum of 10) and lower quality studies were calculated and compared. Subgroup analyses were used to explore the influence of illness duration on the outcomes.

Results of the review
Twenty-five RCTs (1,676 patients) were included.

The methodological quality scores ranged from 3 to 9 (mean 5.84) out of a possible maximum of 10 points. The mean Jadad score was 2.24. Five RCTs described a proper randomisation method. In 5 RCTs the patients were deemed blinded to the treatment allocation. Most trials described reasons for drop-outs or withdrawals. In 11 RCTs the outcome assessor was blinded to the group assignment. Only one RCT adequately described a proper method of allocation concealment. Five RCTs did not adequately describe the control intervention. The majority of RCTs (92%) reported a baseline comparison of the treatment groups, and most (72%) controlled for baseline differences statistically. The results were homogeneous across studies for each effect size calculated.

The results are reported as in the text of the review, where the effect sizes are not always consistent with the signs (- or -)
+ ) of the reported 95% confidence intervals (CIs).

Pain (19 RCTs).

Compared with control, psychological therapy significantly improved pain post-treatment but not at follow-up. The post-treatment effect size (13 RCTs) was 0.22 (95% CI: 0.07, 0.37, P=0.003), while the follow-up effect size (6 RCTs) was 0.06 (95% CI: -0.17, +0.29).

Functional disability (18 RCTs).

Compared with control, psychological therapy significantly improved functional disability post-treatment but not at follow-up. The post-treatment effect size (12 RCTs) was 0.27 (95% CI: 0.12, 0.42, P=0.00001), while the follow-up effect size (7 RCTs) was 0.12 (95% CI: -0.09, +0.33).

Tender joints (7 RCTs).

Compared with control, psychological therapy significantly improved tender joints at follow-up but not at post-treatment. The post-treatment effect size (7 RCTs) was -0.15 (95% CI: -0.09, -0.39), while the follow-up effect size (5 RCTs) was 0.30 (95% CI: 0.04, 0.56, P=0.005).

Psychological status (19 RCTs).

Compared with control, psychological therapy significantly improved psychological status both at post-treatment and at follow-up. The post-treatment effect size (12 RCTs) was 0.15 (95% CI: -0.01, -0.31, P=0.03), and the follow-up effect size (5 RCTs) was 0.33 (95% CI: -0.07, -0.59, P=0.01).

Coping (12 RCTs).

Compared with control, psychological therapy significantly improved coping both at post-treatment and at follow-up. The post-treatment effect size (4 RCTs) was 0.46 (95% CI: 0.09, 0.83, P=0.007), and the follow-up effect size (3 RCTs) was 0.52 (95% CI: -0.07, +1.11, P=0.04).

Self-efficacy (8 RCTs).

Compared with control, psychological therapy significantly improved self-efficacy post-treatment but not at follow-up. The post-treatment effect size (5 RCTs) was 0.35 (95% CI: 0.11, 0.59, P=0.017), while the follow-up effect size (3 RCTs) was 0.20 (95% CI: -0.08, -0.48).

Influence of the trial quality.

The pooled effect sizes for pain and disability were smaller in higher quality RCTs than in lower quality studies: the effect sizes for pain were 0.11 and 0.32 in higher and lower quality RCTs, respectively, and for disability, 0.20 and 0.33. The pooled effect sizes for psychological status were larger in higher quality RCTs than in lower quality studies: 0.23 for higher quality RCTs versus 0.03 for lower quality RCTs. Correlations between trial quality and effect sizes were not statistically significant for any of the six outcomes assessed.

Publication bias could not be ruled out. The fail-safe N was 22 for pain, 49 for disability, 0 for depression, 10 for coping, and 8 for self-efficacy. The funnel plots differed for different outcomes.

The adjusted effect sizes, used to assess reporting bias, were smaller than the results from the meta-analysis. The adjustments only altered the statistical significance of the results for psychological interventions (post-treatment).

Duration of illness (subgroup analyses using data from 18 RCTs).

The pooled effect sizes were smaller in those studies where the patients, on average, had the disease for more than 11.5 years, than in those where the patients had the disease for less than 11.5 years. The effect sizes for studies of longer duration versus shorter duration were, respectively, 0.19 and 0.46 for pain, 0.33 and 0.45 for disability, 0.08 and 0.34.
for psychological status, and 0.43 and 0.49 for coping.

Authors' conclusions
Despite some methodological flaws in the literature, psychological interventions may be important adjunctive therapies in the medical management of RA. The findings suggested that psychological interventions may be more effective for patients who have had the illness for a shorter duration.

CRD commentary
The aims were stated and the inclusion criteria were defined in terms of the participants, interventions and study designs. The outcomes were not defined a priori but were determined after reviewing the included studies. The search was adequate; several potential sources were searched but the methods used to select the studies were not described. In addition, publication bias and reporting bias were assessed. However, the exclusion of non-English language studies may have resulted in the omission of other relevant studies. Validity was assessed and scored using a validated scale, and the results were reported. Relevant data were extracted and tabulated, and details of the methods used to extract the data were reported. Statistical heterogeneity was assessed and the data were combined, appropriately, in a meta-analysis. Sensitivity analyses were undertaken to examine the influence of study quality on the results. The influence of illness duration and type of control group was also explored.

The evidence presented supports the authors' conclusions.

Implications of the review for practice and research
Practice: The authors state that psychological interventions may be important adjunctive therapies in the medical management of RA.

Research: The authors state that additional research is required to clarify which of these psychological interventions (or combinations of interventions) are most effective, and for which specific types of patients. Also, to examine whether or not such treatments can potentially reduce the use of, and reliance upon, pharmacological approaches.

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