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Bibliographic Data	
Authors	Williams ACDC, Eccleston C, Morley S.
Title	Psychological therapies for the management of chronic pain (excluding headache) in adults.
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Other information if relevant	

Methods	
Aim of study	To evaluate the effectiveness of psychological therapies for chronic pain (excluding headache) in adults
Design	Meta-analysis of randomized clinical trials

PICOS	
Population from which participants are drawn	Adults (aged 18 years or older) reporting pain of at least three months' duration in any body site, not associated with a malignant disease process. Patients with only headache or migraine were excluded.
Intervention being evaluated	Two main types of psychological treatment called cognitive behavioral therapy (CBT), and behavior therapy (BT) e.g. biofeedback
Comparison or control intervention	- Active treatment (control) includes physical therapy, education, and medical regime - Treatment as usual includes regular consultations, unrecorded treatment, waiting list
Outcomes	Pain (primary outcome), disability, mood, and catastrophic thinking Two assessment time points: post-treatment and follow-up. Post-treatment is the assessment point immediately following treatment, and follow-up is the assessment point at least 6 months after the end of treatment, but not more than 12 months 8 separate comparisons were conducted for each of the 4 outcome measures comprising 2 classes of psychological treatment (CBT, behavioral therapy), 2 forms of comparator (active control, treatment as usual), and 2 assessment time points (post-treatment and follow-up). 32 comparisons in total

Study types	RCTs of psychological treatments having 20 or more participants in each treatment arm at the end of the treatment assessment.

Study selection	
Search date of literature review	September 2011
Databases in literature search	CENTRAL, MEDLINE, EMBASE and Psychlit
How authors assessed study quality (risk of bias and other considerations	Cochrane risk of bias tool including random sequence generation, allocation concealment, blinding of outcome assessment, incomplete outcome data, and selective reporting.
Additional information if relevant	Applied a quality rating scale specifically designed for psychological interventions in pain

Results	
Number of studies screened	87 RCTS were screened in a 2009 version of this Cochrane review, and 48 additional references were screened for 2 updated searches
Number of studies selected for analysis of results	22 RCTS were selected from the 2009 Cochrane and 20 RCTs were added in this current Cochrane for a total of 42 studies with 4788 participants. 35 studies provided data for analysis.
Whether authors elected to perform meta-analysis to pool study results statistically and type of meta-analysis done (fixed effect or random effects, heterogeneity, etc)	Of the 32 possible comparisons, 25 contained more than one study where results were pooled and a random effects model meta-analysis was performed. Of the 24 analyses reported, 10 showed low heterogeneity (I^2 < 25%), 6 showed modest heterogeneity (I^2 > 25% to < 50%), and 8, almost all analyses of behavior therapy, showed large heterogeneity (I^2 > = 50%). For 4 analyses showing an effect of intervention with high heterogeneity (I^2 > 50%), outliers were removed and heterogeneity was reduced to less than 56%. Standard mean differences (SMDs) and 95% confidence intervals (CIs) were calculated for each analysis.
Quality of studies as assessed by authors	5 of the 42 studies had a low risk of bias in all 5 domains assessed. 15 studies had a low risk of bias for randomization, 14 studies had adequate allocation concealment, 12 were at low risk of attrition bias, 34 were at low risk for selective reporting of outcomes, and 13 were at low risk of bias for blinding of outcome assessment. Most judgements of high risk of bias were because of inadequate reporting.

Effect sizes reported for primary outcomes (mean differences, standardized mean differences, response ratios, etc)	CBT appears to have a small effect on **pain** that is statistically significant measured immediately post-treatment when compared with treatment as usual (SMD = -0.21, 95% CIs-0.37, -0.05, 16 studies, 1148 participants), but not when compared with an active control (SMD = -0.10, 95% CIs -0.24, 0.04). There is no effect at follow-up 6 to 12 months after treatment compared with treatment as usual (SMD = -0.09, 95% CIs -0.25, 0.08) or with an active control (SMD = -0.08, 95% CIs -0.23, 0.06). Behavior therapy had no significant effect on pain compared to treatment as usual at post-treatment (SMD = -0.27, 95% CIs -0.79, 0.24), or at follow-up (SMD = -0.03, 95% CIs -0.32, 0.26). There was only one study in the comparison with an active control, and that showed no benefit post-treatment or at follow-up.
Effect sizes reported for additional outcomes (mean differences, standardized mean differences, response ratios, etc)	CBT has a very small effect on **disability** compared with an active control at both post-treatment (SMD = -0.19, 95% CIs -0.33, -0.05, 12 studies, 1130 participants) and at follow-up (SMD = -0.15, 95% CIs -0.28, -0.02, 12 studies, 1295 participants), and also a small effect at post-treatment compared with treatment as usual (SMD = -0.26, 95% CIs -0.47, -0.04, 15 studies, 1105 participants), but this effect disappeared at follow-up (SMD = -0.13, 95% CIs -0.51, 0.25). Behavior therapy had no effect on disability compared to active control or usual treatment, post-treatment or at follow-up, although there were only 2 studies (144 participants) comparing behavior therapy with an active control. CBT has no effect on **mood** compared with active control immediately post-treatment (SMD = -0.05, 95% CIs -0.19, 0.09) or at follow-up (SMD = -0.07, 95% CIs -0.18, 0.05), but when compared with treatment as usual, it has a small effect size immediately post-treatment (SMD = -0.38, 95% CIs -0.57, -0.18, 12 studies, 899 participants) and a small effect at follow-up (SMD = -0.26, 95% CIs -0.51, -0.00, 7 studies, 637 participants). Behavior therapy had only one study in which it was compared with active control. Behavior therapy showed no effect compared with treatment as usual either post-treatment (SMD = -0.53, 95% CIs -1.42, 0.35), or at follow-up (SMD = -0.65, 95% CIs -2.07, 0.77). CBT had a small effect on **catastrophizing** compared to active control immediately post-treatment (SMD = -0.18, 95% CIs -0.36, 0.00, 6 studies, 735 participants), but not at follow-up (SMD = 0.06, 95% CIs -0.18, 0.29). In comparison with usual treatment, it had a moderate effect post-treatment (SMD = -0.53, 95% CIs -0.76, -0.31, 5 studies, 308 participants) which was sustained at follow-up in one study. For behavior therapy, study numbers were too small in the active control comparison, but in comparison with usual treatment, behavior therapy had a moderate effect immediately post-treatment (SMD = -0.72, 95% CIs -1.43, -0.01, 3 studies, 269 participants), but the I^2 value was 84%. There was no follow-up data in comparison with usual treatment.

Additional information if relevant –summary of results	- CBT has very small positive effects on disability and catastrophizing, but not on pain or mood, when compared with active controls. CBT has small effects on pain, disability, mood and catastrophizing immediately post-treatment when compared with treatment as usual, but all except a small effect on mood had disappeared at follow-up. - Overall, there is an absence of evidence for behavior therapy. The pooled results for behavior therapy had no effect on pain, disability, mood or catastrophizing compared to active control or usual treatment, post-treatment or at follow-up. The small effect of 3 pooled studies on catastrophic thinking must be interpreted with caution, since heterogeneity was high (I^2 = 84%).

Authors' Conclusions	
Key conclusions of study authors	- CBT is a useful approach to the management of chronic pain. Benefits of CBT are almost entirely from comparisons with treatment as usual, not with active controls. CBT has weak effects in improving pain, but only immediately post-treatment and when compared with treatment as usual. CBT has small effects on disability associated with chronic pain, with some maintenance at 6 months. CBT is effective in altering mood and catastrophizing outcomes, when compared with treatment as usual, with some evidence that this is maintained at 6 months. - Behavior therapy has no effects on pain, disability, or mood, but showed an effect on catastrophizing immediately post-treatment. - CBT is effective when delivered by experienced staff, those trained and supervised in the trial protocol, or both. The results cannot be extrapolated to CBT delivered by untrained staff. - Of our four outcome domains, effects on mood (mostly depression) were strongest, followed by catastrophic thinking, disability and, lastly, pain. - Compared to the 2009 Cochrane review (Eccleston 2009), the effect sizes for CBT are largely sustained while those for behavior therapy are diminished. - Psychological interventions can reduce pain, disability, psychological distress and catastrophic ways of thinking about pain. Average effect sizes derived from collapsing data across trials are relatively small, as they are across pharmacological and physical treatments for chronic pain. - Although most trials did not report adverse effects, they should be small, so the treatment can be considered safe. - Treatment makes substantial demands on patients, although many trials do not monitor whether patients practice treatment components as instructed. The assessments of adherence could doubtless be improved. - There is no need for more general RCTs reporting group means. Different types of studies and analyses are needed to identify which components of CBT work for which type of patient on which outcome/s, and to try to understand why.
Additional information if relevant	- Examination of what we think is feasible as the outcome of psychological treatment is appropriate. Is it mere palliation, in which case effects will be small, or can we effectively enable patients to manage the interruption of pain and to reduce its interference with their lives, and thereby to repair damaged identities?

Comments by DOWC staff

- Psychological therapies for the management of chronic pain are potentially useful treatments, with better evidence for and better effects of CBT than behavior therapy for which the evidence contains fewer studies and is much weaker.
- This review showed that there is a large evidence base for estimating the effectiveness of psychological treatments, especially for CBT, in chronic pain even when strict criteria on psychological quality and study size were applied. The large number of studies with ample participants (the largest analysis being of 1258 participants and the smallest of 144 participants) allowed for reasonable power in the meta-analyses to find a treatment effect. The average effect sizes found were small, similar to most available treatments for chronic pain, and similar to other systematic reviews in this field of mixed chronic pain (Scascighini 2008), and low back pain (Henschke 2010a; Hoffman 2007). The evidence of weak to small effects across a range of outcomes is clear from this large systematic review and from the previous ones cited above, and is very unlikely to change as a result of further similar RCTs and systematic reviews. Further research is unlikely to have an important impact on the confidence of the current estimates and will not change the size of the treatment effect.
- Even though the small effect sizes found for CBT were statistically significant, they may not be clinically important alone in the treatment of chronic pain. The authors noted that few if any other commonly used treatments for chronic pain, including NSAIDS, meet the thresholds for minimal clinically important differences for pain. Since few if any chronic pain treatments have specific effects that meet the threshold for clinically relevant benefits, this does not necessarily mean that there are no effective treatments for chronic pain. It appears that psychological therapies or any intervention in isolation will not be sufficient to adequately reduce chronic pain. This might mean instead that the threshold for clinical relevance is too high for any individual treatment alone, and that a multidisciplinary approach to chronic pain management, with a focus on combining several non-pharmacological therapies is necessary.
- As occurs with other Cochrane reviews, the meta-analyses in this review considered CBT and BT as stand-alone therapies for the treatment of chronic pain, and not as a component in a multidisciplinary approach to chronic pain management.
- Since the benefits of psychological therapies may diminish over time, it may be important to continue monthly psychological therapy treatments in the months prior to the follow-up assessments.
- The relative benefits of psychological therapies compared with other treatments cannot be reliably assessed, because for most chronic pain treatments there are small effect sizes with wide confidence intervals. It is unreliable to estimate the relative effects of psychological therapies compared to other active treatments using indirect comparisons.
- For most of the comparisons made in this review, there was only low or very low quality evidence to support the results. Moderate quality evidence was found for a small number of comparisons. Due to the low quality studies included in this review, only good evidence, not strong, can be derived from this review.

Assessment by DOWC staff	
Overall assessment as suitability of evidence for the guideline ☒ High quality ☐ Adequate ☐ Inadequate	High quality Cochrane meta-analysis supporting good evidence that cognitive behavioral therapy, but not behavioral therapy, shows weak to small effects in reducing pain, and small effects on improving disability, mood, and catastrophizing in the treatment of patients with chronic pain.
If inadequate, main reasons for recommending that the article not be cited as evidence	

Additional references if relevant

- Eccleston C, Williams A, and Morley S. Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database of Systematic Reviews* 2009, Issue 2. [DOI: 10.1002/14651858.CD007407.pub2].
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