



AOTA Evidence Briefs

Chronic Pain

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

CPAIN #1

Cognitive-behavioral therapy (CBT) is more effective than no treatment in improving pain experience, mood, cognitive coping and appraisal, pain behavior, and social role functioning.

Morley, S., Eccleston, C., & Williams, A. (1999). Systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache. *Pain*, 80, 1–13.

Level: IA

Systematic review and meta-analysis.

Why research this topic?

Reviews of studies on CBT have found strong evidence for its effectiveness in restoring function, elevating mood, and reducing pain and disability-related behavior.

What did the researchers do?

Morley, Eccleston, and Williams (1999), of the Universities of Leeds, Bath, and London, respectively (all in the United Kingdom), conducted a **meta-analysis** (see *Glossary*) of randomized controlled trials of the effectiveness of CBT (including behavior therapy and biofeedback) in reducing chronic pain other than headache. The researchers sought to discover whether CBT is more effective than no treatment and whether it is more effective than alternative treatments.

The researchers searched four computer-based abstracting services (MEDLINE, PSYCHlit, EMBASE, and Social Science Citation Index) and one database (PARED) for published reports of the targeted kind of study. They then examined the reference lists and bibliographies of all the articles they retrieved and all relevant reviews. Their effort identified 33 articles reporting data from 30 trials. Only 25 of the trials, however, contained data suitable for meta-analysis.

Across the 25 trials, 1,672 adults participated, 635 men and 1,037 women. Their average age was 48.4 years. Their primary diagnoses were chronic low-back pain, 36%; rheumatoid arthritis, 20%; mixed, predominantly back pain, 16%; osteoarthritis, 8%; upper limb pain, 8%; fibromyalgia, 4%; and unspecified 8%.

Some of the studies used a waiting-list group as the control. Others used an alternative treatment as the control. Still others used both. The researchers differentiated between waiting-list controls and alternative-treatment controls in their analyses of outcomes.

The outcome areas of interest were *pain experience*, *mood/affect* (depression or other affective states, primarily anxiety), *cognitive coping and appraisal* (negative and positive), *pain behavior* (expression and activity), and *social role functioning* (all as measured by a variety of instruments across the 25 trials).

What did the researchers find?

The researchers used data available from the 25 trials to calculate the **effect size** (see *Glossary*) of each comparison made between treatment and waiting-list groups or treatment and alternative-treatment groups.

In the comparison of CBT with no treatment, the mean effect sizes for the outcome measures of interest were pain experience, 0.40; mood/affect depression, 0.36; mood/affect other, 0.52; cognitive coping and appraisal negative, 0.50; cognitive coping and appraisal positive, 0.53; pain behavior expression, 0.50; pain behavior activity, 0.46; and social role functioning, 0.60.

In the comparison of CBT with other treatments, the mean effect sizes were pain experience, 0.29; mood/affect depression, -0.14; mood/affect other, 0.05; cognitive coping and appraisal negative, 0.17; cognitive coping and appraisal positive, 0.40; pain behavior expression, 0.27; pain behavior activity, no data; and social role functioning, 0.17.

What do the findings mean?

For therapists and other providers, the findings suggest that, compared with no treatment, CBT is effective in reducing pain experience, reducing depression, reducing other affective states, reducing negative coping, increasing positive coping, decreasing pain behavior, increasing activity level, and improving social role functioning.

Further, the findings suggest that, compared with other treatments, the effectiveness of CBT is limited to reducing pain experience, increasing positive coping, and decreasing pain behavior.

What are the study's limitations?

The number of studies considered for the final analysis were very low ($n = 25$).

- *Selection bias*: No a priori criteria were established for the target population. Also, the bias in selecting studies with positive results cannot be ignored.
- *Contamination*: Many studies implemented CBT in conjunction with other forms of intervention. The qualitative and quantitative differences among various studies, while providing CBT in these studies, were not considered by the authors.

GLOSSARY

effect size (Cohen's r)—An effect size is a measure of clinical significance. It provides information about the magnitude of effect of the treatment. Although related to significance, it is not as influenced by the size of the sample. Therefore, it is possible to have an outcome on which the treatment had a large effect (e.g., the treatment group improved a lot more than the control group) and still have a nonsignificant result. If the results have a large effect but no significance, then this effect may be sample specific and not generalizable outside the study. There are many types of effect sizes. What is reported here is Cohen's r , which can be interpreted in a manner similar to a Pearson's correlation coefficient:

Effect size r	Size of the effect
<0.10	Negligible
0.10 – 0.29	Small
0.30 – 0.49	Medium
>0.50	Large

Cohen, J. (1977). *Statistical power analysis for behavioral sciences*. New York: Academic Press.

meta-analysis—A specific subset of systematic review that statistically combines data from many studies to find a common effect. The meta-analysis' power comes from the ability to statistically digest many studies and emerge with a final assessment of their common effect.

■ Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

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For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.



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