Psychological treatments for fibromyalgia: a meta-analysis
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CRD summary
The review concluded that psychological treatments for fibromyalgia had relatively small but significant positive effects for sleep problems, depression, functional status, catastrophizing and particularly for pain. Cognitive-behavioural therapy had the greatest effects. The review was generally well-performed, but the quality of the evidence and so the extent to which the authors' conclusions are reliable is unclear.

Authors' objectives
To evaluate the short- and long-term efficacy and treatment moderators of psychological interventions for fibromyalgia.

Searching
PubMed, PsycINFO and The Cochrane Library were searched from inception to 1 January 2009 for publications in English, German, Spanish, Italian and Polish; search terms were reported. Bibliographies of retrieved articles and relevant reviews were handsearched. Only published studies were included.

Study selection
Randomised controlled trials (RCTs) and uncontrolled or non-randomised studies of psychological treatment of any kind in adult patients (ages 18 to 65 years) diagnosed with fibromyalgia (FM) using American College of Rheumatology (ACR) criteria were eligible for inclusion. Psychological treatment had to account for at least 60% of treatment time in cases of multimodal programmes. Psychological treatment was defined as "the relief of distress or disability in one person by another using an approach based on a particular theory or paradigm, and the agent performing the therapy has had some form of training in delivering this".

The main outcomes were average pain intensity (primary outcome), functional status and depression. Other relevant outcomes were sleep disturbances and catastrophizing. Eligible studies had to report at least one of the main outcomes pre- and post-intervention and provide sufficient data to perform effect size analysis. Studies that used drug treatment as a cointervention were excluded (drug intake as usual or general medication advice during treatment was allowed). Studies where the psychological treatment length was insufficient were excluded. Case studies, studies with fewer than six patients and studies where patients partially or completely overlapped with other studies were excluded. One outlier study was excluded as the treatment effects were considered to be too high.

Interventions were divided into six types: cognitive-behavioural therapy (CBT; eight studies), relaxation (eight studies), educational (six studies), behavioural treatments (five studies), mindfulness-based (two studies) and other treatments (one study using eye movement desensitisation and reprocessing); detailed definitions were reported. Most of the studies used group therapy or a combination of group and individual therapy; the average number of intervention hours was 26.9 hours (range two to 120 hours). Two-thirds of studies had no cointervention; the other studies had exercise, yoga or Qi Gong as cointerventions. One fifth of interventions were uncontrolled, one fifth compared other psychological treatments and almost one third of studies used waiting list or treatment as usual controls; the remaining controls were placebo, exercise and physical and balneotherapies. Most of the patients were female (92%).

Two independent reviewers performed the study selection.

Assessment of study quality
Methodological quality was assessed by two reviewers independently using an adaptation of the Jadad scale developed by three reviewers. Disagreements were resolved by discussion. Inter-rater reliability was measured. The scale comprised 20 dichotomous terms and gave a maximum validity score of 20. Criteria included descriptions provided for the title (one criterion), abstract (six criteria), introduction (one criterion), methods (six criteria: searching and detailed information sources; inclusion/exclusion; validity assessment; data extraction; study characteristics; and data synthesis), results (three criteria: trial flow and meta-analysis profile; study characteristics; and data synthesis) and discussion (one criterion).
Data extraction
Two reviewers independently selected psychometrically validated outcomes and extracted numerical data. Two other reviewers decided which measures had adequate psychometric properties to be included in the analyses. Effect sizes were calculated using Hedges's g with 95% confidence intervals (CI) to correct for biases due to small sample size. Changes were calculated from pre- to post-treatment and from pre-treatment to follow-up.

Methods of synthesis
Hedges's g values were pooled using intention-to-treat (ITT) data and a random-effects model (heterogeneity was expected). Separate effect sizes were calculated for controlled studies in the short term. Cohen's recommendations were used to estimate the magnitude of the effect: Hedges's g of 0.2 indicated a small effect, 0.5 indicated medium effect and 0.8 indicated a large effect. Where g was more than 3.0 a result was considered to an outlier and excluded from the analysis. Publication bias was assessed by calculating fail safe N and using the trim-and-fill method for funnel plots. Moderating effects of treatment type, study quality and treatment dose (hours) were calculated using meta-regression.

Results of the review
Twenty-three studies were identified (n=1,396 participants, range six to 133). The mean validity score for studies was 11.22 (SD 2.96, range 5 to 16); seven studies scored less than 10. There were 30 intervention groups. ITT data were available for 11 studies. Where available, drop-out rates were 20.85% for intervention groups and 20.06% for control groups. Where available, follow-up ranged from two to 48 months.

Psychological interventions had a significant effect on short-term (Hedges's g=0.37, 95% CI 0.27 to 0.48; number of interventions in analysis (nt) = 26) and long-term pain reduction (Hedges's g=0.47, 95% CI 0.30 to 0.65; nt=15) for an average follow-up of 7.4 months. Psychological interventions were significantly effective in reducing sleep problems in the short term (Hedges's g=0.46, 95% CI 0.28 to 0.64; nt=17) and long term (Hedges's g=0.41, 95% CI 0.14 to 0.68; nt=12) and depression in the short term (Hedges's g=0.33, 95% CI 0.20 to 0.45; nt=20) and long term (Hedges's g=0.34, 95% CI 0.22 to 0.46; nt=16). Psychological interventions significantly affected functional status in the short term (Hedges's g=0.42, 95% CI 0.25 to 0.58; nt=14) and long term (Hedges's g=0.52, 95% CI 0.29 to 0.75; nt=11) and catastrophizing in the short term (Hedges's g=0.33, 95% CI 0.17 to 0.49; nt=8) and long term (Hedges's g=0.40, 95% CI 0.22 to 0.59; nt=7).

Analyses for controlled studies alone in the short term gave significant effects for pain reduction (Hedges's g=0.34, 95% CI 0.05 to 0.64; nt=5) and depression (Hedges's g=0.44, 95% CI 0.21 to 0.66; nt=12), but no significant effects for sleep problems (nt=3), functional status (nt=2) and catastrophizing (nt=4). Analyses for controlled studies plus studies with active comparisons found psychological interventions significantly reduced pain intensity (Hedges's g=0.50, 95% CI 0.14 to 0.86; nt=10), depression (Hedges's g=0.56, 95% CI 0.19 to 0.93; nt=8) and catastrophizing (Hedges's g=0.47, 95% CI 0.11 to 0.82; nt=2) but no significant effect on sleep problems (nt=6) and functional status (nt=6).

Detailed results were reported for the moderator analyses. CBT was significantly better than other treatments for short-term pain reduction (Hedges's g=0.60, 95% CI 0.46 to 0.76; nt=6 versus Hedges's g=0.27, 95% CI 0.17 to 0.37; nt=18 for psychological treatments excluding CBT). CBT and relaxation/biofeedback were significantly better than other treatments for treating sleep problems. Higher treatment dose was associated with better outcomes.

There was little evidence of publication bias.

Authors' conclusions
The results suggested that the effects of psychological treatments for fibromyalgia were relatively small but robust and comparable to those reported for other pain and drug treatments used for this disorder. Cognitive-behavioural therapy was associated with the greatest effect sizes.

CRD commentary
The review addressed a well-defined question in terms of participants, interventions, study design and relevant outcomes. Relevant databases were searched in five languages. Unpublished studies were not considered so some relevant studies may have been missed. Publication bias was assessed and little was found. Study quality was assessed using PRISMA recommendations, which relate to systematic reviews and not RCTs. Efforts were made to reduce error.
and bias throughout the review process. Relevant study details were reported, but study design and number of participants of each study was unclear. The statistical method used for the meta-analysis seemed appropriate. Relevant sensitivity analyses were performed. More than one third of studies had fewer than 50 participants.

The review was generally well performed, but study quality was assessed with an inappropriate tool and so the quality of the included studies is unclear and the extent to which the authors conclusions are reliable is unclear.

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

**Practice**: The authors recommended use of all three types of CBT (cognitive, respondent and behavioural) and treatment with a combination of methods and with psychological interventions as a major component. Clinicians should work on several patient goals (such as reducing pain, sleep problems and catastrophizing) and elevating mood and daily functioning. Clinicians and patients should be aware that effects may be small and require a large number of sessions.

**Research**: The authors identified a need for more RCTs on the efficacy of psychological treatments for fibromyalgia. Trials needed to comply with methodological standards and focus on process measures. Research should identifying patient subgroups that may differentially benefit from specific interventions and the mechanism of action of psychological treatments.

**Funding**

Three authors were students supported by the German Academic Exchange Service (DAAD).

**Bibliographic details**


**PubMedID**

20727679

**DOI**

10.1016/j.pain.2010.06.011

**Original Paper URL**


**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

Cognitive Therapy /methods; Fibromyalgia /psychology /rehabilitation; Follow-Up Studies; Humans; Psychological Tests; Reproducibility of Results; Treatment Outcome

**AccessionNumber**

12010007662

**Date bibliographic record published**

02/03/2011

**Date abstract record published**

07/09/2011

**Record Status**

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.